

GANNON UNIVERSITY

Undergraduate Catalog 2021-2022

109 UNIVERSITY SQUARE ERIE, PENNSYLVANIA 16541
1-800-GANNON-U or 814-871-7240
www.gannon.edu

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DISABILITY STATEMENT

Advocate for Campus Accommodations

Lisa Laird is the Director of the Office of Disability Services and the 504/ADA Coordinator for students with disabilities who require accommodations at the University.

Students seeking information or assistance in any matter regarding accessibility or accommodations should contact her upon admission to the University.

Office of Disability Services

Gannon University • 109 University Square • Erie, PA 16541

(814) 871-5522 • laird004@gannon.edu

GANNON UNIVERSITY POLICY OF EQUAL OPPORTUNITY

It is the policy of Gannon University to affirmatively implement equal opportunity to all qualified applicants and existing students and employees. In administering its affairs, the University shall not discriminate against any person on any basis prohibited by law. All aspects of employment including recruitment, selection, hiring, training, transfer, promotion, termination, compensation and benefits shall conform to this policy. All aspects of student affairs and education of students including recruitment, admissions, financial aid, placement, access to facilities, student discipline, student life and student employment conform to this policy.

Furthermore, Gannon University does not discriminate on the basis of sex in its education programs and activities. Gannon University will protect the rights of all students and employees to work and study free from harassment, including sexual harassment and/or sexual violence.

Student inquiries concerning the application of Title IX and other non-discrimination policies are to be referred to the Gannon University Title IX Coordinator, Susan Majoeka, Beyer Hall 306, 109 University Square, Erie, PA 16541-0001; 814-871-7224; kerner005@gannon.edu.

Employee inquiries concerning Gannon non-discrimination policy are to be referred to Caprice Hudson, Human Resources Senior Generalist 814-871-7145; hudson015@gannon.edu.

The information in this catalog is considered to be descriptive in nature. The University reserves the right to make any changes in the contents of this catalog or in the documented course of study that it deems necessary or desirable. When changes are made they will be communicated to the appropriate students.

Gannon: A Closer Look

MISSION STATEMENT

Gannon is a Catholic, Diocesan university dedicated to excellence in teaching, scholarship and service. Our faculty and staff prepare students to be global citizens through programs grounded in the liberal arts and sciences and professional specializations. Inspired by the Catholic Intellectual Tradition, we offer a comprehensive, values-centered learning experience that emphasizes faith, leadership, inclusiveness and social responsibility.

ACADEMIC ACCREDITATION

Academic accreditation is based on accepted qualitative and quantitative standards of excellence for evaluating the quality of education offered at the institution. Evaluation and subsequent accreditation include such areas as the educational objectives and achievements, academic programs, admissions practices, student personnel and welfare services, institutional study, training and experience of instructional staff, financial stability, and laboratory and library resources.

Gannon University is accredited by:

The Middle States Commission on Higher Education

3624 Market Street, Philadelphia, PA 19104

(267)-284-5000, FAX (215) 662-5501, www.msche.org

The Middle States Commission on Higher Education is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation.

Academic Programs of Gannon University are accredited by:

Pennsylvania Department of Education

333 Market Street, Harrisburg, PA 17126-0333

(717) 783-6788, FAX (717) 783-0583, www.education.pa.gov

Florida Department of Education

Commission for Independent Education

325 West Gaines St., Suite 1414, Tallahassee, FL 32399-0400

(850) 245-3200, www.fldoe.org/cie

ABET

(See individual program descriptions for details on the specific accrediting organizations that apply)

415 North Charles St., Baltimore, MD 21201

(410) 347-7700, FAX (410) 625-2238, www.abet.org

Accreditation Council for Occupational Therapy Education

6116 Executive Blvd., Suite 200, North Bethesda, MD 20852-4929

(301) 652-6611, www.acoteonline.org

Accreditation Council for Business Schools and Programs

11520 West 119th Street, Overland Park, KS 66211

(314) 872-8481, FAX (314) 872-8495, www.acbsp.org

Accreditation Review Commission on Education for the Physician Assistant

12000 Findley Road, Suite 275, Johns Creek, GA 30097

(770) 476-1244, FAX (770) 476-1738, www.arc-pa.org

Commission on Accreditation for Allied Health Education Programs

9355 113th Street N, #7709, Seminole, FL 33775

(727) 210-2350, FAX (727) 210-2354, www.caahep.org

Committee on Accreditation for the Exercise Sciences

401 W. Michigan Street, Indianapolis, IN 46202

(317) 777-1135, FAX (317) 634-7817, www.coaes.org

Commission on Accreditation for Respiratory Care

264 Precision Blvd., Telford, TN 37690

(817) 283-2835, FAX (817) 354-8519, www.coarc.com

Commission on Accreditation in Physical Therapy Education

3030 Potomac Avenue, Suite 100, Alexandria, VA 22305
(703) 684-2782, FAX (703) 684-7343, www.capteonline.org

Commission on Accreditation of Athletic Training Education

2001 K Street NW, 3rd Floor North, Washington, DC 20006
(512) 733-9700, www.caate.net

Commission on Collegiate Nursing Education

655 K Street NW, Suite 750, Washington, DC 20001
(202) 887-6791, FAX (202) 887-8476, www.aacnursing.org/ CCNE

Council on Academic Accreditation in Audiology and Speech-Language Pathology

200 Research Blvd., #310, Rockville, MD 20850
(800) 498-2071, www.caa.asha.org

Council on Accreditation of Nurse Anesthesia Educational Programs

222 South Prospect Avenue, Park Ridge, IL 60068-4001
(847) 655-1160, www.coacrna.org

Council on Social Work Education at the Baccalaureate Level

333 John Carlyle St, Suite 400, Alexandria, VA 22314
(703) 683-8080 FAX (703) 683-8099, www.cswe.org

Joint Review Committee on Education in Radiologic Technology

20 North Wacker Drive, Suite 2850, Chicago, IL 60606-3182
(312) 704-5300, FAX (312) 704-5304, www.jrcert.org

The Commission on English Language Program Accreditation (CEA)

100 North Fairfax Street, Suite 630, Alexandria, VA 22314
703-665-3400, <https://cea-accredit.org/>

Gannon University holds membership in the following associations:

ACPA – College Student Educators International

American College Personnel Association/National Center for Higher Education
One Dupont Circle, NW, Suite 300, Washington, DC 20036
(202) 835-2272, FAX (202) 296-3286

American Association of Colleges of Nursing

655 K Street NW, Suite 750, Washington, DC 20001
(202) 463-6930, FAX (202) 785-8320, www.aacnursing.org

American Council on Education

One Dupont Circle, NW, Suite 800, Washington, DC 20036
(202) 939-9300, FAX (202) 833-4760, www.acenet.edu

American Society for Engineering Education (ASEE)

1818 N Street N.W. Suite 600, Washington DC 20036
Telephone: 202.331.3500, Fax: 202.265.8504, www.asee.org

Association for Athletic Training Education (Ruskin)

7613 Elmwood Avenue, P.O. Box 620762, Middleton, WI 53562
www.aated.org

ASACCU – Association for Student Affairs at Catholic Colleges and Universities

Siena College
515 Loudon Road, Loudonville, NY 12211
(518) 783-2328

Association of Independent Colleges and Universities of Pennsylvania

101 North Front Street Harrisburg, PA 17101-1405
(717) 232-8649; Fax (717) 233-8574, <http://www.aicup.org/>

Association of Schools Advancing Health Professions

122 C. Street NW, Suite 200, Washington, DC 20001
(202) 237-6481, www.asahp.org

College Entrance Examination Board (The College Board)

45 Columbus Ave, New York, NY 10023-6992
(212) 713-8000

Council of Colleges of Arts and Sciences

c/o The College of William and Mary
P.O. Box 8795, Williamsburg, VA 23187-8795
(757) 221-1784; Fax (757) 221-1776, www.ccas.net

Middle Atlantic Association of Colleges of Business Administration

LaSalle University, 1900 W. Olney Avenue, Philadelphia, PA 19141
(215) 951-1040, FAX (215) 951-1886

Pennsylvania Association of Colleges and Teacher Educators

89 Hawk Valley Lane, Denver, PA 17517
(724) 609-3727

Pennsylvania Association for Middle Level Education

P.O. Box 312, State College, PA 16801, www.pamle.org

Gannon University is approved by:

State Board of Nursing of the Commonwealth of Pennsylvania

PO Box 2649, Harrisburg, PA 17105-2649
(833) 367-2762, FAX (717) 783-0822

ACADEMIC PROGRAMS

.....Degree Page

College of Engineering and Business
Dahlkemper School of Business

| | | |
|--------------------------------------|---|-----|
| Business Administration | Associate of Science | 95 |
| Business Administration | Bachelor of Science in Business Administration | 92 |
| <i>With majors in:</i> | | |
| Accounting | Bachelor of Science in Business Administration | 103 |
| Business Administration | Bachelor of Science in Business Administration | 99 |
| Economics | Bachelor of Science in Business Administration | 109 |
| Entrepreneurship | Bachelor of Science in Business Administration | 111 |
| Finance | Bachelor of Science in Business Administration | 112 |
| Healthcare Management | Bachelor of Science in Business Administration | 114 |
| International Management | Bachelor of Science in Business Administration | 116 |
| Management | Bachelor of Science in Business Administration | 117 |
| Marketing | Bachelor of Science in Business Administration | 120 |
| Risk Management and Insurance | Bachelor of Science in Business Administration | 122 |
| Sport Management and Marketing | Bachelor of Science in Business Administration | 123 |
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| Computer Science | Bachelor of Science in Computer Science | 146 |
| Computer Science-Software Engineering Dual Degree..... | 2x Bachelors of Science in Computer Science and in Software Engineering | 165 |
| Cyber Engineering | Bachelor of Science in Cyber Engineering | 167 |
| Cybersecurity | Bachelor of Science in Cybersecurity | 173 |
| Electrical Engineering..... | Bachelors of Science in Electrical Engineering..... | 179 |
| Environmental Science..... | Bachelor of Science in Environmental Engineering | 199 |
| Environmental Engineering | Bachelor of Science in Environmental Science..... | 203 |
| Industrial and Robotics Engineering..... | Bachelor of Science in Industrial Engineering | 215 |
| Information Systems..... | Bachelor of Science in Information Systems..... | 229 |
| Mechanical Engineering..... | Bachelors of Science in Mechanical Engineering..... | 239 |
| Software Engineering | Bachelor of Science in Software Engineering | 253 |
| Software Engineering International Degrees..... | Bachelors of Science and Bachelors of Engineering in Software Engineering..... | 261 |
| College of Engineering and Business Minors | | |
| Accounting..... | | 100 |
| Business Administration (for non-business majors only) | | 100 |
| Computer Science | | 146 |
| Cybersecurity..... | | 161 |
| Data Analytics..... | | 237 |
| Economics | | 100 |
| Electrical Engineering..... | | 171 |
| Entrepreneurship | | 100 |
| Environmental Science..... | | 207 |
| Finance..... | | 100 |
| Geographic Information Systems | | 208 |
| Global Business | | 100 |
| Information Systems..... | | 237 |
| Innovation and Creativity..... | | 85 |
| Marketing | | 100 |
| Risk Management and Insurance | | 100 |
| Sport Management and Marketing | | 101 |
| Supply Chain Management..... | | 101 |

.....Degree Page

College of Humanities, Education and Social Sciences

School of Humanities and Social Sciences

| | | |
|--|--------------------------|-----|
| Advertising Communication..... | Bachelor of Arts..... | 274 |
| Criminal Justice..... | Bachelor of Arts..... | 296 |
| Criminal Justice..... | Associate of Arts..... | 308 |
| Digital Media Communication..... | Bachelor of Arts..... | 275 |
| English..... | Bachelor of Arts..... | 350 |
| English Teaching Certificate..... | Bachelor of Arts..... | 311 |
| Global Languages..... | Bachelor of Arts..... | 363 |
| Gerontology..... | | 362 |
| Global Cultures..... | Bachelor of Arts..... | 263 |
| History..... | Bachelor of Arts..... | 373 |
| Social Studies Teaching Certificate..... | Bachelor of Arts..... | 382 |
| Interdisciplinary Studies..... | Bachelor of Arts..... | 384 |
| Interdisciplinary Studies..... | Associate of Arts..... | 386 |
| Journalism Communication..... | Bachelor of Arts..... | 278 |
| Legal Studies..... | Bachelor of Arts..... | 386 |
| Legal Studies..... | Associate of Arts..... | 387 |
| Legal Studies..... | Certificate..... | 387 |
| Library..... | | 391 |
| Military Science..... | | 391 |
| Mortuary Science..... | Bachelor of Science..... | 397 |
| Philosophy..... | Bachelor of Arts..... | 399 |
| Political Science..... | Bachelor of Arts..... | 404 |
| Pre-Law..... | | 408 |
| Pre-Law 3/3 Early Admissions..... | | 410 |
| Psychology..... | Bachelor of Arts..... | 413 |
| Psychology..... | Bachelor of Science..... | 413 |
| Public Relations..... | Bachelor of Arts..... | 279 |
| Public Service and Global Affairs..... | Bachelor of Arts..... | 425 |
| Social Work..... | Bachelor of Arts..... | 429 |
| Sociology..... | | 436 |
| Theatre & Communication Arts..... | Bachelor of Arts..... | 286 |
| Theatre Design and Technologies..... | Bachelor of Arts..... | 288 |
| Theatre Performance for Media & Stage..... | Bachelor of Arts..... | 289 |
| Theology..... | Bachelor of Arts..... | 437 |
| Writing..... | Bachelor of Arts..... | 350 |

School of Education

| | | |
|---|---------------------------|-----|
| Early Childhood Education PreK-4..... | Bachelor of Science..... | 315 |
| Early Childhood Education PreK-4..... | Associate of Arts..... | 335 |
| Early Childhood Education PreK-4/ Special Education PreK-12..... | Bachelor of Science..... | 318 |
| Middle Level 4-8..... | Bachelor of Science..... | 320 |
| Secondary Education 7-12..... | | 333 |
| Early Childhood Education & Early Intervention..... | Associate of Science..... | 336 |

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| Arabic Studies..... | | 366 |
| Archaeology and Culture..... | | 270 |
| Communication and Rhetorical Studies..... | | 295 |
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| Criminal Justice..... | | 309 |
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| Education..... | | 337 |
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| Fine Arts..... | | 293 |
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| Journalism..... | | 279 |
| Music and Culture..... | | 294 |
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| Political Science..... | | 408 |
| Pre-Law..... | | 412 |
| Psychology..... | | 424 |
| Social Work..... | | 435 |
| Spanish Language and Culture..... | | 366 |
| Special Education and Diversity..... | | 338 |
| Theatre..... | | 294 |
| Theology..... | | 443 |
| Training and Development..... | | 339 |
| Women’s Studies..... | | 443 |
| Writing..... | | 360 |

Morosky College of Health Professions and Sciences

School of Health Professions

| | | |
|--|--|-----|
| Applied Exercise Science..... | Bachelor of Science..... | 445 |
| Communication Sciences and Disorders..... | | 489 |
| Nursing (Villa Maria School of) – BSN..... | Bachelor of Science in Nursing..... | 515 |
| Nursing (Villa Maria School of) – RN-BSN Option..... | Bachelor of Science in Nursing..... | 523 |
| Nursing (Villa Maria School of) – School Nurse Certification..... | Certificate..... | 528 |
| Nutrition & Human Performance..... | Bachelor of Science..... | 529 |
| Occupational Therapy..... | Master of Science..... | 532 |
| Physical Therapy..... | Doctor of Physical Therapy..... | 541 |
| Physician Assistant..... | Master of Physician Assistant Science..... | 547 |
| Polysomnography..... | Certificate..... | 626 |
| Radiologic Sciences..... | Associate of Science..... | 617 |
| Respiratory Care..... | Bachelor of Science..... | 622 |

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| School of Sciences | | |
| Biochemistry | Bachelor of Science..... | 457 |
| Biology | Bachelor of Science..... | 458 |
| Biology Teaching Certificate..... | Bachelor of Science..... | 474 |
| Chemical Engineering | Bachelor of Science..... | 479 |
| Chemistry | Bachelor of Science..... | 480 |
| CWRU Pre-Dental | Bachelor of Science..... | 565 |
| Forensic Science..... | Bachelor of Science..... | 498 |
| Freshwater and Marine Biology..... | Bachelor of Science..... | 471 |
| LECOM Dental..... | Bachelor of Science..... | 567 |
| LECOM Medical..... | Bachelor of Science..... | 570 |
| Mathematics..... | Bachelor of Science..... | 501 |
| Mathematics Teaching Certificate..... | Bachelor of Science..... | 507 |
| Medical Laboratory Science..... | Bachelor of Science..... | 509 |
| PCOM Medical | Bachelor of Science..... | 577 |
| Physics | | 556 |
| Podiatry Medicine**..... | Bachelor of Science..... | 603 |
| Pre-Medical, Pre-Dental, Pre-Podiatry, Pre-Veterinary, Pre-Optometry, Pre-Chiropractic..... | | 559 |
| Pre-Pharmacy..... | | 561 |
| Pre-Pharmacy (Charleston)..... | | 600 |
| Pre-Pharmacy (Duquesne)..... | | 590 |
| Pre-Pharmacy (LECOM)..... | | 592 |
| Public Health | Bachelor of Science..... | 612 |
| Pre-Health Qualification | | 611 |
| Ross Medical | Bachelor of Science..... | 580 |
| Ross Veterinary..... | Bachelor of Science..... | 607 |
| Salus Optometry..... | Bachelor of Science..... | 588 |
| Science..... | Bachelor of Science..... | 629 |
| UMHS Medical | Bachelor of Science..... | 584 |
| Morosky College of Health Professions and Sciences Minors | | |
| Applied Exercise Science | | 455 |
| Biology | | 477 |
| Chemistry | | 488 |
| Mathematics..... | | 509 |
| Nutrition..... | | 456 |
| Sport Behavior | | 456 |
| Statistics | | 509 |

** We have accelerated programs with Kent State Podiatric Medicine and with Temple Podiatric Medicine and students can receive a Bachelor of Science

THE LIBRARY

The Msgr. Wilfrid J. Nash Library and Student Learning Commons is a dynamic and engaging learning environment that provides resources, spaces, and support to students of Gannon University to foster learning and academic success.

Nash Library and Student Learning Commons opened in spring of 2018 after an extensive modernization project. The building contains spaces for quiet study as well as spaces for collaborative work. There are 49 study rooms in a variety of sizes and configurations designed to accommodate 2 to 10 students. Urban Brew, a new café with its own distinctive menu, is also located in Nash. The library is open 104.5 hours per week during the Fall and Spring semesters.

Nash Library's collections contain over 200,000 book volumes and more than 5,000 audiovisual items. Special collections include the University Archives. The library provides online access to over 45 databases, 50,000 periodicals, and 175,000 ebooks. Other learning resources such as laptops and anatomical models are also available for checkout. Research assistance and information literacy instruction are also integral components of the library's educational mission.

The **STEM (Science, Technology, Engineering, and Mathematics) Center** provides free one on one and group tutoring opportunities for courses within the Morosky College of Health Professions and Sciences and the College of Engineering and Business, and also supports related coursework from the College of Humanities, Education, and Social Sciences. (Specific areas include mathematics, statistics, physics, chemistry, biology, health professions, engineering, and business.) The STEM Center also provides more intensive support for traditionally difficult courses through the STEM-PASS (Peer Assisted Study Scheme) initiative which includes tutor attendance and participation in the target classes and facilitation of several extra help sessions each week. Additionally, the STEM Center seeks input and involvement from faculty and other campus stakeholders in order to evolve and create services that assist students in their efforts to meet course and program learning outcomes. The STEM Center is staffed by a director and trained peer consultants.

The **Writing & Research Center (WRC)** is staffed by professional and trained peer consultants who reflect our respect for the individual writer. The Writing & Research Center team has a strong commitment to service and regards language as fundamental to the holistic development of the student. We offer one-on-one conferencing, both in-house and online, for students of all abilities, including speakers of other languages. Undergraduate and Graduate students should visit the Writing & Research Center at any stage of the writing process, from any discipline. In addition, the WRC provides tutoring for all CHES courses, as well as support for the college of Communication and the Arts. The WRC also houses the CHESMate Program, which aims to foster academic engagement and reinforce learning outcomes in CHES courses through embedded peer mentorship and supplemental sessions.

To schedule an online or in-person appointment at the STEM Center or Writing and Research Center, students can visit <http://gannon.mywconline.com>.

Admission to the University

ADMISSION POLICY

Gannon University subscribes to the National Association for College Admission Counseling's Statement of Principles of Good Practice. Admission policy has been established to protect all students' rights, privileges and privacy, while providing well-qualified students with an opportunity to enroll at the University. Gannon University reserves the right to deny admission to applicants who have a criminal record or other indications that they could harm or impact the wellness of the Gannon Community.

EVALUATION OF CANDIDATE CREDENTIALS

Admission decisions are based on a variety of factors including high school record, as demonstrated through course selection; grades; and the results of SAT (Evidenced Based Reading & Writing, Math) or ACT Tests. In some cases, the SAT/ACT requirement may be waived during the admission process. Extra-curricular activities, recommendations, and personal statements also enter into the admission decision.

ADMISSION REQUIREMENTS

Candidates for admission must be graduates of accredited secondary schools, preparatory schools, or present a General Equivalency Diploma (GED). It is recommended that a candidate's preparation include 16 academic units distributed as follows:

SCIENCE & ENGINEERING

| | |
|--|-----------------|
| English | 4 units |
| Social Sciences | Any combination |
| Global Language | of 4 units |
| Mathematics | 4 units |
| Including Geometry, Trigonometry, and Pre-Calculus | |
| Science | 4 units |
| Including Biology, Chemistry, and Physics with Labs | |

HUMANITIES

| | |
|-----------------|-----------------|
| English | 4 units |
| Social Sciences | |
| Global Language | Any combination |
| Mathematics | of 12 units |
| Science | |

HEALTH SCIENCES

| | |
|-----------------|--|
| English | 4 units |
| Social Sciences | Any combination |
| Global Language | of 4 units |
| Mathematics | 4 units including up to Algebra II and Pre-Calculus |
| Science | 4 units including Biology and Chemistry with Labs |

BUSINESS

| | |
|---|-----------------|
| English | 4 units |
| Social Sciences | Any combination |
| Global Language | of 4 units |
| Mathematics | 4 units |
| Including Geometry, Trigonometry, and Pre-Calculus | |
| Science | 4 units |
| Including Biology and Chemistry with Labs | |

EDUCATION

| | |
|-----------------|-----------------|
| English | 4 units |
| Social Sciences | |
| Global Language | Any combination |
| Mathematics | of 12 units |
| Science | |

FRESHMAN APPLICATION PROCEDURE/PROCESSING

Completion of the application sequence includes the following:

1. Submission of a completed Application Form (on-line or Common Application).
All applications are free of charge.
2. Submission of an official secondary school transcript including senior class schedule, and counselor recommendation. All transcripts become the property of Gannon University and cannot be returned, copied, or forwarded to a third party. Gannon can receive transcripts via email from a counselor at admissions@gannon.edu or electronically through Common Application or Parchment.
3. Submission of standardized test scores, either SAT or ACT. (It is recommended that you have test scores sent directly from the testing agency). This requirement may be waived by the Office of Admission in some cases.
4. Submission of additional letters of recommendation, personal statement, and a listing of extracurricular activities and accomplishments. Students applying for a health professions program are required to submit one letter of recommendation from a high school science teacher.

If there is a need for further information, the Office of Admissions will contact you. The Admissions Committee may require a personal interview.

While there is no deadline for filing the application*, it is recommended that students who plan to live on-campus, complete the application no later than August 1 following their senior year if they plan to start in the fall term. Students planning to start in the spring term (January) should apply no later than December 1 preceding that term. Applications are processed as they are received and offers of admission are extended on a space available basis. In other words, some programs have maximum enrollment quotas that will be filled prior to the beginning of the academic year.

Notification of admission decisions occurs on a rolling basis. Students will be notified within 2-4 weeks once all necessary items to complete an application have been received.

All students who plan to enroll must submit a final, official secondary school transcript verifying graduation.

*In processing applications for the Fall semesters, the Physician Assistant Program has an application deadline of November 15.

DEPOSITS

An enrollment deposit is requested when a candidate has been accepted. The deposit amount is \$100. The Physician Assistant; LECOM Dental, Medical, and Pharmacy programs require a \$300 deposit.

Most programs for the entering class are filled as the deposits are received. Room assignments are also made according to the date deposits are received in conjunction with completion of appropriate paperwork.

The deposit is refundable until May 1 should a student choose not to enroll. We will delay admission for most programs for a semester or year upon receiving written request for delayed admission. In these cases, the deposit is rolled over to the new admission date.

ADVANCED PLACEMENT

Applicants participating in the College Entrance Examination Board Advanced Placement Program will be considered for credit and placement if the appropriate test scores are sent. See Advanced Placement section.

TRANSFER STUDENTS

General Requirements

Students in good standing (generally defined as a 2.0 average or better on a 4.0 scale) at regionally accredited institutions may qualify for admission, depending upon various aspects of the entire academic record. Several programs require a grade point average above a 2.0. Of primary interest to the Admissions Committee is the college performance, although the high school record may carry weight in some instances. Additionally, transfer students will be asked to submit a college clearance form (Transfer Applicant Evaluation Form) from the Dean of Students at the current or last college attended. Receipt of this form is required in order for students to complete final registration.

Official updated transcripts from each college/university/institution attended are required before a final admission decision is made. Transfer students with fewer than 30 credits must also provide an official copy of their high school transcript. All students must show proof of high school graduation.

Students on notice of academic or non-academic dismissal are not eligible to apply for admission to Gannon University until after the lapse of one academic year following the dismissal. Upon the completion of said academic year, the Admissions Committee will determine whether or not the student may be admitted. Students must be eligible to return to their most recent institution in order to be considered for admission to Gannon. Applicants on academic probation or whose records show less than an overall 2.0 GPA at their current or most recent institution are advised that they will not, except in extraordinary circumstances, qualify for admission to Gannon University.

Students with any pending criminal charges may be denied admission to the University. Gannon University reserves the right to deny admission to applicants who have a criminal record or other indications that they could harm or impact the wellness of the Gannon Community.

A grade of "incomplete" is not acceptable on a transcript from a previous college. All "incompletes" must be resolved prior to being reviewed for admission.

Courses taken previously at regionally accredited institutions which have relevance to the program to be followed at Gannon University, and in which grades of "C" (2.0) or better have been earned, are eligible for transfer. (Several Programs require grades of "B" or better to be considered for transfer.)

UPPER DIVISION TRANSFER PROGRAMS (for Associate degree graduates)

Next-Step Program

Transfer students may be eligible to use the Next-Step program in order to expedite the completion of a bachelor's degree from Gannon. Students holding the Associate of Arts or the Associate of Science Degree from another regionally accredited institution may qualify for Gannon's Next-Step program. The program enables students to make an easy transition from a two or four year college to Gannon. The program guarantees acceptance of up to 64 credits and allows students to potentially enter Gannon with junior level status. Only courses in which grades of "C" (2.0) or better have been earned are eligible for transfer. At least two years of upper-division full-time study are required to obtain the baccalaureate degree from Gannon.

Next-Step Programs

| | |
|--------------------------|--|
| Accounting | Marketing |
| Biology | Medical Laboratory Science |
| Chemistry | Nursing RN-BSN |
| Criminal Justice | Occupational Therapy** (for OTAs only) |
| Digital Media | Political Science |
| English | Psychology |
| Entrepreneurship | Risk Management and Insurance |
| Finance | Science |
| Health Care Management | Social Work |
| International Management | Sport Management and Marketing |
| Management | Supply Chain Management |

** May require summer courses.

Curriculum for each major is listed in the Academic Program section of the catalog. (i.e., Biology-Next-Step, See Biology).

Persons who are interested in receiving general information or making application to Gannon should write or call:

Office of Admissions
 Gannon University
 109 University Square
 Erie, Pennsylvania 16541-0001
 (814) 871-7407
 1-800-GANNON-U
 admissions@gannon.edu
 www.gannon.edu

GLOBAL/INTERNATIONAL STUDENTS

Application

Global/International students should apply as soon as possible for visa-issuance purposes. Gannon recommends applying by July 1st for the next fall intake (August) and December 1st for the next spring intake (January) to ensure adequate time for processing.

Global/International students need to submit the following:

1. International Admission Application.
2. Transcripts and final exam results-these must be official, notarized (attested) English translations
 - a. Undergraduate: all secondary and post-secondary schools showing degrees and diplomas conferred
 - b. Graduate: all undergraduate and graduate level transcripts showing degrees conferred
3. Letter of recommendation(s)
 - a. Undergraduate: one letter of recommendation – optional for most programs but recommended for all
 - b. Graduate: three letters of recommendation – required unless waived by program director
4. Affidavit of Support Form along with a bank statement showing appropriate funds in U.S. Dollars. Gannon University is required by United States immigration law to verify financial resources available for a student's educational and related expenses.
5. International Transfer Application Form for students who are already in the U.S. This form is to be completed by the International Student Advisor or designated equivalent at the applicant's current school.

-
6. Additional document(s)
 - a. Undergraduate: personal statement – optional but recommended
 - b. Graduate: statement of purpose, curriculum vitae and standardized test if applicable.
 7. Evidence of English Language Proficiency
 - a. Native of an English Speaking Country
 - b. Completion of a four-year degree from an accredited U.S. university within the past year or similar university in another English Speaking country
 - c. TOEFL 79 iBT
 - d. IELTS (International English Language Testing System). The following majors require a 6.5 IELTS score or its equivalent: Clinical Mental Health Counseling, Strategic Communication, Environmental Health and Engineering, Medical Laboratory Science, Nursing, Nutrition and Human Performance, Pre-Medicine, Pre-Pharmacy, Pre-Physical Therapy, Radiologic Sciences, Respiratory Care, Sport and Exercise Science, Athletic Training, Occupational Therapy, Physical Therapy. All other majors require a 6.0 IELTS score or its equivalent.
 - e. English 3 66
 - f. PTE (Pearson Test of English) 53
 - g. ELS Language Center, Level 112
 - h. Completion of Gannon University’s English Language Program – Advanced 2
- * see Office of Global Admission website for other accepted evidence.

Policy on ESL Testing and Potential Placement

Students who do not meet the English language proficiency requirements as defined above must take the ESL placement test upon arrival to campus. Depending on the results of the test, students will be placed into one of the levels of ESL or be exempt as the language proficiency will have been determined.

NOTE: Applicants who meet the academic requirements for a specific program, but who do not satisfy the English-language requirement, may be offered admission to the university. These students can meet the language proficiency by enrolling and completing Gannon’s English as a Second Language (ESL) Program.

Residency

All first-year students who are transitioning from their country’s U.S. equivalent of high school to Gannon, and any student within the first two years of post-secondary school immediately after high school, are required to live on campus through their first two years after completing their secondary education.

RE-ADMISSION TO THE UNIVERSITY

Students who have withdrawn or been separated and wish to return should complete the Undergraduate Re-Admission Application. This application can be completed online or printed at www.gannon.edu/apply. Applications may also be mailed upon request. The Re-Admission application requires a personal statement and a review by the Re-Admission Committee.

Students who left in good standing (2.0 GPA or better) and with a positive conduct history, should be eligible to return. Students who were academically dismissed must wait one full year before being eligible to return.

Academic Forgiveness is a way to encourage capable, mature students who were previously academically unsuccessful with an opportunity for a fresh start in completing their bachelor’s degree. Students wishing to apply for academic forgiveness should complete the Re- Admission Application and follow the appropriate directions. For more information about Academic Forgiveness, see that section of the catalog.

SPECIAL CONDITIONS WITH PROBATIONARY ACCEPTANCE

The Admissions Committee may require specific course(s), earned grade point average, and/or an academic contract as a condition of admission/readmission in addition to the minimum requirements of the University. Special terms of admission/readmission will be outlined in the acceptance letter. Students who do not fulfill the special admission conditions will be subject to separation from the University.

HIGH SCHOOL DUAL ENROLLMENT PROGRAM

The High School Dual Enrollment program is an opportunity for high school juniors and seniors to enroll in college courses while in high school. To apply for High School Dual Enrollment status, students must submit the High School Dual Enrollment Application, official high school transcripts, School Authorization Form from his/her high school and a check (made payable to Gannon University) for the full cost of courses. All documents must be submitted together for consideration. There is no application fee for the High School Dual Enrollment Program. To ensure that a student's experience at Gannon University will enhance his/her high school performance, we ask that students work with their high school guidance counselor or principal to avoid any conflict with regular schoolwork while attending classes at Gannon University.

Admission Criteria

Seniors with at least a 3.25 cumulative GPA on a 4.0 scale, 1130 SAT) and/or 22 ACT and a rank in the top 25% of his/her graduating class may be eligible for admission as a High School Dual Enrollee. In some cases the SAT/ACT requirement may be waived. Students applying to take classes starting in their senior year must submit at least five semesters of coursework for review.

Juniors with at least a cumulative 3.50 GPA on a 4.0 scale and a rank in the top 25% of his/her graduating class may be eligible for admission. Students applying to take classes starting in their junior year must submit at least three semesters of coursework for review. In order to enroll in subsequent semesters as a High School Dual Enrollee, students must attain a 2.0 GPA in each class from Gannon University. Students must also submit a new School Authorization Form to the Office of Admissions for each semester.

The tuition cost for High School Dual Enrollees is \$100 per credit hour in addition to any applicable fees and books. This tuition is subject to annual increases.

Registration will be coordinated by the Office of Admissions in conjunction with the Registrar's Office, once a student is accepted as a Dual Enrollee and has paid tuition in full.

Students applying for an upcoming Fall term must apply by the end of May, for the Spring Term by mid-December and the Summer term by the end of March. However, keep in mind that Gannon courses are available on a first-come, first-served basis.

For more information about the High School Dual Enrollment Program, contact the Office of Admissions at (814) 871-7407 or admissions@gannon.edu.

The application, supporting materials and overview can be found on-line at the High School Dual Enrollment web site: www.gannon.edu/dual.

PART-TIME ENROLLMENT

Those individuals who desire to attend Gannon as part-time students will apply for admission through the Office of Undergraduate Admissions. This office is fully equipped to assist students who plan to enroll part-time as a freshman, transfer, summer transient (guest) or returning student.

Part-time study for undergraduate students is considered less than 12 credits per semester (generally taking fewer than four courses per semester).

Admission as a part-time adult student requires verification of high-school graduation or successful completion of the GED. An entrance exam is required of all students unless they have taken the SAT or ACT. Part-time transfer students should review the catalog section regarding policies on academic standing, probation and dismissal to determine eligibility to apply for admission to Gannon University. Admission applications can be completed and in many cases processed in one visit to the Office of Undergraduate Admissions.

A copy of transcripts is sufficient for evaluation. However, before a student is accepted, the University must receive an official transcript, mailed directly from the institution of record to the Office of Undergraduate Admissions. High school records, GED scores, and/or college transcripts (if applicable) must be sent in this manner. A form to facilitate the process is available in the Office of Undergraduate Admissions.

Contact the Office of Undergraduate Admissions for more information.

FULL-TIME ENROLLMENT FOR ADULT STUDENTS

Students 21 years of age or older who have not previously attended a college and are interested in attending Gannon on a full-time basis should apply through the Office of Undergraduate Admissions.

Admission as a full-time student requires verification of high school graduation or successful completion of the GED. An entrance exam may be required of all students unless they have taken the SAT or ACT.

A copy of transcripts is sufficient for evaluation. However, before a student is accepted, the University must receive an official transcript, mailed directly from the high school. GED students must submit an official transcript showing all years of high school completed as well as a copy of the GED scores.

Several full-time programs have application deadlines and specific entrance requirements. Contact the Office of Undergraduate Admissions for more information.

Financial Facts

UNIVERSITY EXPENSES

UNDERGRADUATE TUITION

A flat rate for 12 to 18 credits is charged. Students wishing to enroll in more than 18 credits must have written approval from their Academic Dean and are charged a per credit rate for each additional credit.

| | Per Semester Flat Rate 12-18 Credits | Per Credit Rate |
|--------------------------------|---|-----------------|
| PROGRAMS | | |
| Business | \$ 16,780 | \$810 |
| Education | 16,780 | 810 |
| Humanities | 16,780 | 810 |
| Science | 16,780 | 810 |
| Engineering & Computer Science | 17,795 | 875 |
| Health Sciences | 17,795 | 875 |

SPECIAL FEES AND EXPENDITURES

| | |
|--|------------------------------|
| APB/SGA/Engagement Fee | \$ 143 /semester |
| Audit Fee | 150 /credit |
| CLEP/Challenge Recording Fee | 50 /credit |
| Graduation Fee | 150 |
| High School Dual Enrollment/ Cathedral Prep-GU Scholars Program | 100 /credit |
| Late Fee | 50 -100 |
| Non-scheduled course Fee | 100 /credit |
| NSF Check Fee | 25 |
| Orientation & Transition Fee – Fall | 185 |
| Orientation & Transition Fee – Spring | 100 |
| Student Insurance (optional) | Contact Gannon Health Center |
| University Fee | 340 /semester/Full-time |
| | 30 /credit/Part-time |

COURSE AND PROGRAM FEES

Refer to www.gannon.edu/fees for a complete listing of all course and program fees.

HOUSING RATES (per semester)

| | | |
|----------------------------------|--|--------------|
| One Time Housing Application Fee | | 100 |
| GU Connect Fee | | 165 |
| Catholic House | Single 3,900 Single Apartment 4,200 | Double 3,500 |
| Finegan Hall | | Double 3,740 |
| Freeman Hall | | Double 3,760 |
| Harborview Apartments | Single 4,380 | Double 4,180 |
| Kenilworth Apartments | Single 3,960 | Double 3,660 |
| Lubiak Apartments | | Double 3,760 |
| North Hall | Single 4,540 | Double 4,240 |
| Walker Hall | Single 4,190 Single Apartment 4,400 | |
| Wehrle Hall | Single 3,600 | Double 3,200 |
| West Hall | Single 3,100 | |
| Wickford Apartments | Single 4,100 Single Apartment 4,390 | Double 3,690 |
| 201-205 West 8th Street | Single 4,200 Single Apartment 4,400 | |
| 202 & 204 West 8th Street | Single 4,100 Single Apartment 4,300 | |
| 210 West 8th Street | Single 4,100 Single Apartment 4,300 | |
| 221 West 5th Street | Single 3,330 | |
| 223 West 5th Street | Single 3,330 | |
| 253 West 5th Street | Single 3,230 | Double 2,930 |
| 301 West 5th Street | Single Apartment 4,300 | |
| 302 Myrtle Street | Single 3,230 | |
| 305 West 5th Street | Single 3,230 | Double 2,830 |
| 418 Peach Street | Single 3,330 | Double 3,000 |
| 502 Sassafras Street | Single 3,330 | |
| 504 Sassafras Street | Single 3,330 | |
| 608 Walnut Street | Single 3,200 | Double 2,900 |
| 632 Sassafras Street | Single Apartment 4,400 | Double 3,900 |
| 724 Sassafras Street | Single 3,230 | |

MEAL PLAN RATES (per semester)

Any student (except a freshman resident) can choose from the plans listed.

Freshmen Resident Plans (Refer to the Residence Life section for plan explanation.)

| | |
|---------------------------------------|-------|
| All Access Plan + \$200 GU Gold | 3,775 |
| Golden Knight Plan + \$300 GU Gold | 3,665 |
| Golden Knight Plan + \$150 GU Gold | 3,515 |
| Victor E. Knight Plan + \$300 GU Gold | 3,545 |
| Victor E. Knight Plan + \$150 GU Gold | 3,395 |
| Maroon Plan + \$300 GU Gold | 3,075 |
| Maroon Plan + \$150 GU Gold | 2,925 |

Other Plans

| | |
|--|-------|
| 150 Meals per semester + \$200 GU Gold Funds | 2,045 |
| 75 Meals per semester + \$200 GU Gold Funds | 1,120 |
| 50 Meals per semester + \$250 GU Gold Funds | 858 |
| 25 Meals per semester + \$300 GU Gold Funds | 604 |

PAYMENT

- Check, Cashiers Check or Money Order
- Cash payments under \$1,000
- On-Line Payment

E-Check and Credit Card payments can be made on GUXpress using the "View & Pay Semester Bill" link on the Student Account Center or at www.gannon.edu/epayment.

There is no charge for E-Check transactions.

A 2.65% service fee is assessed on credit card transactions.

Cards accepted: VISA, MasterCard, Discover and American Express.

- Payment Plans

Annual Plan

An annual payment plan is available through CASHNet which enables you to pay all or part of your annual costs in ten interest-free payments for a minimal processing fee. More information regarding this plan can be found at commerce.cashnet.com

Semester Plan

A Deferred Payment plan is available through Gannon's Cashier Office which enables you to defer up to \$2,500 per semester in three interest-free payments for a minimal processing fee.

INDEBTEDNESS POLICY

A student who is in debt to the University may not register, receive an official transcript, or receive their diploma from the Registrar until the indebtedness has been discharged.

PAST DUE ACCOUNTS

Past due accounts without satisfactory arrangements with Gannon's Cashier Office will be turned over to a collection agency. All reasonable collection costs, including attorney fees and other charges necessary for collection, will be the student's responsibility.

REFUND POLICY

Tuition & Fees:

For 14 week semesters, a percentage of tuition charged will be refunded as follows: 100% during the first week; 80% the second week; 60% the third week; 40% the fourth week; and no tuition refund thereafter. For fees, 100% refund will be given during the first week; and no fee refund thereafter.

There is no financial adjustment for credits dropped between the flat rate (12-18 credits). After the first week of the semester, there is no financial adjustment when a student drops from full-time to part-time.

Housing:

A 100% refund will be given during the first week of the semester; and no refund thereafter.

Meal Plan:

A meal plan dropped during the first week of the semester will be refunded the full cost of the plan less the equivalent cost of meals consumed prior to dropping the plan. After the first week, a percentage of the meal plan cost will be refunded as follows: 80% the second week; 60% the third week; 40% the fourth week; and no refund thereafter.

Federal:

The Financial Aid Office is required by federal statute to determine how much financial aid was earned by students who withdraw, drop out, are dismissed, or take a leave of absence prior to completing 60% of a payment period or term.

For a student who withdraws after the 60% point-in-time, there are no unearned funds. However, a school must still complete a Return calculation in order to determine whether the student is eligible for a post-withdrawal disbursement.

The calculation is based on the percentage of earned aid using the following Federal Return of Title IV funds formula:

Percentage of payment period or term completed is the number of days completed up to the withdrawal date divided by the total days in the payment period or term. (Any break of five days or more is not counted as part of the days in the term.) This percentage is also the percentage of earned aid.

Funds are returned to the appropriate federal program based on the percentage of unearned aid using the following formula:

Aid to be returned is (100% of the aid that could be disbursed minus the percentage of earned aid) multiplied by the total amount of aid that could have been disbursed during the payment period or term.

If a student earned less aid than was disbursed, the institution would be required to return a portion of the funds and the student would be required to return a portion of the funds. Keep in mind that when Title IV funds are returned, the student borrower may owe a debit balance to the institution.

If a student earned more aid than was disbursed to him/her, the institution would owe the student a post-withdrawal disbursement which must be paid within 120 days of the student's withdrawal.

The institution must return the amount of Title IV funds for which it is responsible no later than 45 days after the date of the determination of the date of the student's withdrawal.

Refunds are allocated in the following order:

- Unsubsidized Federal Stafford Loans
- Subsidized Federal Stafford Loans
- Unsubsidized Direct Stafford Loans (other than PLUS loans)
- Subsidized Direct Stafford Loans
- Federal Parent (PLUS) Loans
- Direct PLUS Loans
- Federal Pell Grants for which a Return of funds is required
- Federal Supplemental Opportunity Grants for which a Return of funds is required
- Other assistance under this Title for which a Return of funds is required (e.g., LEAP)

GU GOLD FUNDS

The student ID card also acts as your GU Gold card. GU Gold funds can be used for a variety of purchases on and off campus. Deposits can be made any time during the year. Once funds are deposited they cannot be withdrawn as cash, or used to pay balances on a student's tuition account. Funds remain on account from one semester to the next until the student graduates or withdraws. At that time, a refund can be requested. The credit will first be applied to any outstanding balance on a student's tuition account before being refunded.

FINANCIAL AID

In order to bring a Gannon education within the reach of qualified students who could not otherwise afford it through either their own or their families' reasonable efforts, Gannon offers an integrated financial aid program of scholarships, loans, and employment.

The Gannon Net Price Calculator (NPC) is available for applicants to submit data and receive an early estimate of aid. The NPC is an interactive program that will process the data entered by the user and provide an immediate estimate of aid.

Gannon's Financial Aid program is open to all students attending classes during the nine month period from September through May. Financial aid is not available for summer term courses, although the Financial Aid Office can help students secure outside loans to help with expenses during this period.

Finalizing Aid

To secure merit and need based scholarships, grants and educational loans all students should complete and submit the Free Application for Federal Student Aid (FAFSA) each year. The FAFSA is available for completion annually on October 1. So as not to miss any deadlines, students should submit the FAFSA no later than March 15th.

Need based financial aid is awarded on the basis of established financial need. Need is defined as the difference between the family's relative financial strength and the cost to attend Gannon. All students must file the **Free Application for Federal Student Aid** (FAFSA) available online at <https://studentaid.ed.gov/sa/fafsa>. The Expected Family Contribution (EFC) is determined by an analysis of the data submitted. The EFC measures a family's financial strength and determines eligibility for federal student aid. Upon determination of the EFC, a student's need is derived and an aid package is put together.

Types of Assistance

Financial Aid is generally awarded in the form of a package including grant, scholarship, employment, and loan funds. The amount of each type of aid varies according to the University's funds and the student's need. During 2020-2021, about 97 percent of Gannon's

students who applied received financial assistance. The financial aid budget including athletics, was over 52 million dollars. Aid awards range from \$500 to the full cost of tuition, fees, room and board. In addition, many Gannon students receive scholarship funds from outside the University.

Loans

Long-term loans are an important financial aid resource available to students who need help and who are willing to pay for part of their current education with their future earnings.

Federal Student Loans

All students are eligible to apply for a Federal Direct Student Loan. Under this program a student may borrow a maximum amount from \$5,500 to \$7,500 per year subject to a total undergraduate borrowing limit of \$31,000. The interest rate is fixed, and the principal may be deferred while a student is enrolled at least half-time. Repayment may be made over a ten year period which begins six months after less than half-time enrollment. Interest may accrue immediately.

Private/Alternative Loans

Private/Alternative loans are loans that can be obtained to help pay for the cost of education. These loans are in the student's name and in most cases require a creditworthy co-signer. This type of loan can also be deferred until after graduation, but interest accrues upon disbursement.

Nursing Student Loan Program

The Nursing Student Loan Program is a low interest loan available only to those who have been accepted in the nursing program. The program is intended to assist full-time students to achieve careers in nursing by providing long-term, low-interest loans to help meet the costs of education.

Parent Loans

Federal Parent PLUS (Parent Loan for Undergraduate Students) loans can be used to cover college expenses, including tuition, room, board, and fees, minus any other financial aid received. The PLUS loan is not need-based and has a fixed rate.

Student Employment

The Federal Work-Study Program

The majority of the employment opportunities on campus are reserved for students eligible to participate in the Federal Work-Study Program. This federal program provides students with many interesting opportunities to work with faculty, staff and administrators. Students work limited hours a week and are able to set up their work schedule around the times they attend classes.

Scholarships and Grants

General Scholarships

Gannon awards scholarships to freshmen and transfer students who meet eligibility standards. The University offers a variety of scholarships, grants and awards in recognition of students' academic and athletic accomplishments, demonstrated need and outstanding talents. In addition, need based aid is considered for students who demonstrate financial need by filing the required applications and adhering to deadlines. Award packages are renewed each year to students who remain in academically good standing and continue to meet the required eligibility standards for both academic and need based aid. Students need not apply for specific scholarships since they will automatically receive consideration for all funds for which they may be eligible when they submit the FAFSA.

Outside Scholarships

Candidates for Gannon scholarships are urged also to apply for national, state, and local scholarships for which they may be eligible and which may be used at the institution of their choice. These include National Merit Scholarships and scholarships offered by local foundations, clubs or business organizations. The high school guidance office should be consulted about these awards. All outside scholarships received and applicable at Gannon

should be reported to the Financial Aid Office, even if they are received after the FAFSA is submitted or after a Gannon award is made. Federal regulations mandate all resources, including outside scholarships, must be considered in determining need.

Gannon University reserves the right to adjust all University grants, scholarships, or funds if the student recipient receives additional grants, scholarships, or tuition assistance from any other internal or external source that exceeds regular billable charges and books.

The brochure "Important Information Regarding Financial Aid," outlines all financial aid policies in detail, accompanies all final award notifications and is available online. This information should be reviewed regularly.

Federal Grants

Federal Pell Grant

The FAFSA must be filed in order to determine if a student would be eligible for a Federal Pell Grant. Eligibility varies and is based on parent and student income and asset information.

The Teacher Education Assistance for College and Higher Education (TEACH Grant)

Current conditions and eligibility requirements are listed at the Dept. of Education web site at: <https://studentaid.gov/understand-aid/types/grants/teach>

Federal Supplemental Educational Opportunity Grants (FSEOG)

The FSEOG program was established by Congress to help universities enroll qualified students with exceptional financial need. Gannon has a limited amount of funding to award to undergraduate students who fall into certain need categories.

How to Apply for Financial Aid

Prospective students who are candidates for financial aid at Gannon University must take the following steps:

1. File a formal application for admission with the Admissions Office.
2. File the Free Application for Federal Student Aid (FAFSA).
3. Pennsylvania residents must file the FAFSA no later than May 1st in order to be considered for State Grant funds. Students from other states should file the appropriate state required form for state grant purposes only.

Army ROTC Scholarships

The Army ROTC program awards two and three year campus based scholarships to qualified applicants. These scholarships pay full tuition, a book stipend, plus a monthly stipend for 10 months per school year.

GU/ROTC Room and Board — Gannon University offers Room and Board scholarships to all cadets receiving FULL ROTC Scholarship funding.

For additional information, contact the Gannon University Department of Military Science at 814-871-ROTC.

POLICY STATEMENT ON SATISFACTORY ACADEMIC PROGRESS

Credit Requirement

Academic advancement is defined for full-time enrollment as successfully completing a minimum of 24 credits within 2 consecutive semesters. This progress will be checked each semester you are in attendance. If you have not progressed a minimum of 12 credits in the first semester you will be sent a warning letter. Your aid will be continued for the next semester but you will be required to make up any deficiency prior to the next awarding of funds.

Failure to comply with academic advancement will result in the loss of aid for any subsequent term. Students are reminded that progressing at the rate of only 24 credits per year, while

meeting the minimum progress requirement, may utilize all of their eligibility for financial aid before completing their program of study.

Part-time students are also required to academically advance in the same manner as mentioned above, except at a reduced rate of 6 credits per semester (12 credits per year) at half-time and 9 credits per semester (18 credits per year) at three-quarter time.

GPA Requirement

Students enrolled in an educational program of more than two academic years must have a 2.00 Cumulative Grade Point Average prior to the receipt of a 3rd year of financial aid. Students have the right to appeal academic advancement and GPA policies. Please refer to Gannon's Financial Aid web page under Forms and Documentation for additional policy and procedure information regarding Satisfactory Academic Progress (SAP) for institutional, state and federal grants and loans.

VETERANS ASSISTANCE

In an effort to provide veterans with personal support and multiple services, Gannon University maintains an Office of Veterans Affairs. The Veterans Affairs representative offers the veteran current information on the assistance available primarily in the areas of higher education, vocational and technical training. Assistance is also available to explain the wide range of VA benefits accruing to veterans and their dependents as well as guidance in filing the appropriate VA forms.

Veteran Affairs Education Benefits

GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government website at <https://benefits.va.gov/gibill/>.

Benefits currently available to the veteran under the GI Bill® can range from \$200 a month to tuition and fees. Many opportunities such as tutoring, counseling, and remedial programs can be explained to the veteran by contacting the Gannon Veterans Affairs Office.

Pennsylvania Veterans' are offered maximum state grant awards. Federal grants and loans are additional sources of financial aid to the veteran.

The Veterans Affairs Office additionally provides a referral service to veterans for federal, state, and county services which are not a part of any veteran's program but are available to the veteran.

Gannon University will take veteran status into consideration in making decisions regarding admission. Up to 6 credits of Military Science can be awarded to the student for military training. Additionally, many schools attended and training given while in the service allow for the granting of credit for corresponding university courses.

Policy on VA Tuition & Fees Payment

In accordance with Title 38 US Code 3679 subsection (e), this school adopts the following additional provisions for any students using U.S. Department of Veterans Affairs (VA) Post 9/11 G.I. Bill® (Ch. 33) or Vocational Rehabilitation & Employment (Ch. 31) benefits, while payment to the institution is pending from the VA. This school will not:

- Prevent the student's enrollment;
- Assess a late penalty fee to the student;
- Require the student to secure alternative or additional funding;
- Deny the student access to any resources (access to classes, libraries, or other institutional facilities) available to other students who have satisfied their tuition and fee bills to the institution.

However, to qualify for this provision, such students may be required to:

- Produce the VA Certificate of Eligibility (COE) by the first day of class;
- Provide a written request to be certified;
- Provide additional information needed to properly certify the enrollment as described in other institutional policies

Student Life and Support Services

The Gannon Experience

Encouraging students to be actively engaged in their college experience is the primary focus of the Student Development and Engagement division (SDE.) Leadership programs, volunteering and service-learning opportunities, traveling abroad, intramural sports and wellness programs are just a few examples of interactive, educational and fun programs offered at Gannon. These activities and other programs are centered on 4 strategic themes: Service, Globalization, Leadership, and Wellness. These themes, and the liberal studies core curriculum, incorporate the concepts of nine lifestyle dimensions (intellectual, social, physical, emotional, sexual, life-planning, cultural, spiritual, and political) as a foundation for students' holistic and spiritual growth. Students are encouraged to reach for their dreams while being challenged to explore their values, beliefs and attitudes. Through meaningful discussions and a variety of experiences students gain a better understanding of themselves, their interests and what they want to do in life. This personal and professional development process coupled with academic achievements empowers students to meet their goals, achieve their dreams and ultimately graduate transformed.

Gannon offers a full spectrum of opportunities, services and support to assist students with creating a personalized and successful college experience.

COMMUTER LIFE OFFICE

The Office of Commuter Life provides a "home away from home" for commuter students with a large lounge complete with a sink, microwave, refrigerator and coffee pot for student use. There are also two study rooms attached to the lounge and lockers to sign out. The lounge is a place to meet other students, receive guidance and information from the Commuter Advisers, and learn about opportunities for involvement and leadership on campus. Programming allows students to grow and become more connected to Gannon. Commuter Life also oversees a parking lottery in the summer for all commuters for parking in available ramps and lots around campus.

HEALTH AND COUNSELING SERVICES

Health and Counseling Services is committed to providing holistic health and psychological services to the Gannon University community to promote all aspects of wellness. The staff approaches these services in a dedicated, professional, and approachable manner while adhering to state mandates and guidelines appropriate to a university setting. Students are not charged for most services.

Counseling Services

Counseling services are available to support students with their personal development. Students seek counseling for a variety of reasons, including stress, family issues, depression, anxiety, relationship concerns, eating disorder or body-image concerns, and other life challenges. Goals of counseling include increased awareness about personal values, needs, attitudes, and related behavioral changes. Counseling Services utilizes a brief treatment approach and referrals to community resources are made as needed.

Individual, couples, and group counseling services are provided by licensed psychologists, counselors, or interns/trainees from various academic backgrounds. Psychiatric services are also available on a limited basis. Counseling Services also provides programming for various

groups and organizations on campus. Staff are also available for consultation with faculty and staff regarding student concerns.

Health Services

Health Services is a minor care facility which strives to promote wellness and conserve the time of the students for their class work and studies by preventing and treating minor illnesses and injuries. A full time nurse practitioner is available at Health Services along with two full-time registered nurses. Students can be evaluated at Health Services during the scheduled academic calendar.

A University Health Examination Form must be on file at Health Services in order to receive services from the nurse practitioner. Students who do not submit this required form will be referred to other local health care facilities for services. New students should receive their Health Examination Form in an admission packet after their deposit is paid. Any student who does not receive this form can pick it up at Health Services, call 814-871-7622 to request a form be mailed to them or can obtain the form from the Health Services website. Each properly registered student may, as needed, receive such medical care as Health Services is equipped to provide at the discretion of the medical staff.

Please note that students who are enrolled in Health Science majors may receive a separate health form from their department. It is necessary for these students to have both the academic departmental form and Health Services form filled out and returned to the appropriate offices.

Health Insurance:

All international students and dependents in J status are required by the Department of State (DOS) to maintain health/medical insurance that meets DOS requirements as outlined in the DS-2019. The insurance must cover the entire time period of the exchange experience in order to meet regulatory requirements. Gannon University has a policy that mandates that all enrolled global/international students must have health insurance coverage. Students who do not show proof of health insurance that is operational in the United States will be subscribed to Gannon's contracted health insurance provider and charged accordingly. Students who do not want to be charged for health insurance must demonstrate coverage through the approved plan prior to the deadline set by the Office of Global Support and Student Engagement.

Student Medical Insurance Plan

We encourage students to be aware of their health insurance plan and the scope of the coverage. If you are covered by your parents' health insurance, coverage may be impacted if you change your academic status from full-time to part-time or withdraw from the University.

Gannon University has a policy that requires all enrolled international students to have Health Insurance coverage. Therefore, there will be a charge on their semester bills for the insurance that Gannon has contracted with an independent insurance carrier to provide. If the International student can provide proof of insurance, they will be permitted to sign a waiver and remove this charge.

This plan is **optional** for all other enrolled students. Students who participate in internships, rotations, clinicals, etc. need to check with their academic departments to see if there is a requirement to show proof of insurance before going on site. This is particularly true for Health Science majors.

Details relating to Gannon Health Insurance coverage, cost, and enrollment instructions can be obtained from Health Services office or can be found on the Health Services website.

Meningitis Vaccine Policy

All incoming freshmen and transfer students who will reside in University owned housing are required by Pennsylvania state law to obtain a meningitis vaccine before admission to housing will be allowed. A student may request an exemption from this mandate if the student (or parent/guardian if the student is a minor) provides a signature as to the reason, i.e. religious,

medical, or other. Enrolled students are encouraged to obtain the vaccine from their primary care provider/clinic and provide the information on the mandatory university meningitis vaccine/exemption form prior to obtaining the room key to their housing unit. Information regarding meningitis and the vaccine may be obtained from Health Services.

INTERCOLLEGIATE ATHLETICS

Gannon University is dedicated to fostering the harmonious development of the physical, social, intellectual and spiritual faculties of its students. This concern prompts the University to conduct a program of intercollegiate athletics based upon sound educational principles and practice. This practice functions as a proper part of the educational mission of the University and meets the NCAA and PSAC guidelines. The overall welfare of the participant is of primary concern.

The University is committed to providing an intercollegiate athletic program for student-athletes, and to promoting and developing educational leadership, sportsmanship, physical fitness, and athletic excellence... These activities afford a healthy social outlet, and their publicity is a stimulus to school spirit and pride.

Gannon University conducts its program of intercollegiate athletics in such a manner that each student-athlete will have an optimum opportunity to develop his or her athletic potential while pursuing the completion of an academic degree.

The University is dedicated to fostering the harmonious development of the physical, social, intellectual and spiritual faculties of its students. This focus prompts the University to conduct a well-rounded program of intercollegiate athletics based on sound educational principles and practice. These practices function as a proper part of the educational mission of the University, and the overall welfare of the student-athlete is a primary concern.

In order to appeal to individual interests, Gannon provides first-class athletic facilities and maintains a complete schedule of intercollegiate events in basketball, baseball, competitive cheer, cross country, football, golf, swimming & diving, water polo, soccer and wrestling for men; and acrobatics & tumbling, basketball, competitive cheer, cross country, competitive dance, golf, lacrosse, swimming & diving, softball, water polo, volleyball, soccer and wrestling for women.

The University is committed to providing an athletic program for its student-athletes and to promoting and developing educational leadership, sportsmanship and athletic excellence while complying with all PSAC and NCAA rules and regulations. By promoting the values and mission of the University, the Department of Athletics generates school pride and positively represents Gannon University to the community.

GLOBAL SUPPORT AND STUDENT ENGAGEMENT

Gannon has a long tradition of welcoming global students. Global/international students and scholars bring a wealth of cultural experiences and perspectives to Gannon's classrooms. These experiences and insights are in turn a great opportunity for all students to develop friendships across cultures and gain cultural competence through meaningful interactions.

The Office of Global Support and Student Engagement (OGSSE) strives to provide an environment, services and programs to ensure that our global/international students will thrive and succeed at Gannon. The OGSSE works closely with departments across campus and with the broader local community to design opportunities for global/international students to establish friendships and meaningful connections with their classmates, professors, and other members of their new community in the U.S. Examples of such programs and resources include:

- Pre-arrival correspondence and registration information on and Global Student Orientation
- Cultural Programming
- Workshops on global/international student topics

- Advocacy, Referral, and Global/International Student and Family Resources
- Student Organization Support and Advising

The Office of Global Support & Student Engagement is responsible for student and University compliance with U.S. immigration regulations, as well as reporting required data to the Department of Homeland Security (DHS) through the Student and Exchange Visitor Information System (SEVIS). In order for international students to understand and maintain federal regulations governing their immigration status and attendance in school, all new students coming to Gannon University on F-1 and J-1 visas are required to attend Global Student Orientation.

Maintaining Immigration Status

Staff members in the Office of Global Support and Student Engagement serve as Gannon University's Designated School Officials (DSOs) and Responsible Officers (ROs).

DSO and RO responsibilities include, but are not limited to, the following:

- General Immigration Advising for Students and Dependents
- Curricular Practical Training Authorization
- Optional Practical Training Applications
- Reduced Course Load Authorization
- Mandatory Health Insurance Requirements

Enrollment Requirements:

Global/international students on F-1 and J-1 visas are required to enroll each semester in a full course of study, making steady academic progress toward completing their program of study. For most undergraduates, this is 12 credits per semester. For most graduates, this is 9 credits per semester. If a student needs to drop below a full course load, they must consult with the Office of Global Support and Student Engagement prior to dropping a course, or their immigration status may be terminated.

Employment under F-1 Status:

On-campus employment: F-1 students are permitted to work on campus no more than 20 hours per week while school is in session and full-time during break periods, including summer.

Curricular Practical Training: CPT authorization may be granted for employment off campus if: it is an established curricular requirement of a degree program; a track within a degree program; or for course credit. F-1 students are eligible for CPT after completing one academic year, unless otherwise required by their degree program. Students may work up to 20 hours per week on CPT while school is in session, and up to full time on CPT during break periods, including summer.

Optional Practical Training: The OGSSE assists students in applying to the United States Customs and Immigration Services (USCIS) for OPT authorization to work in the U.S. Students must attend an information session to learn more about OPT options and regulations before applying.

Note: Spouses and dependents in F-2 status may not work in the U.S.

Employment under J Status:

Students and their dependents in J status must meet with a staff member of the OGSSE in order to discuss authorization for both on- and off-campus employment.

Address Changes:

F-1 and J-1 students are responsible for submitting a physical address and any changes to the OGSSE within ten days of arrival or a move. The OGSSE updates the address in SEVIS in order to comply with reporting requirements.

Health Insurance

Gannon University has a policy that mandates that all enrolled global/international students must have health insurance coverage. Students who do not show proof of health insurance that is operational in the United States will be subscribed to Gannon's contracted health-insurance provider and charged accordingly. Students who do not want to be charged for health insurance must demonstrate coverage through proper documentation before the start of classes.

OFFICE OF ENGLISH LANGUAGE AND GLOBAL TRAINING

The Office of English Language and Global Training offers English as a Second Language (ESL), short-term programs, and workshops on language and culture. The staff guides international students and global participants in their cultural adjustment to the United States by creating and supporting a professional and respectful learning environment, one which students simultaneously develop and strengthen their language ability, academic skills, and intercultural competence.

English as a Second Language Program

The Office of English Language and Global Training prepares non-native speakers to achieve language competency necessary to succeed in English language curricula at the post-secondary level. Through its academic programming, as well as the specialized services it provides to English language learners, this office echoes the University's mission by its commitment to excellence in teaching, scholarship and service, and by preparing its students to become global citizens.

The English as a Second Language Program is designed to meet the needs of students who are accepted to Gannon University and have yet to reach the required English language proficiency. Students who do not meet the required minimum benchmark must enroll in the ESL Program. Students will take a placement exam that will determine their language level. Students may place in one of the six levels: Beginning 1, Beginning 2, Intermediate 1, Intermediate 2, Advanced 1, and Advanced 2.

Each level can be completed in one nine-week session. At each level students take four core courses: reading, writing, grammar, and listening and speaking, as well as special courses tailored to support the needs of the students at a particular level.

MISSION AND MINISTRY

The Mission and Ministry Office is charged with overseeing the integration of the University's Mission into all areas of the University, to maintain and promote the University's Catholic Identity, to provide leadership for activities that pertain to pastoral care and sacramental ministry, and, finally, to provide co-curricular service opportunities.

The Mission and Ministry Office is made up of three areas: Campus Ministry, the Center for Social Concerns and Global Exploration and the Associate Vice President for Mission and Ministry. Although each area is distinct, they collaborate together on many projects, and all are under the leadership of the Associate Vice President for Mission and Ministry, a Roman Catholic priest of the Diocese of Erie who is also a member of the President's Leadership Team.

Campus Ministry

The University's Mission is furthered by Campus Ministry through a wide variety of programs that are open to individuals of all the various faith traditions represented in our diverse campus community. The Campus Ministry team works to develop a community of faith by providing opportunities to participate in daily and weekend Masses, regular ecumenical services and interfaith dialogue, and offers additional programs designed to engage students in activities to

deepen their faith, increase their self-understanding and to grow as leaders through experiences that include retreats, leadership workshops, a variety of faith sharing groups, reflection, meditation, and small group dialogue. We seek to empower students to be student leaders in every aspect of our ministry.

Campus Ministry has full-time Resident Campus Ministers who serve in the first-year residence halls and continue to support students as they become upperclassmen. The Kirk House and The Catholic House offer Gannon students the opportunity to live in and experience Christian community through faith-sharing, community building and service. The Campus Ministry team provides intentional outreach to a variety of student populations on campus including student-athletes, Greek Life, commuters, Global Students and the LGBTQ community.

Center for Social Concerns and Global Exploration

Founded in 1988 and inspired by Catholic Social Teaching, the Center for Social Concerns and Global Exploration (CSCGE) equips students and campus colleagues to engage with Gannon's communities, both local and global, through purposeful service, exploration and action for the common good. The CSCGE's programming includes opportunities for local service and community engagement, advocacy and awareness building, and small group service and cultural immersion programs (ABST and TRAVEL Programs). Through our signature Alternative Break Service Trip (ABST) and Transforming Residents Abroad Via Engaged Learning (TRAVEL) programs Gannon students develop as socially responsible global citizens through service, learning, and cultural immersion. These non-credit bearing, one to two week-long, small group travel experiences provide students the opportunity to serve and encounter the world, grow personally and professionally, and build relationships with our Gannon Family during group meetings and formation prior to and during their travels.

ABSTs are student lead experiences rooted in four pillars of service, simplicity, community and reflection. The CSCGE mentors student leaders who create and facilitate the ABST experience for their student participants and employee accompaniers. Pre-trip formation culminates in week-long service immersions and cultural encounters during spring break and in the summer. Through the TRAVEL program, small groups of 8-14 students and 2 employee facilitators meet weekly throughout the academic year to get to know one another, develop their intercultural competence, and study topics prior to traveling to domestic or international destinations for two weeks in the summer. Both programs offer a variety of scholarships, financial need-based aid, and fundraising opportunities to make these experiences affordable and accessible to all students. Groups also designate meeting times based on student schedules and availability.

The CSCGE also offers community service opportunities including campus-wide invitations to serve such as GIVE Day and Day of Caring, as well as opportunities of sustained and meaningful service in small groups within our local communities. The office supports advocacy and awareness building efforts across campus by providing and collaborating on events and trainings around building self-awareness and cultural competence, dialogue around local and global issues, and interfaith dialogue. Working closely with colleagues across campus, but especially in community engagement, Mission and Ministry and Student Development and Engagement, the CSCGE helps bring the University Mission to life across campus and in our global human family.

Associate Vice President for Mission and Ministry

The Mission and Ministry Office celebrates the rich heritage of the Roman Catholic tradition through ministries of pastoral care, sacramental celebration, evangelization and service to the Gannon community, and provides specialized community and individual support as needed, including pastoral counseling, spiritual direction and hospital and bereavement visits.

FIRST-YEAR EXPERIENCE

First-Year Experience

The mission of the First-Year Experience is to support new students in making a successful transition to the University and to provide them with the foundations for lifelong learning, personal development and engagement in a global community.

Gannon University recognizes the importance of connecting all students to the University community during the first year in addition to laying the developmental foundation for their success across the Gannon Experience. Students who engage in various areas of the university will understand who they are and how they want to live their lives.

Some of the major components of the First-Year Experience include Summer Orientation, Preview GU, First-Year Seminar courses, Living Learning communities, Freshman Four Week Grades, Fall Advisor Meetings, and additional engagement opportunities.

RECREATION AND WELLNESS CENTER

The Recreation and Wellness Center is a fusion building designed to provide a state-of-the-art venue for recreation, wellness, athletics and academics. This student-run facility serves Gannon University student, faculty and staff, as well as the greater Erie community and provides rich opportunities for the development of student leaders and the engagement of all. A \$14.5 million project to enhance student wellness and academic research was completed with a grand opening in August, 2014. The new facility features nearly 52,000 square feet of subdivided indoor space for year-round athletic, intramural, open recreation and fitness activities, including an 80 yard indoor field house and a Human Performance Lab (HPL). In addition, new locker rooms and a healthy refreshment snack bar are quickly helping to establish a culture of health and wellness at Gannon University.

Fitness

The professional and student team at the RWC understand and encourage the benefits of fitness and how daily workouts replenish cognitive and physical energy, boost work productivity and academic success in students as well as keep the immune system strong and stress reduced.

RWC Fitness offers personal training sessions, group fitness classes including Yoga, Body Pump and Zumba, a newly refurbished weight room and fully-equipped cardio deck, racquetball courts, a 6-lane 25 yard indoor pool and a three court, full-sized basketball gymnasium with a suspended walking/running track.

Intramural Sports

The Intramural Sports program is designed to encourage all Gannon University students, faculty, and staff to participate in organized activities with emphasis on “no experience necessary.” These programs will provide the use of facilities for such activities, organize and promote friendly competition between groups and individuals, enhance physical fitness through competitive activities, and foster a spirit of fair play and sportsmanship among participants and spectators. In order to meet its goals, the Intramural Sports program offers events in team and individual sports.

Sports Clubs

As an integral part of the overall Recreation and Wellness Department, the Sport Clubs Program supports the common interests of students pursuing particular sport activities as a means of skill and social development and competitive play. In addition, Sport Clubs serve as learning experiences for members as they become involved in the administrative activities of the clubs to which they belong. The management of each club is the mutual responsibility of its members. Sport Clubs offer opportunities for students to develop leadership, management, and organizational skills in addition to the benefits of physical activity and team participation. Sport

Clubs can be competitive in nature and travel regionally to compete against other universities, or be recreational in nature.

Current Sport Clubs include: Dance (Co-Rec), Fishing (CoRec), GUST – Gannon University Sailing Team (CoRec), Ice Hockey (Men’s), Lacrosse (Men’s), Rugby (Men’s and Women’s), Soccer (Women’s), Tennis (CoRec), Ultimate Frisbee (CoRec), Volleyball (Men’s & Women’s)

GOOD FOR U – Gannon University Wellness

Good for U is the University’s initiative to promote wellness in our campus community. At Gannon, wellness is more than physical health. It is multi-dimensional and includes social connectedness, emotional well-being, intellectual processing, spirituality, and an appreciation of our natural environment. Opportunities to nurture each of these areas of wellness are available to students, faculty, and staff through campus wide programming, wellness challenges, an annual wellness fair, and innovative informational campaigns to promote healthy lifestyle behaviors. Students have an opportunity to get involved at every level by attending campus related wellness programming, serving as an intern with the recreation and wellness staff, subscribing to the Wellness List Serve, and by providing feedback on proposed wellness projects as part of a focus group. Students can also join G.U.A.C. – Gannon University Adventure Club. G.U.A.C. is a great way to stay active and connect with others who enjoy the great outdoors. Ultimately the goal of Good for U is to enhance the quality of life for all members of the Gannon Community by nurturing a culture of wellness through shared responsibility and ownership.

RETURNING TO EDUCATION ADULT PROGRAM (REAP)

The Returning to Education Adult Program (REAP) recognizes that adult students face many challenges in balancing multiple roles and responsibilities and is there to provide support to help make the transition into the classroom easier. There is a lounge for adult students which is complete with many amenities such as a microwave, refrigerator and couches. Many students feel the lounge is a “home away from home” and enjoy socializing, studying, and attending programs there. Non-traditional Commuter Advisers are available to provide support, plan activities, and connect students to events going on around campus.

STUDENT ARTS AND MEDIA

Chorus

The Gannon University Chorus offers students with talents and interests in vocal music performance the chance to share with one another and with audiences on and off campus. Students may either take mixed chorus for one (1) credit each semester, or sing with the ensemble for the joy of making music. Some members of the ensemble receive scholarships for their participation in the chorus. Rehearsals take place for one hour a week during the semester, with additional rehearsals as concert time approaches at the end of each semester. In addition to the culminating performance each semester, the ensemble may be invited to share their gifts with groups and organizations in the Erie community. Gannon University Chorus falls under the support of the School of Communication and the Arts.

Concert Band

The Gannon University Concert Band offers performance opportunities for Gannon students of all majors. Band may be taken for credit by wind, brass and percussion players; and each playing member of the ensemble receives a cash award. Rehearsals take place once a week on Wednesday evenings, and the repertoire ranges from classic band literature to new and innovative works. Along with two performances a year, the Concert Band takes a field trip to see a professional performing group in the area. The Gannon University Concert Band is operated under the auspices of the School of Communication and the Arts.

Schuster Art Gallery

Schuster Art Gallery, located at 700 Peach Street, offers a unique opportunity for regional artists to display their work. Exhibits change four times a year, displaying a variety of media. An Annual Gannon Arts Exhibit is held. The gallery is free and open to the public during designated hours. Please visit the Schuster Gallery page at www.gannon.edu/visitors-andcommunity/area-attractions/schuster-gallery.

Schuster Program for the Arts

The Schuster Program for the Arts has several components, including: Music Scholars, Patron Scholars, a Re-Grant Initiative, Studio Art Classes, "Arts Outings", and the Schuster Fund. Music Awards are available through an audition process and Patron Scholarships are available through an application process. For more information concerning these opportunities, students should contact the Financial Aid Office. The Schuster Re-Grant Initiative is a program Gannon administers, awarding funds to local non-profit organizations engaging in cultural activities.

Programming initiatives of the Schuster Program for the Arts encompass a non-credit studio art class program and the "Arts Outings" program. Studio Art experiences are offered each semester in the evening on campus. For a nominal fee, students can enroll in these hands-on classes with professional artists. In the past, classes have been offered in photography, clay, mosaic glass, linoleum block print, painting, drawing and much more! "Arts Outings" is a program where Gannon acquires tickets to local and regional arts events and underwrites the costs to students. For a nominal charge, students can attend cultural and visual art events.

The Schuster Fund is another funding opportunity at Gannon. Faculty and staff can apply to the fund with an idea for an arts opportunity on campus. Students will have direct impact through the fund from coursework to APB Cultural Events. The fund is open to all full-time employees to apply for support.

Schuster Theatre in Scottino Hall Productions

For actors, designers, technicians and theatre lovers, Gannon offers a diverse main-stage season in the Schuster Theatre in Scottino Hall on Sassafras Street across from the Nash Library. Enjoyed by students, faculty, staff, friends, family, and Erie theatregoers, our campus productions are open to participation by anyone in or associated with Gannon. Open auditions are held for each semester's production during the first week of classes. The theatre program, which offers degrees in Theatre and Communication Arts, Theatre Performance for Media and Stage, and Theatre Design and Technologies, is a part of the School of Communication and the Arts.

Student theatre artists who show outstanding achievements and ability in the theatre arts may be eligible for election to the Kappa Beta Chapter of the national dramatic honor fraternity, Alpha Psi Omega. Membership is awarded on the basis of merit points accumulated through participation in our theatre productions and related activities.

Each year, the theatre presents a variety of classical and modern plays, including musicals, improvisations, and student directed/written work. The theatre is also host to guest artists, and is a regular invitee of the International Collegiate Theatre Festival at the Edinburgh (Scotland) Festival Fringe.

The Gannon Knight, Campus Newspaper

Students with an interest in journalistic writing, editing, page design, photography, social media and web design can sharpen their skills at The Gannon Knight, Gannon University's weekly newspaper. The Gannon Knight office features modern and newly revamped production facilities located in the Center for Communication and the Arts, housed within the School of Communication and the Arts. The Knight's facilities are progressive and sophisticated, allowing students access to modern newspaper equipment and procedures that help facilitate a deeper and more meaningful understanding of media in all of their capacities. The Knight focuses on the areas of news, opinions, features, entertainment and sports. The

award-winning publication, a presence on campus since 1946, is open to all students, regardless of their major. Staff members can pursue roles as writers, section editors or assistant editors, copy editors, photographers, web editors and advertising sales people. Scholarship funds are available for editorial board positions. Board members are responsible for designing and laying out pages for a PDF version of the paper, which is part of The Knight's website, www.gannonknight.com, and also interact with readers via social media outlets including Facebook and Twitter.

Radio station, WERG-FM

Named *Best College Station in America* in 2020, 90.5 WERG-FM is Gannon University's 3000-watt over-the-air, student-operated radio station, located in the Center for Communication and the Arts at 700 Peach Street. WERG boasts an innovative and sophisticated digital media operation built to accommodate the ever-evolving needs of current and future communications majors of the 21st century. Participation at WERG is open to all Gannon students in good academic standing, regardless of major. WERG provides Gannon University students with a creative and stimulating learning experience in station operation, from the position of on-air announcer to the position of General Manager. Students are placed in charge of day-to-day operations under the supervision of the station's professional Operations Manager: executing airshifts, scheduling program logs, compiling and reading newscasts, sports talk and play-by-play announcing, maintaining the station website and social media platforms, planning and running promotions, recording promotional and public service announcements, and all the other duties that make-up a successful broadcast operation. WERG's over-the-air signal is available throughout the entire tri-state area and southern Ontario at 90.5 FM. WERG's live internet stream can be accessed through www.wergfm.com or with the Tune-In Radio app on a smart phone or tablet. 90.5 WERG is operated under the auspices of the School of Communication and the Arts.

RESIDENCE LIFE

Housing Accommodations & Contract

Gannon University and the Office of Residence Life team believe that there are important educational and social interaction benefits in residence halls and on-campus housing programs that support and enhance the overall student experience. Because of this conviction, all undergraduate students, in their first four semesters, whose permanent home address is located outside a 25-mile straight-line radius of campus, are required to live in Gannon University operated housing as specified below.

As a student progresses* through college study, housing accommodations and program offerings widen (*progress is determined by regular semesters of study completed). The following description of housing facilities and policies is an overview for prospective students and a guide for full-time enrolled students at any point in their years of study, but is not all inclusive. Additional information should be sought through the Office of Residence Life, its external webpage, and/or supplemental information published by the Office of Residence Life.

Please note the following main points:

- All students located outside the radius previously described, in their first two years with the university, are required to live on campus. The University requires a four semester commitment except for those exempt, which is covered further in this section. College credits earned in high school do not apply toward the four-semester requirement. Transfer students must also live on campus, unless they can prove 60 attempted credits or four semesters at another institution(s).
- Any student registering for Gannon University operated housing, will be held to an Academic Year contract.

- Any first through fourth semester student enrolled at the University, who lives outside the 25-mile straight-line radius, will receive a housing assignment to occupy and will be billed for room charges, regardless if they physically occupy the space or not. First-year and sophomore commuter students must live at their parent/legal guardian's permanent home address, registered with the University and must complete an exemption form.

Exemptions to the above mandatory housing requirements are granted to:

1. Married students, whose spouse will be residing with them
2. Students who have completed four semesters of living on a college campus
3. Veterans
4. Students whose child will be residing with them

ON CAMPUS LIVING

There are many options for students through a variety of styles of residence halls, apartments, and houses.

For First-Year Students

All students in their first year of study reside in one of Gannon's two residence halls: Finegan Hall, a traditional-style residence hall, and North Hall, a suite-style building.

First-year buildings are staffed by a Resident Director, Resident Campus Minister, and upper-class students who serve as Resident Assistants on each floor. The staff participates in extensive training and contributes to the development of a living-learning environment, true to the mission of Gannon University. The Residence Life staff strive to ensure a safe and secure environment as well as facilitate the growth of each individual student by offering many co-curricular opportunities in the halls and on campus through programs and small group excursions.

All first-year residents are required to purchase one of the meal plans designated for first-year students, detailed in other publications and on the Office of Residence Life webpage.

Into the Second Year and beyond

Returning students move to other residence halls or apartment buildings in their second year.

The Office of Residence Life manages multiple buildings including traditional residence halls, apartment buildings, and a few small houses in the neighboring community which are available for certain affinity groups. All of these housing options are fully furnished and include utilities and campus wifi. Most units can occupy between one and four residents with living and dining areas, bedroom(s), bathroom(s), and a kitchen. Some buildings can fit upwards of five residents.

Although upper-class students are not required to purchase a meal plan, various options are available to them. The housing contract for upperclassman students is the same as the Academic Year contract as First Year students, with summer housing available through a separate agreement with applicable summer rates.

All upperclassman communities are overseen by a professional staff member, and most are also staffed by Resident Assistants.

Any student whose academic program ends midyear (ex: internships, study abroad, or graduation), or is no longer taking classes due to withdrawal, is exempt from the contract termination fee.

Off-Campus

Apartments are available in the surrounding area and may also provide housing for students who choose to move out of campus housing. Students contracting housing with area landowners enter into legal obligations in all aspects of rental and at their own risk.

ON CAMPUS DINING

The University, through its food service provider, offers a number of meal plan options to the student body. Meal plans are purchased and managed through the Office of Residence Life. A complete list of the most updated meal plan choices and costs is available through the Office of Residence Life website.

In addition to the main dining hall in Beyer, there are multiple food service locations on campus to provide convenience and variety. Options include Doc's Landing and Knights Cove in the Waldron Center, InterMetzo in the Palumbo Academic Center, 900 State in the Center for Business Ingenuity, the Courtyard Café in the Morosky Academic Center, and Urban Brew in Nash Library. The Fresh Café in the Recreation and Wellness Center and the Knight Club are also favorite spots for dining and offer a variety of healthy food options. There is a convenience store with coffee shop and grab n' go items in North Hall and all students can request card access to the lobby for shopping and eating in that location. All dining facilities offer a variety of options meeting many palates and dietary needs. Students are encouraged to communicate any allergens, special needs, or prep accommodation with the cooks or management so that excellent service can be provided.

ALCOHOL, OTHER DRUGS AND VIOLENCE PREVENTION EDUCATION PROGRAM (AODV)

The University understands that alcohol, other drugs, and sexual violence are part of society, and as a result, a reality on college campuses as well. Gannon's inclusive Alcohol, Other Drugs and Violence Prevention Education Program strives to expand and enhance Gannon University's response to sexual violence including sexual assault, intimate partner violence, and stalking by ensuring a comprehensive and lasting violence program. This is achieved through a collaborative continuum of services, specifically focusing on education and training for the bystander, healthy relationships and avoidance of risky behavior. Partnerships with campus and community resources advocate for the safety of victims and assist with procedures to hold offenders accountable for their actions.

Alcohol and other drug issues are addressed by Gannon's AODV program through best practices related to enforcement, prevention, and awareness programming. The program encourages students to make responsible and healthy decisions; as well as be active bystanders by promising to STEP UP! and help one another.

The AODV program supports the mission of the University by offering leadership opportunities for both students and adults at Gannon to take an active stand against violence and promote a safe living and learning community. Counseling and health services, as well as a wealth of resources addressing sexual violence, alcohol and other drug topics and issues are available.

STUDENT CONDUCT

Each student is expected to adhere to established standards of behavior for members within the University community. Students are required to abide by all federal and local laws as well as all of Gannon University's policies and regulations. Upon admission to the University, students acknowledge their awareness and agree to adhere to the policies and regulations outlined in the Student Handbook which can be found online.

LEADERSHIP DEVELOPMENT AND CAMPUS ENGAGEMENT

The Campus Engagement office is committed to ensuring that every student who walks onto Gannon's campus has an exceptional experience. Once students are engaged, they are exposed to transformational experiences of self-discovery, personal development, and organizational leadership. Specific opportunities include small group initiatives, StrengthsFinder training, the NCSL national student leadership conference, and Leadership X, a year-long small group experience devoted to personal development, leadership and creating change in the community.

Fraternities and Sororities

Social Greek-letter organizations (fraternities and sororities) have played an integral role in the campus community as well as the greater Erie community since 1954. The ideals and values of each organization stress the importance of developing its members as leaders, scholars, and civic minded individuals. Fraternity and sorority membership provides opportunities for interpersonal and social development, philanthropic and community service endeavors, leadership skill training, as well as recreational and spiritual pursuits. Gannon currently has five sororities and seven fraternities.

Student Government Association

The Student Government Association (SGA) is a student-run governing body that represents all full-time undergraduate Gannon students and acts as a liaison between the students, faculty, and administration. It strives to maintain a healthy academic and co-curricular student environment through: a) serving as the official voice and administrative unit of the undergraduate student body; b) working to advance the student intellectually and developmentally; and, c) fostering a spirit of friendship, companionship and pride throughout campus.

The SGA General Assembly consists of an eight member executive board, nine representatives elected from each class, and representatives from other student constituencies. Throughout the year the SGA actively engages with and has voting rights on most University standing committees to ensure that students needs are addressed. For example, there is SGA representation on the Board of Trustees and University committees such as Academic Affairs, Liberal Studies, and Planning & Budget.

The SGA encourages students to voice their ideas and opinions about University policies, facilities and events. There are several SGA committees in which students can participate such as the BFC (Budget & Finance Committee), Marketing & Communications committee and Student Engagement committee. Students may also give input by attending the Students' Voice section of any SGA General Assembly meeting, attending any open forum, and visiting the SGA office located in Beyer Hall, suite 200.

In addition to being the main voice for the students, the SGA allocates funding for the student activities fee to recognized clubs and organizations, student academic projects and student engagement projects; co-sponsors a Merit Scholarship for engaged students; and facilities student leadership opportunities open to all undergraduate students.

Activities Programming Board (APB)

The Activities Programming Board (APB) provides a wide variety of educational and social activities for the student body. This board is comprised of 16 student representatives who plan various activities through the year using funding from the student activities fee. Programs are presented throughout the year to meet the interests of students. Some of these programs include Homecoming, Family Weekend, Little Siblings Weekend, comedians, hypnotists, trips, as well as cultural and social events. The APB office is located in Beyer Hall.

Clubs and Organizations

Gannon University houses approximately 97 recognized clubs and organizations, which offer a wide variety of opportunities to its students. Gannon has clubs in each of the following categories: academic and profession-related organizations; governing and programming organizations; media organizations; Greek letter and honor societies; special interest clubs; sport clubs; and social fraternities and sororities. There is a club or organization for almost any interest and every student. And if not, the WCC will guide students through the process of forming a new club or organization.

Engage U Transcript

The Engage U Transcript allows students to showcase their areas of involvement, learning experiences, and overall outstanding achievements. A printed record of their involvement history, memberships, interests, service and volunteer hours becomes a particularly useful tool when applying for jobs and graduate schools.

WALDRON CAMPUS CENTER

The Waldron Campus Center, named for beloved Gannon Professor John E. Waldron, is the hub of campus life at Gannon University. The WCC provides the setting in which students can enjoy a shared meal, find ample areas for quiet daytime and late night study, computer stations and printers, it provides opportunities for student clubs and organizations to meet and interact with their fellow students, promote their events and activities to the student body, and it also serves as the Home Stop on Gannon's own private bus route, running weekdays 7am until after 9pm, with stops at all major campus locations every 15 minutes.

The Waldron Campus Center offers a variety of meeting and conference spaces fully equipped with state-of-the-art audio-visual and video conferencing equipment. The Campus Center frequently hosts meetings and conferences sponsored by Gannon's partners in global manufacturing and business, and it also hosts many lectures, special events, and training sessions sponsored by Gannon faculty and staff.

THE KNIGHT CLUB

During the academic year, The Knight Club features a full menu of delicious appetizers, sandwiches, wraps, salads, burgers, pizza, side dishes, desserts, and refreshing beverages. Open exclusively to the Gannon community, students experience great food, live music and comedy, video karaoke, movie nights, pool tables, video game tournaments, cards, and board games in a relaxed, safe, on-campus/non-academic setting.

Sponsored by Gannon's student led Activities Programming Board, our Friday and Saturday Knights Live@The Knight Club events have become legendary additions to the weekend activities schedule. From 10pm until midnight most Fridays and Saturdays, students experience live musical performances while enjoying free of charge, their choice of freshly prepared items from The Knight Club kitchen menu.

The Knight Club provides opportunities for student employment, academic engagement, and students create and produce a full calendar of special events. The Knight Club is an on-campus hangout where students can establish connections with each other and with the University, and build positive memories that will last a lifetime. Meal plans are not applicable at The Knight Club, but .GU Gold is accepted.

FRESH CAFE

Located within Gannon University's Recreation and Wellness Center, Fresh Café's grab'n go menu features juices and smoothies made from fresh fruits and vegetables, a variety of hand-crafted salads, wraps, panini, fresh fruit and healthy desserts. Fresh Café is a great space for preparation, organization, and restoration while advocating all around wellness. Meal plans are not applicable at Fresh Café, but GU Gold is accepted!

STUDENT SUCCESS CENTER

The SSC is located on the first floor of the Palumbo Academic Center (PAC 1025) and includes Commuter Life located on the second floor. For complete descriptions of each department within the office suite, please visit their corresponding pages in the catalog:

- Academic Advising Center (page 42)
- Career Exploration and Development (page 43)
- Commuter Life (page 28)
- Distance Education and Online Programs (page 43)
- Learning Abroad (page 67)
- Office of Disability Services (page 44)
- Office of Learning Abroad and International Academic Programs (page 44)
- Student Support Services – SSS/TRIO (page 44)

ACADEMIC ADVISING CENTER

Gannon University utilizes the faculty-based advising model. Application of this model allows for the advisor and advisee to develop a deeper rapport. The advisor can assist the advisee in course selection, career planning and furthering their academic studies. The successful implementation of this model helps to achieve greater student satisfaction and retention. The Academic Advising Center (ACC) is assisting faculty to increase their knowledge of advising through a variety of workshops, webinars, and guest speakers.

The Academic Advising Center has a variety of other functions. The AAC collaborates with several groups of students to assist them in reaching their academic goals. The AAC serves as a supplement to the student's advisor in helping those students who have received some form of academic action (probation or caution). The College Student Inventory (CSI) is used with all freshman students to identify obstacles that might hinder their transition to college. The AAC staff provides services to students referred to them through the Early Alert Referral System (E.A.R.S.). The E.A.R.S. system allows faculty or staff members to refer students to the AAC, who are having academic or transitional issues that are impacting their classroom performance. General Studies and the Undeclared students are supported by the AAC. The AAC overall objective is to assist with the undergraduate retention effort.

General Studies

Gannon University established General Studies in recognition of the diversity of students and the importance of providing them academic and personal support. General Studies provides support to students by helping them orient to college, assessing academic needs and providing study skills assistance. It offers an opportunity to receive personalized assistance that will help students in values clarification and self-concept development.

Assistance to General Studies students is provided in a variety of academic areas, including the STEM Center and Writing and Research Center. Students are advised by the Director and academic advisors within the Academic Advising Center. Their primary responsibility is to assist them in the areas of career development, personal development, academic advising related to curriculum concerns and course scheduling.

Students remain in General Studies for a minimum of one semester or a maximum of three semesters. Students are permitted to enroll in their academic major after achieving the prescribed GPA, demonstrating competency in related courses, and being recommended by the Director of the Advising Center, with final approval by the College Dean and/or the Program Chair. General Studies is designed to enable students to complete degree requirements within the standard time frame for their major.

The purpose of General Studies is to develop the skills necessary to assure academic success and make college a positive experience. The Program is uniquely designed to help motivate and empower students with the knowledge that they are capable of college work and endeavors to inspire them with confidence in their ability to become contributing members of their community, society and church.

Undeclared

Gannon University recognizes that not all students are ready to declare a major. Students who fall in this category are advised through the Academic Advising Center. The advisors support and offer students the time to complete some intense college major/career exploration, while taking both liberal core classes and courses of interest. Being Undeclared allows students to explore programs at Gannon University before choosing.

To assist in career exploration and college major selection, students may be enrolled in a specific First-Year Seminar and will meet regularly with their advisors to address questions about curriculum, degree requirements, course selection, and personal interests.

Career Exploration and Development

The Career Exploration and Development team helps students connect their coursework with career possibilities through advising, outreach, professional events, internships, and other experiences. Through partnerships with university colleagues, alumni, and employers, the department is committed to helping develop students into career-ready professionals.

It is never too early for a student to engage with us! Students are encouraged connect and: explore career options; develop career development objectives; learn how to articulate transferable skills and knowledge gained from academic and co-curricular experiences; develop resumes and other essential documents; build shadowing, internship, co-op, and networking plans; identify skills needed to seek and obtain meaningful employment; and pursue graduate studies – among other subjects. There are also many supplemental resources available for students and alumni including job, internship and co-op opportunities.

A common starting point is to connect in-person with the team located on the first floor of the Palumbo Academic Center. Many first-time visitors request a meeting with an advisor and then complete a self-assessment to help better identify and articulate interests, values and potential pathways. There are also on-demand resources available and accessible at any time for students. This includes the MyPlan platform; listed on the departmental My.Gannon and public website pages.

Distance Education and Online Programs

Gannon University is a premier provider of high-quality distance education and online programs in targeted, high demand fields. Gannon's distance programs offers flexible and current educational opportunities aligned with University mission and standards so that distance students are prepared to expand their career options.

Distance education is defined as courses in which 30% or more of the instruction is offered when students are separated by the instructor through space and/or time. This would include online instruction and synchronous instruction from a distance. Areas of the University that fall under distance education include the online courses and programs, OCICU, COIL, dual-enrollment from a distance, and the Erie Diocese Diaconate program.

All online, hybrid, or distance education courses offered by the University are designed and reviewed using approved University course design processes and standards coordinated

by the Distance Education Department and the Center for Excellence in Teaching and Learning (CETL).

Students can reach the Online Student Engagement Coordinator at (814) 871-7886 in CETL with questions about online learning or how to access Gannon's comprehensive online learning student services. The Online Engagement Coordinator supports students enrolled in fully online programs and implements initiatives and strategies to improve student success. The Online Engagement Coordinator also facilitates our online new student orientations, implements strategies to ensure that online students are active in their online courses, and provides general online student support through a variety of high-touch methods to engage students and support student retention efforts.

Gannon University has been approved as a participating institution in State Authorization Reciprocity Agreement (SARA) for state authorization of distance education. Due to new federal regulations, any institution offering distance education programs and practicum experiences in states other than their own must receive authorization or be a SARA approved institution. All online students should update the Registrar's Office at (814) 871-7611 when a change in state of residence occurs.

Office of Disability Services

Gannon University, in compliance with the Americans with Disabilities Act (ADA) of 1990, Section 504 of the Rehabilitation Act, and related state and federal legislation, is dedicated to providing responsible advocacy, reasonable accommodations, and support services to students with disabilities who present current and proper documentation of disability to the Office of Disability Services. Accommodations may include, but are not limited to, extended time on exams, reduced distraction environment, notetaking support, and reader/scribe foreams. Students requesting Gannon housing accommodations, must bring the process through the Office of Disability Services. Students may contact the Director of the Office of Disability Services (ODS) by calling 814-871-5522, email ods@gannon.edu, or in person by visiting the ODS located in the Student Success Center in the Palumbo Academic Center (PC 1025).

Office of Learning Abroad and International Academic Programs

The Office of Learning Abroad and International Academic Programs works with students to explore their academic undertakings in a global context. Students may choose to participate in short-term programs (GIFT Courses) or long-term programs, such as a semester and/or summer abroad. Students may participate in more than one program per year, based upon availability and scheduling.

All Office of Learning Abroad programs are credit-bearing and count toward completion of the student's degree. Students should meet with their academic advisor to discuss Learning Abroad opportunities before scheduling a meeting with the Office of Learning Abroad and International Academic Programs.

Students are also able to participate in credit-bearing international internships arranged through an affiliate provider. These 4-12 week internships are specialized to students' interests, whether location-based or career-focused.

The Office of Learning Abroad and International Academic Programs also works with global partner universities to support and foster mutual cooperation and program development, as well as facilitate the arrival of international exchange students to Gannon for a semester abroad.

The Office of Learning Abroad and International Academic Programs is located on the first floor of Palumbo Academic Center in the Student Success Center.

Student Support Services (SSS/TRIO)

Student Support Services (SSS) is a federally-funded TRIO program through the US Department of Education, Office of Postsecondary Education. The goal of SSS is to increase participants' college persistence, support them through graduation and facilitate their transition into graduate programs and/or careers.

Student Support Services Mission Statement:

A mutual collaborative partnership grounded in a climate of support that empowers SSS and Students to engage in individualized free services through non-judgmental guidance, opportunities, and encouragement for academic and life-long personal success.

SSS offers or facilitates the following services for its 150 undergraduate participants:

- Academic & Career Advising
- Course Selection & Scheduling Assistance
- Priority Registration
- FAFSA Completion & Financial Aid Process Assistance
- Graduate School Preparation
- Educational & Cultural Trips
- Personal/Life Coaching
- Tutoring Support

Who is Eligible?

- US Citizen, permanent resident, or eligible for Federal Student Aid; and
- Admitted to or enrolled at Gannon University in a bachelor degree program; and
- Meets at least one of the following criteria:
 - First-generation college status: Parent(s)/Legal Guardian(s) did not complete a four-year college degree
 - Low income: Federally determined using taxable income and number of exemptions
 - Disability status: Documentation accepted includes: IEP, M.D. verification, letter from Gannon Disability Support Services, or government sources.

SSS staff offices are located in Palumbo within the Student Success Center.

Visit www.gannon.edu/ssc for more information and to access the forms to join our TRIO family.

Degree Requirements, Academic Awards

GRADUATION

Degrees are conferred three times per year, in December, May, and August. Attendance at Commencement ceremonies, which are held in December and in May, is highly recommended, since graduation is such an important and joyous occasion in the life of academic institutions. An undergraduate student is eligible to participate in the May ceremony if all requirements are expected to be completed in May or August of the same year. An undergraduate student is eligible to participate in the December ceremony if all requirements are expected to be complete in December of that year.

Prospective graduates must complete an application for graduation by November 15 for May or August graduation and by May 31 for December graduation. The application, which is available in the offices of the Dean, Registrar, Center for Adult Learning and on GUXpress, must be submitted to the Registrar's Office. Prior to the deadlines, the Dean will audit the student's record to determine eligibility for graduation on the date indicated, and will supply a copy of the audit to the student. No application will be accepted without the Dean's verification of eligibility. If the application is completed by the appropriate deadline, the graduation fee will appear on the fall bill for December graduates and on the spring bill for May and August graduates.

Failure to apply for graduation by the appropriate deadline may result in the loss of such privileges as participation in the ceremony, senior awards, and name listed in the commencement program. Payment of the graduation fee must accompany late applications.

It is the student's responsibility to apply for graduation at the appropriate time and to meet all requirements for graduation.

Bachelor Degree Requirements

The following list indicates minimum University requirements for the baccalaureate degree. Please note that some programs specify additional requirements beyond these minimums. See descriptions of individual programs for any additional requirements.

1. At least 128 hours of academic work must be completed by the student, with an overall quality point average of not less than 2.0. Courses numbered below 100 are not used to meet the requirement.
2. The specific course requirements must be fulfilled as stipulated in each academic program. A cumulative grade point average of 2.0 in the field of concentration is required. A cumulative grade point average of 2.0 is also required for a successful completion of the minor.
3. At least two thirds of the upper level courses in the field of concentration, including required seminars, and the final thirty credit hours of degree requirements, must be taken at Gannon University. Exceptions to these specific requirements have been granted to students who are enrolled in approved accelerated programs. Other students with special circumstances may request a waiver of these degree requirements, with the approval of the Academic Dean and Provost of Gannon University.
4. All courses specified for the fulfillment of requirements for the field of concentration and cognate fields must be completed within a time span not to exceed ten years.
5. A course failed in the field of concentration may be repeated once. If not successfully passed, the student is not permitted to continue in that field of concentration.

6. A student is not permitted to continue in a field of concentration in which ten or more semester hours have been failed, or in which more than six semester hours have been failed in one semester.

Dean's List

To honor excellence in academic performance, Gannon University names to the Dean's List **students who have completed 12 credits or more with a letter grade for each and a grade point average of 3.50 or higher for the semester.** A student who makes a failing grade is disqualified in that semester for the Dean's List. Dean's list is not awarded to a student with an incomplete grade.

Academic Honors

Students who have consistently achieved academic distinction receive the following graduation honors:

Cum Laude — a cumulative grade point average of at least 3.50.

Magna cum Laude — a cumulative grade point average of at least 3.70.

Summa cum Laude — a cumulative grade point average of at least 3.90.

With Academic Honors — Associate Degree students with a cumulative grade point average of at least 3.50.

No student with a failing grade in his/her field of concentration will receive honors at the time of graduation.

Transfer students to be eligible for honors at graduation must have completed 64 semester hours (32 semester hours for Associate degree majors) at Gannon University. Their average will be computed on the basis of their four or two year program. No higher honors will be given than are earned by the semester hours completed at Gannon University.

Senior Awards

Notable accomplishment of all-inclusive nature or in a specific field is recognized by the following awards:

The Gannon University Medal of Honor

Presented to the graduating Senior who in the opinion of the faculty and the student's own classmates has done the most to further the interests of the University, to foster loyal college spirit, and to carry out the ideals of the Christian life.

The Archbishop John Mark Gannon Award

For general scholastic excellence including transfer courses.

Individual Achievement Awards:

The Monsignor Wilfrid J. Nash Award

For Excellence in Christian Service

The Reverend Charles Drexler Award

For Outstanding Leadership in Faith, Worship, Community, and Service

The Doc Beyer Award

For Outstanding Achievement in Scholarship and Athletics

The Joe Luckey Award

For Dedication to the University

The Educational Opportunity Program Award

Academic Awards for Excellence may also be awarded in each of the undergraduate disciplines.

Academic Policies and Procedures

ACADEMIC FORGIVENESS POLICY

Gannon University's undergraduate Academic Forgiveness policy applies to former Gannon students whose prior academic performance was unsatisfactory. Gannon University students who apply for readmission as undergraduates through the Office of Admissions after at least five years away from Gannon may request Academic Forgiveness. The policy allows the student to have all previous grades dropped from the cumulative grade point average. Courses with grades of C or higher will be treated as transfer courses and can be used toward a degree.

ACADEMIC INTEGRITY POLICY

Gannon University considers the maintenance of academic integrity of utmost importance and stresses that students are responsible for thoroughly understanding this code.

Absolute integrity is expected of every Gannon student in all academic undertakings; the student must in no way misrepresent his/her work, fraudulently or unfairly advance his/her academic status, or be a party to another student's failure to maintain integrity.

The maintenance of an atmosphere of academic honor and the fulfillment of the provisions of this code are the responsibilities of the students and faculty of Gannon University. Therefore, all students and faculty members shall adhere to the basic principles of this Code. Each student will receive the Code of Academic Integrity publication of Gannon University during Freshman Orientation or entrance into the University. Upon review of the publication, the students will be invited to sign a pledge to uphold the Academic Integrity of their work and the work of their peers.

I. Forms of Academic Dishonesty

A. Plagiarism

Plagiarism is the inclusion of someone else's words, ideas or data as one's own work. When a student submits work for credit that includes the words, ideas or data of others, the source of that information must be acknowledged through complete and accurate documentation, and specific footnote references, and, if verbatim statements are included, through quotation marks as well. By placing his/her name on work submitted for credit, the student certifies the originality of all work not otherwise identified by appropriate acknowledgments.

A student will avoid being charged with plagiarism if there is an acknowledgment of indebtedness.

EXAMPLES (Including but not limited to)

1. Whenever one quotes another person's actual words.
2. Whenever one paraphrases another person's idea, opinion or theory; and
3. Whenever one borrows facts, statistics, or other illustrative materials, unless the information is common knowledge.
4. Downloading or purchasing material from Internet without identifying appropriate acknowledgement.

B. Fabrication

Fabrication is the use of invented information or the falsification of research or other findings with the intent to deceive.

EXAMPLES (Including but not limited to)

1. Citing information not taken from the source indicated.
2. Listing sources in a bibliography not used in the academic exercise.
3. Inventing data or source information for research or other academic exercise.
4. Submitting as your own any academic exercise (e.g., written work, documentation or legal document [e.g., patient charts, etc.], painting, sculpture, etc., etc.) prepared totally or in part by another.
5. Taking a test for someone else or permitting someone else to take a test for you.

C. Cheating

Cheating is an act of deception by which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered.

EXAMPLES (Including but not limited to)

1. Copying from another student's test paper and/or other assignments.
2. Actively facilitating another student's copying from one's own test paper/other assignments.
3. Using the course textbook or other materials such as a notebook not authorized for use during a test.
4. Collaborating during a test with any other person by receiving information without authority.
5. Using specifically prepared and unauthorized materials or equipment during a test, e.g. notes, formula lists, notes written on student's clothing, etc.
6. Reporting a clinical visit completed when it was not.
7. Falsifying reports of clinical visits, laboratory exercises, or field experiences.

D. Academic Misconduct

Academic misconduct is the tampering with grades, or taking part in obtaining or distributing any part of a test not administered.

EXAMPLES (Including but not limited to)

1. Stealing, buying or otherwise obtaining all or part of an unadministered test.
2. Selling or giving away all or part of an unadministered test including answers to an unadministered test.
3. Bribing any other person to obtain an unadministered test or any information about the test.
4. Entering a building, office file or computer/computer system for the purpose of changing a grade in a grade book, on a test, or on other work for which a grade is given.
5. Changing, altering, or being an accessory to the changing and/or altering of a grade in a grade book, on a test, a "change of grade" form, or other official academic records of the University which relate to grades.
6. Entering a building, office, file, or computer/computer system for the purpose of obtaining an unadministered test.
7. Hiding and/or mutilating library/classroom books and/or equipment.

II. Procedure

Formal Procedure

1. If an instructor suspects that a student has violated Gannon University's Code of Academic Integrity, he/she will promptly notify the student involved as well as the department chair responsible for the course in question. At no time during the investigation or appeal process are students permitted to withdraw from the course. Within 10 calendar days of the discovery of the alleged violation the instructor will notify the student of the allegation and invite the student to meet to review the matter and to explain the alleged violation. If the student chooses to meet with the instructor to contest the allegation, this meeting shall be scheduled within 7 calendar days of the notification.
2. If the student is cleared of the allegation, the matter will be dropped. If not, then the instructor will inform the Dean's Office of the violation. (The Dean's Office to be notified is the one responsible for the course.) This Office shall then inform the instructor of the student's number of previous violations of the academic integrity policy, if any. In consultation with the department chair the instructor will then impose a sanction upon the student. A letter detailing the sanction will be sent to the student from the instructor and copied to the three College Deans. The letter shall be sent within 10 calendar days from the date the Dean was notified. The student should be aware that admission of guilt does not eliminate or lessen the sanction imposed by the instructor.
3. The student may appeal the instructor's decision to the Dean of the College in which the course resides. Appeals must be made within 7 calendar days of the date of the instructor's decision. Students are expected to continue to attend class during the appeal process.
4. A hearing will be scheduled within 10 calendar days of the Dean receiving the student's appeal. The hearing will include the Dean, the instructor, and the student. The instructor will present pertinent evidence and the student will be given the opportunity to challenge the evidence and present a defense. The student may have one guest present during the hearing, but the guest is not allowed to speak during the hearing unless permitted by the Dean.

The Dean will issue a finding based upon the evidence presented. If the Dean determines that insufficient evidence has been presented, the matter will be dropped. If the Dean finds the student in violation of the Code of Academic Integrity, he/she may support the academic sanction originally imposed by the instructor. The Dean also has the power to issue administrative sanctions [i.e., separation from the University]). In considering the penalty to be imposed, the Dean shall take into account the evidence of the appeal proceeding as well as any documented previous infraction(s). A letter detailing the sanction will be sent to the student from the Dean and copied to the other two College Deans.

5. Following the Dean's decision, the student has 7 calendar days to make a final appeal to the Vice President with respect to the fairness of the proceedings and/or the appropriateness of the sanction. The Vice President will issue a decision within 7 calendar days of the appeal. Students are expected to continue attending class during the appeal process. A final letter will be sent to the student from the Vice President and copied to the three College Deans.

(Note: At the Dean's or Vice President's discretion, exceptions to the calendar day requirements can be made for unusual circumstances such as Christmas or summer breaks).

6. Once all appeals are exhausted and a final decision has been made the Dean's office responsible for the course will report the finding of academic dishonesty to each of the other Academic Deans.

Academic Dishonesty Sanctions

Any student found guilty of academic dishonesty will be subject to penalties, which, depending on the gravity of the offense, may include the following:

1. A grade of “zero” for the assignment involved (as imposed by the instructor in consultation with the department chair). This penalty will generally be applied in the case of a student’s first offense. However, the instructor has the right to impose a more severe penalty based on the circumstances of the offense.
2. Failure of the course (as imposed by the instructor in consultation with the department chair). This penalty will generally be applied in the case of a student’s second documented offense. However, the instructor has the right to impose a lesser penalty based on the circumstances of the offense.
3. Subject to review and approval of the Dean responsible for the course, separation from the University. This penalty will generally be applied in the case of a student’s third documented offense. However, the Dean has the latitude to apply a lesser penalty depending on the circumstances of the offense.

Review and Expunging of Records

1. Records of completed disciplinary proceedings are destroyed if the student is acquitted.
2. Records of the completed disciplinary proceedings are maintained by the Dean’s Office if the student is found guilty. The records are maintained for a period of three years after the student leaves or graduates from the University.

III. Policy of Professional Integrity

All students have an obligation to maintain ethical behavior in relationship to their profession.

Professional Behavior

Those behaviors reflecting status, character, and standards of the given profession.

Ethical Behavior

Those behaviors in accordance with the accepted principles of right and wrong that govern the conduct of a profession.

Any student of Gannon University who engages in unprofessional or unethical conduct is subject to disciplinary action which could include reprimand, probation, separation and expulsion from the University.

IV. Sources

Robert M. Gorell and Charlton Laird, *Modern English Handbook*, 6th Edition (Englewood Cliffs, NJ, Prentice-Hall, 1976), p. 71.

Campus Rules and Moral Community; In Place of In Loco Parentis by David A. Hoekema. Lanham, Maryland: Rowman & Littlefield Publishers, Inc., 1994.

The format and definitions for the policy on Academic Integrity were adapted from the “Academic Honesty and Dishonesty” brochure produced by the College of Health Sciences, Gannon University, Erie, PA 16541.

The format and definitions for the policy on Academic Integrity were adapted from the School of Hotel Administration, Code of Academic Integrity, Cornell University.

Early Alert Referral System

The Early Alert Referral System (E.A.R.S.) is a referral program designed to help identify students early in the semester who are experiencing problems that may hinder their academic performance. Faculty or staff should complete the brief on-line form which is forwarded to

the Student Success Center (SSC). The form is located on the Gannon Portal under GUXpress/ Faculty Information, Blackboard or Health & Well-Being links. Faculty/staff members are encouraged to discuss the referral with the student prior to forwarding the form. The student will receive an email from the staff of the SSC asking them to schedule a meeting to determine the appropriate referral to resolve the student's issues. The SSC staff member will advise the referring faculty member and the student's advisor of any actions taken on the student's behalf. Examples of reasons for referral would include academic performance (received a D or F grade on test/assignment or is not turning in assignments), attendance (missed 2 or more classes), career satisfaction, or financial issues. If the student requires personal counseling a referral to BIT (Behavioral Intervention Team) can also be made through the Gannon portal.

ACADEMIC PROBATION AND SEPARATION POLICY

Academic Probation is a serious warning that the student has failed to meet the University's minimum academic standards. Students are expected to work well above the minimum, both for their individual benefit and for the good of the entire academic community. In fact, students are expected to achieve the highest quality of academic work of which they are capable.

Probationary status is a conditional permission for a student to continue studying at the University until he or she regains good academic standing or is separated from the University for having failed to regain good standing. The Academic Probation and Separation Policy is as follows:

1. All full-time students who fail to achieve a minimum 1.00 semester grade point average will be separated.
2. Full-time freshmen (fewer than 24 credits attempted) who have failed to achieve a semester grade point average of 1.80 (but greater than a 1.0) will be placed on academic probation for the subsequent semester and assigned to a mandatory academic advisement program. If the student achieves a semester GPA of a 2.0 but less than a 1.8 cumulative GPA in the subsequent semester they will be placed on continued academic probation and continue on a mandatory academic advisement program.
3. Full-time freshmen (fewer than 24 credits attempted) who have greater than a 1.80 semester GPA but less than a 2.0 semester GPA will be issued a cautionary letter and be assigned to a mandatory academic advisement program.
4. Students who have earned 24 or more credits, after matriculation to the university, must have a semester GPA of 2.0 and an overall cumulative GPA of greater than 2.0. Students with less than a semester GPA of 2.0 will be placed on probation, and must participate in a mandatory academic advisement program. Students will be granted no more than two consecutive semesters of probation at end of which they must have a both a semester and a cumulative GPA of 2.0
5. Students who have earned 24 or more credits, after matriculation to the university, must have a minimum cumulative GPA of 2.0. Students with less than a 2.0 cumulative GPA will be placed on probation and must participate in a mandatory academic advisement program. Students will be granted no more than two consecutive semesters of probation. If the student achieves a cumulative GPA of a 1.8 but less than a 2.0 in the subsequent semester they will be placed on continued academic probation and continue on a mandatory academic advisement program. If the following semester the cumulative GPA is less than a 2.0, the student will be separated.
6. Part-time students will be evaluated after attempting their first six credits. Students with greater than 6 credits that achieve a cumulative grade point average of 1.8 but less than a 2.0 will receive a cautionary letter and will be assigned to a mandatory academic advisement program. Part-time students with less than a 1.0 grade point average after attempting 6 credits will be separated.

7. Part-time students who have attempted their first 12 credits will be reviewed following the same policies as full-time students. Subsequent reviews and academic action will be taken upon completion of each additional 12 credits.

The Admissions Committee may require specific course(s) and/or an earned grade point average as a condition of admission/readmission in addition to the minimum requirements of the University. Special terms of admission/readmission will be outlined in the acceptance letter. Students who do not fulfill the special admissions conditions will be subject to separation from the University.

For the implementation of this policy, a full-time student is defined as any student who is taking 12 credits or more at the conclusion of the first two weeks of classes. Classes dropped before this are not reflected on the student's transcript. Dropping a course(s) after the second week of classes does not exempt a student from being evaluated under the Academic Probation and Separation policy.

Appropriate College Deans will notify students who have been placed on academic probation. With follow-up from the student's academic advisor and the Student Success Center, these students will be expected to engage in the mandatory academic advisement program and concentrate their energies on their studies so that they can bring their work up to the required standard.

Except with the written permission of both the Vice-President for Academic Affairs and the Dean of Student Development, students on probation may not hold office in any University organization, participate in any intercollegiate events or programs, or otherwise represent the University lest they further jeopardize their academic standing.

With the permission of the appropriate College Dean, students may use the summer session at Gannon to restore their good academic standing provided that they complete the equivalent of a full semester's work, e.g. 6 credits in a five-week term.

Students who are separated from the University may not enroll in any University credit course for one full year. Applications for readmission will not be reconsidered until the expiration of one year. Readmission is not a right. The Admissions Committee will take favorable action only when it is satisfied that the factors which led to the failure have been rectified. It is the student's responsibility to demonstrate to the committee that he or she has a reasonable prospect for academic success at Gannon. Any student readmitted will be on probation and assigned to a mandatory special advisement program for the first semester following his or her return. If the student is separated a second time, he or she will not be readmitted.

Students who are separated may appeal that separation to their College Dean. Such an appeal would need to cite extraordinary circumstances that adversely affected academic performance. The College Dean will review all such appeals.

THE ACADEMIC YEAR

Gannon University operates on semester academic calendar. This plan divides the academic year into two four-month semesters. Typically, the fall semester begins late in August and ends before Christmas, and the spring semester begins in early January and ends with Commencement in early May.

Day Sessions

Classes in the Day Sessions are held five days a week, beginning with the 8 a.m. period. Three credit classes meeting on a Monday, Wednesday and Friday (MWF) sequence meet for 55 minutes each day. Those courses meeting on a Tuesday and Thursday (TTh) sequence meet for 80 minutes each day. There is a ten minute break between each class period.

A one credit course meets 55 minutes once a week. A four credit course meets on the MWF or TTh sequence as mentioned above and also meets 55 minutes on an extra class day. A six credit

course meets five days a week on MWF for 55 minutes and TTh for 80 minutes.

Laboratories in the day sessions are held five days a week, beginning with the 8 a.m. period. One credit laboratories meet once a week; two credit laboratories meet twice a week. One laboratory credit normally requires not less than three hours of student work. Instructors will determine the best use of laboratory time.

Evening Sessions

Classes in the Evening Sessions are held Monday through Thursday with additional classes on Saturday. These classes meet in sequences of one or two evenings per week. Classes held on Saturday usually meet from 9:00 a.m. to 12:00 noon. Those classes meeting Monday through Thursday begin at 4:30 p.m., 6:00 p.m., and 7:30 p.m.

Laboratories in the evening sessions are held Monday through Thursday, beginning with the 4:30 p.m. period.

Summer Sessions

Gannon offers undergraduate summer courses beginning in May. Students may thus enroll in more than one course, and spread out or overlap their courses during the summer months, depending upon the courses they select from the summer session schedule.

Day classes meet five days per week for ninety-five minutes each meeting when offered over five weeks. Evening classes offered for five weeks meet three days per week from 6:00 p.m. to 8:50 p.m.

Courses offered during the summer session cover the same content as those offered during the fall and spring semesters. However, the summer schedule is limited in the variety of courses offered, and students should check GUXpress for the exact courses being taught each summer. Although concentrated into two, five, or ten weeks, the courses meet for the same amount of time and have the same credit value as semester courses.

ADVANCED PLACEMENT PROGRAM

Credit will be given to those students who complete the formal College Board Advanced Placement Courses, with a grade of 3 or higher on the exam. Grades 1 and 2 will be given neither credit nor placement.

Please visit the following website to view a complete and current list of Advanced Placement courses: <http://www.gannon.edu/Search.aspx?id=405&searchtext=advanced+placement>

AUDITING POLICY

Interested persons may audit most lecture courses offered at Gannon University if there is space available in the course on the first day of class and until the end of the second week of class. Audit forms may be obtained in the Registrar's office after the first day of class and only with the written permission of the instructor. Laboratory courses may not be taken as an audit. Students who enroll in a course for credit may only change to an audit grade during the first two weeks of a semester. Courses that are taken for audit may be changed to credit only during the first two weeks of the semester. After these two weeks no changes are allowed (see note below). Audit applications and registration forms may be obtained in the Office of the Registrar.

Refer to the Financial Facts section for the cost.

Records of the course will be noted on a student transcript with a grade of AU which carries neither credits nor grade points.

NOTE: A student who enrolls in a course for credit may withdraw from that course and after withdrawal may continue to attend classes. The grade for such students will be an 'X' and in no case will be assigned an 'AU' grade.

CLASS ATTENDANCE

Attendance at all classes and laboratory sessions is expected of all students and all courses are conducted with this understanding. A student's grades are based upon the general quality of work performed in each course and by such factors as prompt completion of all assignments, papers, and readings, by presence for all examinations, and by participation in class discussion. Ultimately, it is the responsibility of each faculty member to set reasonable attendance policies appropriate to individual courses and to publish those policies on course syllabi. When so indicated on the course syllabus, class attendance may directly influence final grades in a course for upper-class students as well as freshmen. The following policy statements are to assist in a uniform class attendance expectation.

Certain University events, such as athletics or particular extracurricular activities, in which the students represent the University in an official capacity, necessitate excused absences from classes. In such cases, it is inappropriate to penalize a student as a result of their absences resulting from their function as University representative. Faculty then have a responsibility to provide the opportunity to complete any tests, assignments, or other work.

Students should be aware that in the Junior and Senior years of study of some majors such as health science and education majors, it may be extremely difficult for extensive athletic or other types of extra-curricular participation. Students should discuss this with appropriate University officials before selecting a major.

The primary function of Gannon University is the education of its students. Consequently, it is judged to be inappropriate for any arm of the University to request that students excessively absent themselves from regularly scheduled classes in order to function as representatives of the University. Except in emergency situations (e.g., illness or accident), the student is expected to notify the faculty of scheduled course absences one (1) week in advance. Faculty may require verification from appropriate University staff.

Freshmen who absent themselves, *whether it be excused or unexcused*, from a particular course in excess of twice the number of credit hours assigned to that course may be withdrawn from the course, upon recommendation by the faculty member to the Dean of the student's college. This request would typically result from unexcused absences, but a student with excused absences should also try to adhere to this limit. Although the student may not be penalized for excused absences as defined earlier, a combination of excused and unexcused may result in the same requested withdrawal. The faculty member would need to show the Dean that the student, because of the combination of absences, has not been able to show competency in the course and has no chance of doing so. Students who are active in athletics or co-curricular activities must be responsible for their learning and minimize unexcused absence in times such as sickness or emergencies. Missing an 80-minute class period is counted as one and one-half absences. In addition, the Office of New Student Services is interested in knowing which freshmen accumulated the maximum number of absences allowable. The office is prepared to undertake an inquiry aimed at helping the student. Reports on freshmen attendance must be initiated by faculty members, by means of direct contact with the Office of New Student Services.

COURSE LEVELS

Catalog #

- 000-099 Credit earned may not be included in the total credits required for a degree. 100-199 Lower division, undergraduate. Designed as basic introductory courses for freshmen.
- 200-299 Lower division undergraduate. Designed as intermediate courses to be taken primarily in the sophomore year of a major but may be taken by upper level non-majors.

- 300-499 Upper division, undergraduate. Designed as junior and senior courses.
- 500-599 Upper division, and graduate. For graduate students primarily but including courses with some seniors.
- 600-799 Designed for graduate student only.
- 800-899 Doctorate students only.
- 900-999 Doctorate students only (beginning 2001).

COURSE NUMBERING

Each course number consists of 7 to 10 characters. The letters refer to the Department. The first three numbers refer to the catalog number and course level. The last two numbers or letters refer to the section.

FULL-TIME STATUS

To be considered a full-time student, a person is required to be enrolled for 12 credit hours in the current fall or spring semester. These credit hours may be undergraduate or for seniors in their final semester the 12 credits may be a combination of undergraduate and graduate courses. This policy accords with current practice of admitting graduating seniors to certain graduate courses during the final semester of undergraduate study.

Students are half-time if they are enrolled for 6-11 credits, they are less than half-time if they are enrolled for 1-5 credits.

GRADES

Description of Grades and Grade Point Average

| | | | | | |
|----|-----------|------------------|----|---------------|------------------|
| A+ | Excellent | 4.0 grade points | C+ | Average | 2.3 grade points |
| A | Excellent | 4.0 grade points | C | Average | 2.0 grade points |
| A- | Excellent | 3.7 grade points | C- | Below Average | 1.7 grade points |
| B+ | Good | 3.3 grade points | D | Below Average | 1.0 grade points |
| B | Good | 3.0 grade points | F | Failure | 0.0 grade points |
| B- | Good | 2.7 grade points | | | |

A grade point average (GPA) is calculated by dividing the algebraic sum of the grade points earned by the sum of the credits to calculate.

- I Incomplete. This grade indicates failure on the part of the student to measure up to minimum requirements on account of absence for sickness or for some other weighty reason. A student who fails to remove the grade of 'incomplete' within 30 days after the grades are due will automatically receive a failure for the course.
- P Pass. This grade is not calculated in the GPA.
- X This grade indicates withdrawal from a course prior to the cut-off date listed in the academic calendar.
- AU Audit. This grade indicates that the course was not taken for credit.

INTERNATIONAL BACCALAUREATE PROGRAM

Gannon University awards credit for courses completed in the International Baccalaureate Program under the following conditions:

1. Three credits will be awarded for each Higher Level course successfully completed.
2. Successful completion is defined as receipt of a grade of “four” or above.

LEAVE POLICY

Gannon University recognizes that a student may need to temporarily interrupt their education and has a procedure to facilitate this situation. The following are examples of categories that might qualify a student for temporary leave:

- co-op/internship
- military (involuntary)
- medical/psychological
- family/personal

The above categories are not meant to be an inclusive list nor do they guarantee that a student will be granted a temporary leave. The student who feels that they have a legitimate reason to request a leave should request a form from the Student Success Center. The request will be reviewed by appropriate officials of the University.

Temporary leave may be granted for a period of one or two semesters following the student’s current enrollment. If a student applies for leave in the first two weeks of the semester then the current semester is counted as one of the two eligible semesters of leave.

When the student is ready to return to the University they should follow these steps:

- If there were any restrictions/holds placed on their return those should be dealt with first e.g. in the case of medical/psychological leaves students are required to provide a release from their physician to the Health/Counseling Center. The Student Success Center will notify the Registrar Office staff to release the hold.
- Contact your faculty advisor to discuss your schedule and they will okay you for registration in Student Planning
- Contact the Registrar for a registration time.

MAJOR-CHANGE/DECLARATION

Students wishing to declare or change their major field begin the process with their advisor or the Student Success Center. After consultation about a major change, the student obtains the signature of their advisor on the Change/Declaration of Major form. Alternatively, the Chair/Director or Dean of the student’s present major can sign the form in place of the advisor.

The student takes the form to the Chair/Director of the requested major for approval. The form is then sent to the appropriate Dean’s office for final approval. A completed and approved form will be sent to the Registrar’s Office for changing official records.

If necessary, the student can be referred to the Student Success Center at any step in the process.

Requirements for Double Majors

1. Students may declare a second major.
2. A minimum of 21 credit hours in the individual student’s transcript must be unique to each major.

3. Individual student exceptions may be made in appropriate cases by department chairs and program directors with approval from the Dean of the College in which the majors are housed.

MINOR DECLARATION POLICY

Curriculum for available minors are listed in this catalog after the curriculum for each major except for the Minor in Innovation & Creativity which can be found in its own section. In order to declare a minor, a student must fill out a "Declaration of a Minor" form in their Dean's office.

A minor will not be printed on the transcript until the student is certified for graduation by their Dean. Student must be pursuing a baccalaureate degree.

PASS—FAIL OPTION

Students have the option of taking one free elective course per semester on a pass-fail basis. The option excludes required courses in the major or minor field of study, cognate courses and Liberal Studies Core courses. The student is limited to twelve credits of pass-fail courses that count toward the student's degree. If a student elects to take a course on the pass-fail basis, the student must so state to the student's advisor and dean by the date designated in the Academic Calendar. If the dates of the course are different from the regular semester dates, the student must submit the pass-fail form before 60% of the course is complete. Forms are available in their dean's office. The student shall have the option of converting to a letter grade until the date designated in the academic calendar. In any event, the instructor submits a letter grade. The grade is stored in the Registrar's files for future referral. In ascertaining eligibility for inclusion on the Dean's List, a student must present a minimum of 12 credit hours of letter grade courses. A "P" (passing) grade will not be reflected in the grade point average; an "F" (failing) grade, however, will be reflected. Any exception to the rule of one course per semester can be allowed only with the approval of the student's dean.

Courses taken beyond those needed for degree requirements may be taken pass-fail in addition to the twelve credits allowed.

REPEAT COURSES

A student may repeat a course. The student is required to take the course at Gannon and submit written notice of a repeated course to the Registrar's Office if he or she wishes to have the repeat noted on the transcript. Forms are available in the Registrar's Office. When a student elects to repeat a course, the letter "R" will be placed in front of the original grade and the original grade will not be calculated in the grade point average (GPA). This policy is limited to 15 credits of course work. Each repeat registration is counted as a course. This policy does not cover the situation when the "repeat" (or subsequent) course was completed prior to fall 1972 semester unless the student is readmitted. Courses repeated beyond 15 credits will have both grades calculated in the GPA. Repeated courses can only be included once in all degree requirements for graduation.

A student may be granted permission to repeat a failed Gannon course at another institution. However, since credits transfer but not grades, the original course cannot be coded as a repeat.

Refer to Bachelor Degree Requirements under the Degree Requirements section of this catalog for additional regulations about failed courses. Some Academic Programs have a more restrictive repeat policy. Contact the Program Director for more information. A course failed in the field of concentration may be repeated once. If not successfully passed, the student is not permitted to continue in that field of concentration.

STUDENT ACADEMIC GRIEVANCE POLICY

Scope and Purpose:

1. This policy addresses academic grievances only. An academic grievance is defined as a complaint brought by a student regarding the University's provision of education and academic (only) services affecting their role as a student. Complaints or grievances connected to assigned grades represent a special case to the grievance process. Grading reflects careful and deliberate assessment of a student's performance by a faculty member. As such, the substance of grading decisions may not be delegated to the grievance process. Nevertheless, the University recognizes that in rare cases the process of grading may be subject to error or injustice. Therefore, a student who alleges an error or injustice in the grading process would follow this policy toward resolution.
2. This policy does not apply to student complaints regarding employment or alleged violations of other policies in the student handbook.
3. It is the intent that this policy to provide an efficient process, allowing for both informal and formal resolution of grievances related to academic concerns, complaints or allegations.
4. A student must initiate a grievance as close as possible to the date of the occurrence of the incident and no later than 45 days after the end of the semester in which the alleged grievance occurred. The three summer sessions are considered as one semester.

General Guidelines

Academic grievance procedures should be kept as informal as possible based on principles of mediation and conciliation. Every reasonable effort should be made to resolve any academic grievance at the lowest organizational level possible. In the event that it cannot be resolved informally, the student may seek resolution at the next higher level according to the Formal Resolution procedure.

In the event that the faculty member is no longer employed by the University or is not available within the timelines specified in these general guidelines, the student is to initiate the complaint with the faculty member's immediate supervisor.

The student filing a grievance may have a third-party advisor, such as the University Ombudsperson; attend any meeting at which the student appears. The faculty member involved in the grievance may also have a third-party advisor approved by the University attend any meeting at which the faculty member appears. Legal counsel shall not be used by either party in this grievance process.

Informal Resolution Phase

All academic grievances begin with the informal resolution phase. This first step toward resolution of an academic grievance should begin at the lowest organizational level. The student and the faculty member or University colleague involved should meet to discuss and work toward resolution of the concern. The student should address the grievance to the faculty member or University colleague involved as soon as possible. The student should follow the established protocol regarding the levels of appeal. Formal resolution shall not occur without occurrence of the informal resolution phase.

The student may contact the University Ombudsperson for assistance in initiating the academic grievance process or at any time during the process.

Formal Resolution Phase

The formal resolution phase is used by the student when a satisfactory informal resolution has not occurred.

1. The first step in the formal resolution of an academic grievance is to submit a formal written account of the grievance to the appropriate immediate supervisor. Students may consult the Human Resources office to determine the appropriate supervisor.

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- a. The written account must be submitted to the immediate supervisor within two weeks after the last meeting of the informal resolution phase.
 - b. The written account should include: identification of the grievant, the respondent, the incident – date, time, place, names of witnesses, the existing rule/policy/established practice claimed to be violated and a brief statement of the desired outcome.
 - c. Within three weeks of receipt of all written materials, the appropriate immediate supervisor will fact-find from involved parties and render a decision in writing via registered mail to the parties involved.
2. The second step, if needed, in the formal resolution phase occurs when and if the faculty or student is not satisfied with the immediate supervisor’s resolution of the grievance. The student or the faculty member or University colleague involved may then appeal to the next level of the organizational chart by providing a written account of the grievance process and decision.
 - a. A written account must be submitted to the next level of the organizational chart within two weeks of receipt of the decision rendered by the immediate supervisor (Step 1).
 - b. The written account should include: identification of the grievant, the respondent, the incident – date, time, place, names of witnesses, the existing rule/policy/established practice claimed to be violated, a copy of the decision of the immediate supervisor and a brief statement of the desired outcome.
 - c. Within three weeks of receipt of all written materials, the next level of the organizational chart will fact-find from involved parties and render a resolution in writing to the parties involved.
 3. The third step, if needed, in the formal resolution process is to appeal to the appropriate College Dean.
 - a. The College Dean shall be given a written account of the grievance process to date. This must be submitted within two weeks of receipt of the resolution decision rendered by the next person on the organizational chart (Step 2).
 - b. The College Dean shall render a decision in writing to the parties involved within three weeks.
 - c. In the event the Dean’s resolution of the alleged academic grievance is not satisfactory to either party, the appeal shall be directed to the Vice President of Academic Affairs.
 4. The fourth step, if needed, in the formal resolution process is to appeal to the Vice President of Academic Affairs. This step must be initiated within two weeks of receipt of the College Dean’s decision.
 - a. The Vice President of Academic Affairs shall review the written appeal and response(s) to make a determination whether or not there are sufficient grounds to hold an appeal hearing.
 - b. If there are insufficient grounds to hold an appeal hearing, the decision of the College Dean will be upheld.
 - c. If there are sufficient grounds to hold an appeal hearing, the Vice President of Academic Affairs shall establish an ad hoc grievance appeal panel.
 - i. A grievance appeal hearing panel would be established on an ad hoc basis and consist of five members for each case. The grievance appeal hearing panel shall be convened by the Vice President for Academic Affairs. The panel shall be composed of the Vice President for Academic Affairs, or her/his designee (serves as Chair), two faculty representatives chosen from the Faculty Senate, and two student representatives chosen from the Student Government Association. The Vice President for Academic Affairs, or her/his designee shall have a vote only in event of a tie.

1. The panel members shall conduct the business of the appeal in strict confidence, and in private. The meetings and deliberations of the panel shall be closed.
2. The panel members shall have access to the written appeals and each person involved in the grievance.
3. The panel decision shall be communicated in writing to the student, faculty member, College Dean and program director.
4. The decision of the grievance appeal panel must be submitted in writing by registered mail to both parties. This communication should include an opportunity for a member of the panel or the Vice President for Academic Affairs to debrief or otherwise provide further assistance to either party.
5. The decision of the grievance appeal panel is final.

STUDENTS CLASSIFIED AS “UNDECIDED”

Choosing a major is one of the most important, and sometimes difficult, decisions to make in college. Often students have a specific interest in a concentrated area, such as science or engineering, but are “undecided” as to which major to pursue. Gannon offers students the option to begin their studies while being classified as “Undecided.” This allows them to complete core courses without making a premature decision. Once a major is decided upon, and the student has received permission from the department, a Change of Major form (available in the Dean’s Office) must be completed and submitted to the respective Dean’s Office. All students must declare a major in order to graduate. No student may graduate as an “undecided” student.

Students classified as *Undecided* may earn no more than 24 credits in that classification. Upon completion of 24 credits the student must select a major and be accepted into that major or they will be removed by the Dean and placed into the Undeclared category and will be referred to the Academic Advising Center. A Change of Major form will be completed and processed by the advisor. The Registrar’s Office will be notified of any courses that may need to be dropped. The Registrar’s Office will remove advisor approval for registration until the student has successfully met with the AAC staff and has been advised according to the Undeclared requirements.

If permitted by the program, students who fail to meet minimum academic standards in their major program of study may be placed into an Undecided major for one semester to attempt to raise their GPA and return to their original major. If they remain academically ineligible for their original major after one semester in the Undecided category, they will be administratively moved to Undeclared status and the same process as described above will be followed.

The following is a list of Undecided classifications at Gannon:

- Education
- Business
- Computing
- Engineering
- Health Sciences
- Humanities
- Sciences

TRANSCRIPT POLICY

The student's authorization and written signature are needed to release a transcript. The student can request the transcript in person in the Registrar's office, can write a letter addressed to the Registrar's office, online or can FAX the request.

To order transcripts online

Gannon has authorized the National Student Clearinghouse to provide transcript ordering via the Web. You can order transcripts using any major credit card. Your card will only be charged after your order has been completed.

- To order an official transcript(s), login to the Clearinghouse secure site (www.studentclearinghouse.org). Click on orange tab on the right side and select 'Order or track a transcript.'
- The site will walk you through placing your order, including delivery options and fees. You can order as many transcripts as you like in a single session. A processing fee will be charged per recipient.
- Order updates will be emailed to you. You can also track your order online.

Official transcripts must be mailed directly from the Registrar's office to the party requested. All transcripts given directly to the student will be stamped 'Issued directly to the student'.

Students who need transcripts to submit unopened with applications should request that the transcript be issued to them in a sealed envelope. The transcript is stamped "Issued directly to the student," has the Registrar's signature and the school seal. The envelope is sealed and has the Registrar's signature. The student must submit the transcript in the unopened envelope with the application. If the envelope is opened it is no longer valid as an official transcript.

Transcripts are not released for students with financial holds.

Partial transcripts are not issued. Each transcript includes the complete academic record at Gannon University and work accepted from other colleges.

Official transcripts of credit earned at other institutions which have been presented for admission or evaluation of credit and have become a part of the student's permanent record in this office are not reissued or copies duplicated for distribution. Transcripts from other institutions must be official and received by Gannon University directly from the original institution(s). Copies issued to the students with the college seal will not be accepted. This also applies to high school transcripts.

Transferred credit is not added to the Gannon University transcript unless it is applicable toward a degree at Gannon University. Transfer grades are not put on the Gannon transcript.

ACCESS TO STUDENT RECORDS In accordance with the 1975 Family Educational Rights and Privacy Act, the University has established a policy concerning access to student records. The full policy is available upon request from the Registrar's Office. The following items are included here because of their general interest:

1. Grade reports, probation and suspension letters, and other correspondence are sent directly to all students at their home address.
2. Access to student records is permitted only upon receipt of a written release by the student.
3. Students may have access to parental financial records submitted in support of financial aid applications.
4. With certain exceptions, each student has access to his or her personal and academic records.
5. Students may request that directory information not be released to anyone.

WITHDRAWAL FROM THE UNIVERSITY

Students who find it necessary to withdraw from the University must fill out a withdrawal form available in the Student Success Center. Students can complete a temporary withdrawal (2 semesters or less) or a complete withdrawal. Students who withdraw for medical or mental health reasons must present appropriate documentation at the time of the withdrawal. These documents will be reviewed by the director of Gannon's Health Center or Counseling Services and could impact any refund as well as conditions for readmission to the University.

The withdrawal process includes an exit interview with staff from the Student Success Center, student's academic advisor, Cashier's office, Financial Aid office, the Registrar's office, and, when applicable, the Office of Residence Life, International office, Health and Counseling Center. Students must complete the withdrawal process within two working days from the date they start the process in the Student Success Center. Forms that do not reach the Registrar's office with all of the required signatures will be considered incomplete and the student will not be withdrawn from the University.

Failure to comply with this regulation may result in the assignment of a grade of 'F' for all courses in which the student is currently enrolled and possible separation from the University. The student may also forfeit any rights of readmission to the University. When students withdraw they should refer to the Academic Calendar for the last day to withdraw from a course in order to receive withdrawal (X) grades. Withdrawal after this date will result in 'F' grades unless permission is granted by the student's Academic Dean.

Every student receiving a federal grant and/or loan who completely withdraws officially or unofficially within the first 60% of the semester will be subject to a **Title IV Return of Federal Funds** review. This review will determine the portion of federal funds the student earned and the portion of federal funds the school must return to the Department of Education. **Please refer to the Refund Policy in the University catalog for complete details.**

Students that receive all F's for a semester, who did not formally withdraw, will be reviewed by the Financial Aid Administrator to establish the students' last date of attendance. If a student ceased attendance for all classes before 60% of the semester was over, that last date of attendance will be used. If a last date of attendance cannot be determined, the Financial Aid Administrator is required to process an "unofficial" withdrawal date using the mid-point of the semester to calculate unearned federal funds that must be returned to the appropriate federal aid program.

Students need to understand that, although they can withdraw from a semester with X grades, the Financial Aid Administrator must review and adjust federal aid disbursements made to any student receiving federal grants and/or loans based on their last date of attendance or unofficial withdrawal date. The student is responsible for any returned federal funds that results in a balance due on their student account. If payment is not made, the student will be liable for all reasonable collection costs, including attorney fees and other charges necessary for the collection of any amount not paid.

Special Programs

UNIVERSITY HONORS PROGRAM

ANN BOMBERGER, Ph.D., *Director*

The Gannon University Honors Program provides a challenging and supportive global educational experience for academically mindful, highly motivated students from a variety of backgrounds. Through coursework and co-curricular activities, Honors students engage in critical thinking, ethical reasoning, collaborative learning, research, service, and frequent oral and written communication. As a result, the honors program is a close community of socially responsible global citizens and leaders.

Vision Statement

Honors students will value knowledge in all areas of life while achieving distinction in their fields of study. They will be a diverse community that is prepared for leadership and service in their chosen professions and communities.

Additional Benefits

- Honors sections are smaller than non-honors sections. The classroom setting encourages close contact between students and teachers and facilitates students taking an active role in their learning.
- Honors students are eligible for additional study abroad scholarships.
- Some of Gannon's best professors teach in our program.
- Honors students travel to conferences, museums, and other cultural activities as part of the program.
- Students receive special recognition at the graduation exercises.
- Our students have priority registration.

Special Features

Student Advisory Board and the Student/Faculty Honors Committee

Students are actively involved in the governance of the program through the Student Advisory Board (SAB) and the joint faculty/student Honors Committee. The SAB makes recommendations on policy and is responsible for assisting the director in running the program. The board also oversees the committees that are responsible for providing a variety of social, service, and cultural events. The faculty/student Honors Committee makes curricular and long-term policy decisions.

Conferences and Travel

The Honors Program holds memberships in the National Collegiate Honors Council (NCHC) and the Northeast Region of NCHC. Students have participated in conferences sponsored by these organizations in New Orleans, Baltimore, Chicago, St. Louis, Niagara Falls, and Denver.

University Honors Center

The Honors Center functions as a hub for the activities sponsored by the program. It features a study lounge with personal computers, printers, a treadmill desk, couches, and a seminar room. The center is a comfortable place, conducive both to studying and socializing with fellow students and faculty members.

Application Requirements

Admission to the program is based on academic achievement and potential. The following criteria are considered:

- Essay
- High school grade point average of 3.7 weighted or higher
- Rigor humanities courses taken
- High school extracurricular activities or employment

Admission to University Honors for students already enrolled at Gannon University is based on an evaluation of:

- Cumulative Grade Point Average
- Faculty recommendations

To remain in good standing, students must:

- Maintain at least a 3.25 GPA each semester
- Watch a monthly video with updates
- Attend at least 5 events per year
- Complete service hours annually
- Participate in a committee freshman year

Recognition at Graduation**Honors Scholars**

At graduation students are designated as Honors Scholars if they

- have maintained good standing in the University Honors Program
- have earned 24 credits in honors courses
- have completed five hours of service per year through the honors program
- have EITHER taken six credits of a global language OR completed an additional 15 hours of service per year (for a total of 20 hours of service per year, 5 through the honors program).

Associate Honors Scholars

At graduation students are designated as Associate Honors Scholars if they

- have maintained good standing in the University Honors Program
- have earned 18 credits in honors courses
- have completed five hours of service per year through the honors program
- have EITHER taken six credits of a global language OR completed an additional 10 hours of service per year (for a total of 15 hours of service per year, 5 through the honors program).

SAINT MARK'S SEMINARY

Rev. Michael T. Kesicki, *Rector*

Rev. Nicholas J. Rouch, *Vice-Rector*

In cooperation with the Diocese of Erie, Gannon University offers a variety of academic degree programs to students training for the diocesan priesthood in the Formation Program of St. Mark's Seminary. The immediate aim of the college level formation for the candidate for the priesthood is to help him to mature as a liberally educated human person, committed to Christ and to the service of his neighbor.

Bishop Lawrence Persico, Ordinary of the Erie Diocese, responding to the aims and objectives of the United States Conference of Catholic Bishops, continues a tradition begun by the University's founder, Archbishop John Mark Gannon. The seminarian's academic life at the University is under the guidance of the seminary in the development of the human, spiritual, intellectual and pastoral dimensions of priestly formation.

College seminarians matriculate as full-time students of the University. The wide-range of academic programs enables the seminarians to have close contact with their peers and University professors.

Academic Requirements

- A. Seminarians must be full-time students in good standing at Gannon University in a bachelor’s degree program or in the two-year pre-theology studies program.
- B. While Philosophy remains a highly recommended major for preparation for graduate studies in theology, some other majors offered by Gannon University are deemed appropriate. The choice of an undergraduate major as well as a change from one to another must have specific approval of the St. Mark’s Faculty.
- C. Regardless of major, all seminarians beginning as freshmen are required to include in their four-year programs of study the following courses.
 - 1. Philosophy30 credits required as a minimum
 - Introduction to Philosophy (LPHI 131)
 - Philosophy of God (LPHI 233)
 - History of Medieval Philosophy (PHIL 273)
 - Logic (PHIL 210)
 - Philosophy of Knowledge (LPHI 235)
 - Philosophy of Ethical Responsibility (LPHI 237)
 - Introduction to Metaphysics (PHIL 350)
 - History of Ancient Philosophy (PHIL 271)
 - History of Modern Philosophy (PHIL 280)
 - History of Contemporary Philosophy (PHIL 286)

Total: 30 credits
 - 2. Theology12 credits
 - (a.) Foundations of Theology and Christian Morality (LTHE 101) 3
 - (b.) The Catholic Tradition (LTHE 371) 3
 - (c.) The Bible: An Introduction (LTHE 201) 3
 - (d.) Theology Elective (one course) 3

Total: 12 credits
 - 3. Latin12 credits
 - (a.) Introductory Latin I (LATN 111) 3
 - (b.) Introductory Latin II (LATN 112) 3
 - (c.) Intermediate Latin I (LATN 121) 3
 - (d.) Intermediate Latin II (LATN 122) 3

Total: 12 credits
- D. All students pre-register twice per year after consulting with the St. Mark Academic Advisor.
- E. All students must be full-time to a maximum of eighteen (18) semester hours unless specific approval for more than eighteen (18) hours or less than fifteen (15) hours is secured from the St. Mark’s Academic Advisor. A fifteen (15) hour load is the norm for seminarians.
- F. Students are not permitted to take late afternoon or evening classes without the specific approval of the St. Mark’s Academic Advisor. The normal time for all classes to be finished is 3:00 p.m.

Two Year Pre-Theology Program

A program of studies is designed for each man entering the two year pre-theology program. Consideration is given to his undergraduate degree and any graduate work which he has done and his needs in preparation for theological studies, especially with regard to the minimum hours of philosophy and theology.

Spiritual Formation

The Formation Program through seminary life at St. Mark's might best be described as both a place and a process for men to explore the possibility that Christ might be inviting them to make a lifelong commitment to priesthood. This decision cannot be made alone. It is the decision of the individual but it is also the decision of the Church. The individual comes together with others who understand and share in that search in a directed way called the Formation Program.

Information/Application

Inquiries for additional information and/or to apply for seminary status may be directed to:

Rector, St. Mark Seminary
P.O. Box 10397
Erie, Pennsylvania 16514-0397
Day Phone: (814) 824-1200
Evening: (814) 824-1201

Vocation Director
P.O. Box 10397
Erie, Pennsylvania 16514-0397
Day Phone: (814) 824-1202

LEARNING ABROAD

Gannon students have the opportunity to study abroad during the fall, spring, or summer semesters, or take short-term faculty-led travel courses for academic credit.

Gannon has established tuition exchange partnerships with the following universities:

- American University of Rome (Italy)
- Australian Catholic University (Australia)
- Hochschule Esslingen University of Applied Science (Germany) (Business and Engineering)
- Hochschule Osnabrück University of Applied Sciences (Germany) (Business and Engineering)
- Maria Curie-Skłodowska University (Poland) (MBA students only)
- Mary Immaculate College (Ireland)
- Osnabrück University (Germany)
- Pontificia Universidad Católica de Valparaíso (Chile)
- St. Edmund Hall University of Oxford (England)
- Université Catholique de Lille (France)
- Perrotis College (Greece)
- Loyola University Andalucia (Spain)

For those students accepted into these programs, tuition will be paid to Gannon; any university aid awarded to students will apply even though the student is studying abroad for the semester; all state and federal funding, as well as student loans, can be used toward tuition, room, board and fee expenses. Students who meet the minimum GPA requirement of 3.0 are eligible to apply for an additional Learning Abroad Scholarship.

Students have the opportunity to enroll in GIFT (Gannon: Inspired Faculty-led Travel) Courses and travel with faculty members while earning credits that fulfill Liberal Studies Core requirements as well as major and minor requirements and electives. Courses Offered on a rotating basis in the GIFT Program include:

- Global Project Management in Sweden*
- Leadership Seminar in Rome
- Occupational Therapy in Ecuador
- Fine Arts in France
- Occupational Therapy in Mexico
- Archaeological Excavation in Jordan*
- Tropical Marine Biology in the Bahamas*
- Leadership Seminar in Thailand*
- The Art of Film in Paris
- Spanish for Medical Professionals in Cuba*
- Climate Change in Iceland*
- Fine Arts in London
- Literature Studies in England and Wales
- Nursing in Cuba
- Leadership Seminar in Panama
- Field Zoology/Biology in Yellowstone National Park*
- International Sport, Wellness, and Recreation in Greece
- Psychology-based Leadership Seminar in Ireland
- Business Management in Germany
- Philosophy of Place in Cuyahoga Valley National Park
- Theological Implications of the Holocaust in Poland and the Ukraine*
- Theatre Performance and Production in Scotland
- History Without Borders in Bosnia, Hungary, and Croatia

* Students who participate in the GIFT Courses marked with an asterisk may receive a guaranteed scholarship of up to \$300.

Any student participating in a GIFT Course who meets the minimum GPA requirement of 3.0 is eligible to apply for an additional Learning Abroad Scholarship, even if they receive a guaranteed GIFT scholarship. Scholarship applications will be distributed to students after the courses begin.

Students who wish to study abroad in a location in which Gannon does not have a partner university may choose to study abroad through an Affiliate Provider. Students will not be able to use their Gannon scholarships or financial aid to offset the cost of the program, and will pay their tuition directly to the provider. However, student loans, and state and federal financial aid may be applied to Affiliate programs.

Affiliates include:

- American Institute for Foreign Study (AIFS)
- CIS Abroad
- Spanish Studies Abroad
- API Abroad
- Arcadia University

Students participating in Affiliate Programs who meet the minimum GPA requirement of 3.0 are eligible to apply for an additional Learning Abroad Scholarship.

Studying abroad is more than just paying to study outside the United States. It is learning about new traditions and cultures through cultural immersion, exploring your academic field in another country, and becoming a global citizen.

Imagine studying marine biology in the Bahamas, observing wildlife in their natural habitat at Yellowstone National Park, spending an entire semester in one of Australia's major cities, teaching English to students in Thailand, or wandering the ancient ruins of Rome's coliseum and Roman Forum during a semester in Italy. With Gannon, your possibilities abroad are endless.

Students interested in participating in Learning Abroad programs should visit www.gannon.edu/learningabroad to learn more about all of Gannon’s offerings, fill out an interest form and send it to studyabroad@gannon.edu.

SERVICE LEARNING

Many Gannon professors include service-learning assignments so that students can get hands-on experience that translates classroom lessons into “real world” settings. Students receive the benefit of rigorous and realistic challenges, while at the same time; community organizations receive the tangible benefits of the students’ work. For example, Gannon Nursing students conduct health screenings for residents of downtown senior apartment buildings, Accounting majors prepare income taxes in nearby community centers, English majors have written grants for neighborhood development, and Engineering students have designed improvements to medical equipment for shipment to international health clinics. There is an introductory-level service-learning assignment built into all First Year Seminars, and many upper-level courses, research projects, capstones, and international courses are enhanced with the service-learning pedagogy. Service-Learning supports the development of Gannon students, as expressed in the University’s mission to provide a value-centered education through socially relevant courses that prepare students for lifelong engagement in their communities.

Courses marked with the (Service-Learning) designation meet the highlighted criteria in this definition:

We refer to service-learning as a credit-bearing educational pedagogy for a course in which students participate in an organized service experience that meets identified community needs and engages the service in such a way as to gain further understanding of course content, the course objectives, a broader appreciation of the discipline, and an enhanced sense of social responsibility. Unlike extracurricular voluntary service, service-learning is a course-based service experience that produces the best outcomes when meaningful service activities are related to course material through reflection activities such as writing and small group discussions. Unlike practicum and internships, the experiential activity in a service-learning course is not exclusively skill-based within the context of professional education. (Bringle & Hatcher, 1996 p. 5)

Undergraduate Programs at Gannon University & Proposed Service-Learning Course Designations 2019-2020

College of Engineering and Business

| <i>Department</i> | <i>Designated SL Course</i> |
|-------------------------------------|---|
| Accounting | ACCT 431, BCOR 480 |
| Biomedical Engineering | BME 354, BME 308 |
| Business Administration | BCOR 480 |
| Computer Science | CIS 457, CIS 458 |
| Economics | BCOR 480 |
| Electrical and Computer Engineering | ECE 380, ECE 357 |
| Entrepreneurship | MKTG 400, BCOR 480 |
| Environmental Engineering | ENV 494/495, ENV 477/577, ENV 400/401, ENV 440, ENV 403 |
| Environmental Science | ENV 494/495, ENV 477/577, ENV 400/401, ENV 440, ENV 403 |
| Finance | BCOR 480 |
| Healthcare Management | BCOR 480 |
| Industrial Engineering | IE 310, IE 495 |

| | |
|--------------------------------|--|
| Information Systems | CIS 457, CIS 458 |
| International Management | BCOR 480 |
| Management | SCMG 340, BCOR 480 |
| Marketing | MKTG 399, MKTG 400, MKTG 420, BCOR 480 |
| Mechanical Engineering | ME 354 |
| Risk Management and Insurance | RISK 321, RISK 499, BCOR 480 |
| Software Engineering | CIS 457, CIS 458 |
| Sport Management and Marketing | SMGT 480, BCOR 480 |
| Supply Chain Management | SMCG 340, SMCG 425, BCOR 480 |

Undergraduate Programs at Gannon University & Proposed Service-Learning Course Designations 2019-2020

College of Humanities, Education and Social Sciences

| <i>Department</i> | <i>Designated SL Course</i> |
|-----------------------------------|--|
| Advertising Communication | COMM 402 |
| Criminal Justice | CRJS 350; CRJS 261 |
| Digital Media | COMM 356 |
| English | ENGL 206, ENGL 211, ENGL 356, ENGL 211, ENGL 358 |
| Global Languages and Cultures | |
| History | HIST 105, HIST 379 |
| Journalism Communication | COMM 356 |
| Legal Studies | |
| Mortuary Science | |
| Philosophy | LPHI 255 |
| Political Science | POLI 111, POLI 342 |
| Psychology | LBST 383/PSYC 480 |
| Public Relations | COMM 402 |
| Public Service and Global Affairs | |
| Social Work | SCWK 212 |
| Theater Design and Technologies | ARTS 360-376 |
| Theology | THEO 346, THEO 347, THEO 455 |
| Education | |

Liberal Studies Core Curriculum

LIBERAL STUDIES CORE – THE *HEART* OF THE “ONE GANNON STUDENT” EDUCATIONAL EXPERIENCE

The Liberal Studies Core is both the heart of the Gannon University educational experience and a reflection of Gannon University’s commitment to the development of “One Gannon Student,” a model for comprehensive and holistic education and preparation for a productive vocational and avocational life. The Liberal Studies core offers our undergraduates a defined, integrated, shared experience within their academic experience.

Courses in essential history and communication modes and strategies, along with the university’s Catholic Identity in theology and philosophy, form the foundation of the Core. Integrated into the curriculum are explorative and experiential investigations into disciplines essential for appreciation and engagement of all persons, including literature and social sciences, and applied aesthetic, mathematical, and scientific reasoning. Binding the entire Liberal Studies Core curriculum are the formative core classes of seminars and senior capstone, inviting students to concretize their learning through integration of their major field(s) with their liberal arts studies.

The Liberal Studies Core shares the Gannon University Undergraduate Student Learning Outcomes (the educational goals the university hopes to encourage every undergraduate student to achieve, regardless of major field of study):

1. Students apply themes of Catholic Social Teaching and the dimensions of the Catholic Intellectual Tradition.
2. Students demonstrate proficiency in knowledge and skills in academic disciplines.
3. Students communicate effectively through various means.
4. Students demonstrate aesthetic, quantitative, and scientific reasoning.
5. Students synthesize their academic learning with learning outside the classroom.
6. Students demonstrate a holistic understanding of wellness.
7. Students apply value-centered leadership skills.
8. Students demonstrate intercultural competence and self-awareness.
9. Students demonstrate social responsibility.

Overview of the Liberal Studies Core Curriculum

The Liberal Studies Core Curriculum consists of three primary components:

- **Foundational Core** – includes Theology, Philosophy, Ethics/Moral Responsibility, History, and Written/Oral communication, which form solid groundwork for advanced study in areas of majors and minors in all fields.
- **Developmental Core** – includes First-Year Seminars, Leadership Seminars and Capstone Courses which integrate skills and knowledge from all academic disciplines and co-curricular experiences
- **Integrative Core** – includes Fine Arts, Literature, Social Science, Mathematics, and Science where advanced reasoning, integration, and synthesis of knowledge and competencies concretize the undergraduate experience.

Foundational Core

- 6 credits: Theology
- LTHE 101/Foundations of Theology and Christian Morality
 - LTHE 201/The Bible: An Introduction
- 6 credits: Philosophy
- LPHI 131/Introduction to Philosophy
 - Second Course from Philosophy II Series Options (see list below)
- 3 credits: Philosophy or Theology
- Either LPHI 237/Philosophy of Ethics or LTHE Theology III option (see list below)
- 3 credits: History
- LHST 111/History Without Borders
- 6 credits: Writing
- LENG 111/College Composition
 - LENG 112/Critical Analysis and Composition
- 3 credits: Speech
- SPCH 111/Fundamentals of Speech, or SPCH 113/Human Communication & Society, or SPCH 115/Presentational Strategies (or met through Liberal Studies and School of Communication and the Arts approved substitution)

Developmental Core

- 2 credits: First-Year Seminar (may be met in major)
- 1 credit: Leadership Seminar (may be met in major)
- 3 credits: Senior Capstone (LBST 383 or may be met in major)

Integrative Core

- 3 credits: Fine Arts (see list below or may be met within major)
- 3 credits: Literature (see list below or may be met within major)
- 3 credits: Mathematics (see list below or may be met within major)
- 3 credits: Science (see list below or may be met within major)
- 3 credits: Social Science (see list below or may be met within major)

Fine Arts Series Options

| | | | |
|-----------|-----------------------------|----------|--|
| ARTS 213 | Issues in Music History | LFIN 251 | The Art of Listening: Music and Society |
| ARTS 216 | Music in the Theatre | | |
| ARTS 260 | Music and the Media | LFIN 252 | Women in Photography |
| ARTS 385 | American Architecture | LFIN 253 | The Art of Seeing: Creative Visual Arts |
| EDCR 302 | Expressive Arts | | |
| ENGL 250 | Introduction to Photography | LFIN 254 | Art of Film |
| LFIN 250 | Theatre and Culture | LFIN 256 | American Popular Music |
| GLOBL 284 | German Culture Through Film | LFIN 257 | The Creative Human Spirit: An Appreciation of the Artistic Impulse |
| GLOBL 285 | Musics of Latin America | | |
| | | LFIN 258 | Literature and Film |

Literature Series Options

| | | | |
|----------|-----------------------------|----------|----------------------------------|
| ENGL 352 | Modern/Contemporary Drama | LENG 251 | Literature and the Healing Arts |
| LENG 241 | Prose Literature | LENG 252 | Reading Autobiography |
| LENG 243 | Drama | LENG 253 | Introduction to World Literature |
| LENG 245 | Poetry | MLED 201 | Adolescent Literature/Practicum |
| LENG 247 | Introduction to Literature | | |
| LENG 249 | Women Writers | | |
| LENG 250 | Fantasy and Science Fiction | | |

Philosophy II Series Options

| | | | |
|-----------------------|--------------------------------|----------|---------------------------------------|
| LPHI/ PHIL 233 | Philosophy of God | PHIL 248 | Women in Western Philosophy |
| LPHI/ PHIL 235 | Philosophy of Knowledge | PHIL 250 | Comparative World Philosophy |
| LPHI/ PHIL 239 | Philosophy of Science | PHIL 271 | History of Ancient Philosophy |
| LPHI/ PHIL 240 | Philosophy of Education | PHIL 273 | History of Medieval Philosophy |
| LPHI 246 | Philosophy of Mind | PHIL 280 | History of Modern Philosophy |
| LPHI 255 | Philosophy of Place | PHIL 286 | History of Contemporary Philosophy |
| PHIL 210 | Logic | PHIL 290 | Philosophy & Law |
| PHIL 225/ SPCH 225 | Philosophy of Communication | PHIL 345 | Philosophy of History |
| LPHI 310 | Environmental Ethics | PHIL 350 | Introduction to Metaphysics |
| LPHI 320 | Applied Bioethics | PHIL 365 | Modern Existentialism |
| LPHI 330 | Critical Thinking' | PHIL 383 | American Philosophy |
| LPHI 325 | Health Care Ethics | MGMT 360 | Ethical & Social Responsibility |

Theology III Series Options

| | | | |
|----------|--|----------|--|
| LTHE 301 | Faith, Revelation and Theology | LTHE 354 | Race and Theology |
| LTHE 311 | Theology of Jesus Christ | LTHE 358 | God and Radical Evil |
| LTHE 321 | Theology of Church | LTHE 359 | Good and Evil: Reconciling the Holocaust |
| LTHE 323 | Vatican II and the Catholic Tradition | LTHE 361 | Hebrew Bible I: Torah |
| LTHE 325 | Women and the Pilgrim Church | LTHE 362 | Hebrew Bible II: Prophets |
| LTHE 327 | American Catholicism | LTHE 363 | Hebrew Bible III: Writings |
| LTHE 331 | Theology of Christian Worship | LTHE 365 | The Synoptic Gospels |
| LTHE 333 | Theology of Marriage | LTHE 367 | The Theology of John and Paul |
| LTHE 341 | The Life and Thought of Cardinal Newman | LTHE 368 | Archaeology and the Bible |
| LTHE 342 | God in the World: The Life, Thought, and Theology of Carl Rahner | LTHE 371 | The Catholic Tradition |
| LTHE 347 | Protestant Christianity in the Twenty-First Century | LTHE 372 | Jesuits: Saints or Scoundrels |
| LTHE 351 | Catholic Moral Theology | LTHE 373 | The Protestant Tradition |
| LTHE 353 | Theology and Cyberspace | LTHE 377 | Ancient Christianity from Jerusalem to Rome |
| | | LTHE 381 | Christianity and World Religions: Western Tradition |
| | | LTHE 383 | Christianity and World Religions: Eastern Tradition |

Social Science Series Options

| | | | |
|-------------------|---|----------|--|
| ARCH 201 | Archeology and History of Ancient Near East | POLI 111 | U.S. Government and Politics |
| ARCH/ HIST 302 | Becoming Human-Becoming the World | POLI 122 | Public Policy Analysis |
| CRJS 241 | Cybercrime and Society | POLI 133 | Introduction to International Relations |
| BCOR 111 | Principles of Microeconomics | PSYC 111 | Introduction to Psychology |
| BCOR 112 | Principles of Macroeconomics | SCWK 212 | Social Problems, Services, and Solutions |
| ECON 285 | Project Economics | SCWK 221 | Human Behavior Social Environment I |
| EDCR 101 | Psychology of Learning and Teaching | SOCI 110 | Basic Sociology |
| GLOBAL 280 | The Cultures of Mesoamerica | SOCI 120 | Individual, Culture, and Society |
| GLOBAL 283 | France and the Francophone World | SOCI 292 | Cultural Anthropology |
| HIST 110 | Foundations of Western Heritage | | |

Science Series Options

| | | | |
|----------|--|----------|--|
| ARCH 202 | Archaeology Methods and Lab | CHEM 121 | Introduction to Nanotechnology |
| BIOL 103 | Environmental Issues | CHEM 166 | Issues in Science and Technology |
| BIOL 383 | Tropical Marine Biology | ENG 201 | Engineering and Biological Wonders of Panama |
| CHEM 102 | Introduction to Organic and Biochemistry | PHYS 101 | Concepts in Physics |
| CHEM 103 | Chemistry of Life 1 | PHYS 102 | Introduction to Astronomy |
| CHEM 111 | General Chemistry 1 | | |

Mathematics Series Options

| | | | |
|----------|-------------------------------|----------|--------------------------------|
| CRJS 360 | Criminal Justice Statistics | MATH 115 | Business Calculus |
| MATH 103 | Quantitative Literacy | MATH 135 | Pre-calculus |
| MATH 105 | Fundamentals of Mathematics | MATH 140 | Calculus 1 |
| MATH 110 | Mathematics in Human Progress | MATH 141 | Calculus 2 |
| MATH 111 | College Algebra | MATH 213 | Applied Statistics |
| MATH 112 | Trigonometry | PSYC 211 | Psychological Statistics 1 |
| MATH 114 | Business Algebra | SOCI 351 | Statistics for Social Sciences |

COURSE DESCRIPTIONS

For descriptions of courses without a Liberal Studies “L” designated prefix, consult the school/department/program course descriptions.

First-Year Seminar

The First-Year Seminar is a two-credit discussion/experience based course intended to orient new students to Gannon University, to introduce the Liberal Studies Core, to assist in transition to university learning and teaching methods, and to encourage development of the academic, personal, social, and spiritual aspects common to the “One Gannon Student” experience. Each seminar is unique with diverse learning experiences, depending on the instructor and program sponsoring the course, though they share common learning objectives. NOTE: First-year students are expected to complete a First-Year seminar during their first semester at Gannon. If not, the student must complete the requirement prior to their sophomore year.

First-Year Seminar Options

| | | | |
|----------|--------------------|----------|--------------------|
| BCOR 100 | First-Year Seminar | LHPS 101 | First-Year Seminar |
| BIOL 100 | First-Year Seminar | LIBR 100 | First-Year Seminar |
| CIS 103 | First-Year Seminar | MATH 100 | First-Year Seminar |
| COMM 161 | First-Year Seminar | NURS 150 | First-Year Seminar |
| CRJS 108 | First-Year Seminar | OCCT 108 | First-Year Seminar |
| EDCR 104 | First-Year Seminar | PHAS 100 | First-Year Seminar |
| ENG 100 | First-Year Seminar | PSGA 100 | First-Year Seminar |
| ENGL 100 | First-Year Seminar | PSYC 101 | First-Year Seminar |
| FRSH 110 | First-Year Seminar | SPRT 101 | First-Year Seminar |
| HIST 100 | First-Year Seminar | THEO 100 | First-Year Seminar |
| LEGL 100 | First-Year Seminar | UNDL 100 | First-Year Seminar |
| LHES 101 | First-Year Seminar | | |

Leadership Seminar

The Leadership Seminar is a one-credit course that introduces students to various models of leadership, including a repertoire of leadership skills and means of using those skills responsibly in the various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for students' leadership development as reflected in this course. Each seminar is unique with diverse learning experiences, depending on the instructor and program sponsoring the course, though they share common learning objectives. NOTE: The Leadership Seminar is to be taken during the end of the sophomore/ beginning of the junior year. Students are expected to have completed their Leadership Seminar requirement prior to the beginning of their senior year.

Leadership Seminar Options

| | | | |
|----------|--------------------|----------|------------------------|
| BCOR 260 | Leadership Seminar | LHES 241 | Leadership Seminar |
| COMM 240 | Leadership Seminar | LHPS 240 | Leadership Seminar |
| EDCR 240 | Leadership Seminar | MCNR 240 | Leadership in Research |
| ENG 300 | Leadership Seminar | NURS 320 | Leadership Seminar |
| ENGL 240 | Leadership Seminar | OCCT 208 | Leadership Seminar |
| HIST 299 | Leadership Seminar | PHAS 300 | Leadership Seminar |
| LCEB 240 | Leadership Seminar | PSGA 300 | Leadership Seminar |
| LHES 240 | Leadership Seminar | | |

Senior Capstone Seminar

The Liberal Studies Core culminates in a capstone seminar which integrates the student's major field of study with the Liberal Studies program outcomes. The Capstone Seminar shares culminating and integrative learning experiences which facilitate integration of all knowledge and competencies gained during the undergraduate experience, including major courses, Liberal Studies Core courses, and co-curricular activities and experiences. Each Capstone Seminar is distinctive depending on the course content and instructor. NOTE: The Capstone Seminar is to be taken during the senior year and must be completed prior to graduation.

Senior Capstone Seminar Options

| | |
|--------------------|--|
| ARTS 400 | Senior Seminar and Thesis |
| BCOR 480 | Business Policy |
| CIS 457/CIS 458 | Senior Design |
| COMM 400 | Senior Seminar and Thesis |
| CRJS 480/LBST 383 | GIS & Spatial Justice |
| CRJS 495 | Criminal Justice Capstone |
| ECE 357 | Senior Design |
| EDCR 401 | Professional Seminar |
| ENGL 480/LBST 383 | Gender & Rationality |
| ENV 480/LBST 383 | Climate Change-Iceland (Trip) |
| GERO 400 | Death, Dying, and Bereavement |
| GLOBL 480/LBST 383 | Global Cultures Through Film |
| GOCCT 640 | Clinical Reasoning Seminar |
| GPHAS 601 | Pre-Rotation Lectures Series |
| HIST 480/LBST 383 | Global Issues |
| HIST 481/LBST 383 | History of Medicine |
| HIST 482/LBST 383 | Age of Genocide |
| HIST 483/LBST 383 | Problem From Hell: Age/Genocide |
| HIST 484/LBST 383 | Good & Evil Recon-Hlct/Trip |
| LBST 383 | Senior Seminar |
| ME 354 | Senior Design |
| NURS 404 | Nurse Power Politics |
| PHIL 400 | Honors Seminar in Philosophy |
| POLI 480/LBST 383 | Global Migr, Population & Health |
| POLI 481/LBST 383 | Global Issues: European Union |
| PSYC 480/LBST 383 | Psychology of Poverty |
| PSYC 481/LBST 383 | Psyc & the Real World |
| THEO 480/LBST 383 | Medical Ethics |
| SCWK 400 | Social Work Senior Integrating Seminar |

COURSE DESCRIPTIONS

Course descriptions without a Liberal Studies prefix (LXXX) can be found under their school/department/program.

Liberal Studies Component of Two Year Programs

| | |
|--|-------------------------|
| <i>First Year Seminar</i> | 2 credits |
| LENG 111: College Composition | 3 |
| LTHE 101: Foundations of Theology and Christian Morality | 3 |
| LPHI 131: Introduction to Philosophy | 3 |
| SPCH 111: Public Speaking | 3 |
| Social Science | 3 |
| | Total 17 credits |

Liberal Studies Component of Next Step Program

Students admitted to Gannon University from another institution with an Associate's degree, Bachelor's degree, or equivalent international degree will be required to complete the following Liberal Studies Core courses:

| | |
|--|-----------|
| LTHE 101: Foundations of Theology and Christian Morality | 3 credits |
| LPHI 131: Introduction to Philosophy | 3 |
| LENG Literature Series | 3 |
| LFIN Fine Arts Series | 3 |
| Leadership Seminar | 1 |

| | |
|---|-------------------------|
| LPHI Philosophy II series OR LTHE Theology III Series | 3 |
| Senior Capstone Seminar (LBST 383 or equivalent) | 3 |
| | Total 19 credits |

Students may, with the approval of the Director of Liberal Studies, transfer courses equivalent to requirements of the Liberal Studies Core.

Students who have received an Associate Degree from Gannon University must fulfill all Liberal Studies Core requirements in order to graduate with a Bachelor's Degree, and do not qualify for the Next Step Program.

Liberal Studies/LBST 383: Senior Seminar

The Liberal Studies Program includes an Integrating Seminar to be taken in the senior year. The primary objective of the seminar is to provide the student with an opportunity to integrate the concepts and methodologies presented in earlier Liberal Studies courses. *3 credits*

Liberal Studies/LCEB 240: Leadership Seminar

The Leadership Seminar introduces students to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in the various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for students' leadership development as reflected both in this course. *1 credit*

Liberal Studies/LHST 111: History Without Borders

The most important ideas, issues, problems, and developments that mark the changing fortunes of the West's interaction with the world from the Seventeenth Century to the present. *3 credits*

Liberal Studies/LENG 111: College Composition

The principles of logic, rhetoric, and language and their use in written discourse. Application of these theories to numerous reading and writing assignments. Much attention to basic writing skills. *3 credits*

Liberal Studies/LENG 112: Critical Analysis and Composition

Development of the reading, research, and writing skills needed to use library resources to solve problems in a variety of disciplines, and relate these solutions to appropriate audiences. Prerequisite: Liberal Studies/LENG 111 *3 credits*

Liberal Studies/LENG 241: Prose Literature

This course helps students develop an appreciation, understanding and evaluation of prose literature as it reflects human experience in diverse cultural contexts. Prerequisites: Liberal Studies/LENG 111, 112 *3 credits*

Liberal Studies/LENG 243: Drama

This course helps students develop an appreciation, understanding and evaluation of drama as it reflects human experience in diverse cultural contexts. It includes an examination of tragedy, comedy, and tragicomedy from their cultural origins to the present. Prerequisites: Liberal Studies/LENG 111, 112 *3 credits*

Liberal Studies/LENG 245: Poetry

This course helps students develop an appreciation, understanding and evaluation of poetry as it reflects human experience in diverse cultural contexts. Prerequisites: Liberal Studies/LENG 111, 112 *3 credits*

Liberal Studies/LENG 247: Introduction to Literature

This course helps students develop an appreciation, understanding and evaluation of literature as it reflects human experience in diverse cultural contexts. The course focuses on the essential elements of prose, drama, and poetry. Prerequisites: Liberal Studies/LENG 111, 112 *3 credits*

Liberal Studies/LENG 249: Women Writers

This course helps students develop an appreciation, understanding, and evaluation of literature written by women as it reflects women's experiences in diverse cultural and historical contexts. The course focuses on the essential elements of prose, drama, and poetry.

Prerequisites: LENG 111, LENG 112

3 credits

Liberal Studies/LENG 250: Fantasy and Science Fiction

This course enables students to develop an appreciation and understanding of fantasy and/or science fiction literature and its relationship to human experience in a variety of historical periods and/or cultural contexts. The class will also explore the differences among science fiction, fantasy literature, and other types of literature, like magical realism, that contain fantastic elements. Selected texts vary but will always include a mix of older and contemporary literature, as well as authors of different genders, ethnic backgrounds, and nationalities.

3 credits

Liberal Studies/LENG 251: Literature and the Healing Arts

Literature and the Healing Arts is an interdisciplinary course that uses literature as a means for examining humanitarian issues related to illness and the practice of medicine. Poetry, fiction, memoir, and creative nonfiction written by doctors, nurses, and patients provide the framework for exploring the health care worker-patient relationship and its accompanying moral and ethical issues, historical approaches to healing and their implications for modern medical practices, the effects of illness and disease on the individual's sense of identity and personhood, cultural, racial, and ethnic dimensions of patients and health care, and the emotional and mental challenges of health care workers. This course will benefit students planning careers in medicine, nursing, medical technology, or health administration, but it will also appeal to students of any major with interests in excellent literature or the implications of health care for themselves or their families.

3 credits

Liberal Studies/LENG 252: Reading Autobiography

Students in this course will explore "autobiography" (as literally "self-life-writing") in a variety of forms. More specifically, students will investigate the cultural and ethical implications of self-life-writing as it has evolved in the past fifty years. Beginning by looking at traditional self-life-writing and ending with a survey of self-life-writing in the digital age, students in the course will analyze, interpret, and evaluate the cultural self-locating performed by autobiographical subjects.

3 credits

Liberal Studies/LENG 253: Introduction to World Literature

The course is designed to introduce students to diverse forms and content of literature emanating from various parts of the world. Students will see the beauty, sadness, and hurt, in the works of famous world writers. Through these readings students will get to know the amazing flavors and colors of the cultural diversity present around us. Students will also try to contextualize literary works in terms of the history, ideology, and social structures, from which they emanate. Students will see how particular incidents of history and ideological positions resist, subvert, and also create dominant discourses through literature. In short, students will know the world through literature in this course.

3 credits

Liberal Studies/ARTS 213: Issues in Music History

This course provides an in-depth study of the interactions between European and American musical life and gender. Students will gain an understanding of the changing ideas of gender roles and performance and how these work together with the development of musical style in various periods. This course explores how women acted as patrons in early music, gender performance, and male vs. female composers.

3 credits

Liberal Studies/ARTS 216: Music in the Theatre

Examines the role of music as an inherent element of drama. The course surveys various forms of musical and dramatic expression and their application in theatrical productions.

3 credits

Liberal Studies/ARTS 260: Music and Media

This course explores the interaction between music and various forms of media. Students in this course will learn how music enhances visual media forms such as film, television, video games, the internet, etc. Through active participation, listening, and viewing, students will understand how creators of media utilize music for both aesthetic and commercial purposes. *3 credits*

Liberal Studies/LFIN 250: Theatre and Culture

An exploration of theatre as an art form. Particular attention is given to examining the role of theatre in culture, focusing on the human being as the creator and consumer of the theatrical experience. *3 credits*

Liberal Studies/LFIN 251: The Art of Listening: Music and Society

The aim of this course is to guide the student to a more perceptive and meaningful enjoyment of the art of music. After having been acquainted with musical materials and procedures, the student will be introduced to selected works characteristic of different style periods. *3 credits*

Liberal Studies/LFIN 252: Women in Photography

This course examines photography by women in a variety of photographic genres and critical perspectives written by women about photography. Concentration will be on the historical, cultural, stylistic, and aesthetic aspects of selected works. *3 credits*

Liberal Studies/LFIN 253: The Art of Seeing: Creative Visual Arts

An introductory examination of the nature and history of the Visual Arts (i.e., painting, sculpture, and architecture). The goal of the course is twofold: (a) to increase the student's appreciation of the intrinsic elements found in works of art, and (b) to make the student more conscious of the various extrinsic conditions which have had an influence on the long history of the visual arts. Class sessions will be devoted to analysis of projected images of selected artworks. *3 credits*

Liberal Studies/LFIN 254: Art of Film

The components of film art, primarily as seen in short films; analysis of techniques and meaning of experimental, documentary, animation, and other types of film. *3 credits*

Liberal Studies/LFIN 256: American Popular Music

This course aims to introduce students to various types of popular music in America. Throughout the course, participants will consider the basic musical features of popular music as well as its significance in society and culture. Although the bulk of the course will explore music from the 20th century, earlier 19th century influences and popular music of the 21st century inform a significant part of the discussion. By focusing on genres that originated and gained popularity in the United States, the course will work to develop an understanding of the various factors that influence popular music, including changing technologies and social conditions. *3 credits*

Liberal Studies/LFIN 257: The Creative Human Spirit: An Appreciation of the Artistic Impulse

An exploration of creative, communicative, and symbolic nature of the fine arts. By exploring the purposes of art and how it functions, students learn to apply critical skills to art assessment and evaluation as well as appreciating how style impacts artistic experience. Particular attention is given to examining the role of art in diverse cultures, focusing on human beings as both the creators and consumers of artistic experiences. *3 credits*

Liberal Studies/LFIN 258: Literature and Film

Designed to give students skills in critical analysis of literary works (fiction and drama) and films adapted from or inspired by them. We'll explore the process involved in adapting a narrative from a print and/or stage medium to the film medium. We'll study works from a variety of genres and from a variety of critical perspectives. Students interested in pedagogy may also study methods of teaching literature/film pairings. *3 credits*

Liberal Studies/LPHI 131: Introduction to Philosophy

An introduction to the study of philosophy. Beginning with the dawn of philosophical awareness among the ancient Greek philosophers, the course surveys both traditional and modern approaches to the philosophical understanding of the human condition. *3 credits*

Liberal Studies/LPHI 233: Philosophy of God

An introduction to the philosophical study of religion, based largely on the tradition of Christian philosophy. Some of the topics include: the concept of God; the evidence for God's existence; the meaningfulness of religious language; analysis of God's attributes, such as omnipotence and omniscience; the possibility of miracles; life after death; the problem of reconciling divine foreknowledge and human freedom; and the problem of reconciling the existence of a loving God with the world's evils.

Prerequisite: LPHI 131 *3 credits*

Liberal Studies/LPHI 235: Philosophy of Knowledge

A study of the possibility and validity of human knowledge, together with the criteria of truth.

Prerequisite: LPHI 131 *3 credits*

Liberal Studies/LPHI 237: Philosophy of Ethical Responsibility

The subject matter of ethics is "the good life and how to live it." Students will examine a variety of influential approaches to ethics, and will gain skill in applying ethical theory both to practical ethical issues in daily life, and to some of the urgent ethical issues in contemporary society.

Prerequisite: LPHI 131 *3 credits*

Liberal Studies/LPHI 239: Philosophy of Science

A historical and philosophical survey of the various understandings of science and scientific method from ancient times to the present. Students will examine the role philosophy has played in formulating and critiquing models of scientific investigation, and will pay attention to the impact science has had in each historical period on religion, society, and views of human nature.

Prerequisite: LPHI 131 *3 credits*

Liberal Studies/LPHI 240: Philosophy of Education

A critical examination of the goals and methods of education, especially as they relate to ethics and politics. Readings will be drawn from historical philosophers, such as Plato, Aristotle, Rousseau and Dewey as well as contemporary philosophical analysis of educational institutions. *3 credits*

Liberal Studies/LPHI 246: Philosophy of Mind

This course is an introduction to the study of key theories of mind as related to the brain, mind, the body, self, and emerging artificial intelligence. *3 credits*

Liberal Studies/LPHI 255: Philosophy of Place

An overview of the philosophy of place which examines the topological and constructed development of environments. Philosophical categories of space, time, ontology, value theory, ethics and a sense of the global in relation to the local will be explored. Particular attention will be paid to the Catholic Social Teaching tradition's emphasis on private property and the universal destination of goods. A lot of walking and outdoor observation required. *3 credits*

Liberal Studies/LTHE 101: Foundations of Theology and Christian Morality

Rooted in the richness of the Catholic Intellectual Tradition, this course explores the religious experiences of the human person and their relationship to Christian moral living. *3 credits*

Liberal Studies/LTHE 201: The Bible: An Introduction

Students will explore the structure, theological themes, literary forms, and historical context of the Judeo-Christian Bible using methods of Biblical interpretation. *3 credits*

Liberal Studies/LTHE 301: Faith, Revelation and Theology

An investigation of the nature and methods of the science of Theology, with a study of the phenomenon of faith, of Revelation, and of Biblical, and Magisterial hermeneutics.

Prerequisites: LTHE 101 and LTHE 201 *3 credits*

Liberal Studies/LTHE 311: Theology of Jesus Christ

A consideration of the question, “Who is Jesus of Nazareth?”, and a study of the answers to that question presented by the Scriptures, ecclesiastical tradition, and classic and contemporary theology.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 321: Theology of Church

A study of the origins, nature, structure, and role of the Church, with special emphasis on the theological insights of Vatican II.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 323: Vatican II and the Catholic Tradition

A study of the historical, social, and theological dimensions of Vatican II and the ongoing process of Vatican II’s reception in the life of the Roman Catholic Church, the ecumenical community, and the world.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 325: Women and the Pilgrim Church

A study of women’s contribution in Scripture, Theology, and the Church from the Church’s origins to contemporary times.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 327: American Catholicism

Most American Catholics and practically all Americans of other denominations have very little knowledge of the growth and development of the Catholic community in the United States and the role American culture played in that development. Thus, this course seeks to impart to students a good overview of the history of the American Catholic community from colonial times to the present day. We will then interpret some of the key events, movements and developments of that history, which continues to shape the distinctive ethos of American Catholicism. Hence, this course will be an exercise in historical theology, or more precisely, historical ecclesiology. Students will be able to fully capture the meaning and richness of the American Catholic experience.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 331: Theology of Christian Worship

This course will introduce students to the theological foundations, historical evolution and practice of Christian worship over the course of the last twenty centuries. Though guided by Catholic insights into the nature and purpose of worship among followers of Jesus Christ, the course will be broadly ecumenical in its treatment of the variety of ways in which Christian communities have worshiped in the past and currently devote special times and places to the art of worshipping their God. The whole range of ways in which Christians have prayed in common—from the earliest, residential experiments, to the lavish liturgies housed in Europe’s great cathedrals, to the so-called “megachurch spectacles” of today—will be examined. A unique aspect of the course is the manner in which it will challenge groups of students to devise entirely new modes of worship of their own suited to contemporary needs and aspirations. These original worship services will form the basis of group presentations scheduled for the conclusion of the semester.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 333: Theology of Marriage

This course is a study of the Judeo-Christian understanding of marriage in its various aspects: biblical, theological, psychological, and canonical. It will concentrate on the following topics: defining marriage, God and marriage, marriage preparation, and issues surrounding marriage today.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 341: The Life and Thought of Cardinal Newman

This course will introduce students to the life and thought of one of the most significant Church figures of modern times. Blessed John Henry Newman was a towering figure in the 19th century and his influence continues to be felt today. Newman offers us an inspirational model of a life devoted to holiness; a mind alive to religious Truths and the spiritual/invisible world; a religious mind capable of vivid expression and powerful written arguments; and the dedication and courage to align one's life with the Truths that one confesses and the inner voice of one's conscience. Newman's example of persistent faith stands as a rebuke against contemporary fads of cultural and moral relativism. His defense of a true liberal education continues to serve as a warning against the negative effects of exclusive secularism, utilitarianism, and hyper-specialization.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 342 God in the World: The Life, Thought, and Theology of Carl Rahner

This course is a study of the life, thought, and theology of Jesuit theologian Karl Rahner. This course will explore Rahner's life as well as his thought and theology including: the human existence, God, Grace, Christology, the church, and various contemporary areas of theology.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 351: Catholic Moral Theology

A study of themes, concepts and teachings that embody the Catholic moral tradition. Students will identify and examine the Catholic Church's teachings on morality, derived from Scripture, Tradition, the Magisterium, and Christian experience. Students will also apply and evaluate these aspects of Revelation as they pertain to contemporary issues in the globalized world.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 353: Theology and Cyberspace

This course will explore the moral and ethical dimensions of various digital technologies that mediate between people and the external world from within the Christian theological tradition.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 354: Race and Theology

An examination of the intersections between Christian theology and race, exploring Christianity's role in creating the modern concept of race, the historical use of Christian theology both to defend and to challenge racially-discriminatory social policies, and recent attempts by Christian theologians to reclaim and reinterpret race-based concepts within constructive theological discourse.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 358: God and Radical Evil

An examination of the historical and theological development of the idea of God's relationship to evil. The analysis will include readings from Sacred Scripture, the early Christian Church and contemporary theologians, as well as traditional and modern atheists. Students will create their own theodicy (explanation on why evil exists in light of belief in a loving God) using the material from the course and their own experiences.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 359: Good and Evil: Reconciling the Holocaust

An examination of the reality of the Holocaust from multiple historical and spiritual perspectives that will challenge students to integrate this knowledge with theological inquiry concerning the existence of God. In May, faculty and students will travel to Poland and Prague (the Czech Republic) to visit Auschwitz and Treblinka death camps as well as Jewish and Polish cultural sites.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 361: Hebrew Bible I: Torah

This course is an examination of the first section of the Hebrew Bible. Known in most English translations as the Pentateuch, the Torah is composed of: Genesis, Exodus, Leviticus, Numbers, and Deuteronomy. In this course, students consider the formation of the literature, major literary forms and themes contained in the Torah.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 362: Hebrew Bible II: Prophets

This course is an introduction to the second of three bodies of literature within the Hebrew Bible: the Prophets. This collection of literature has had a tremendous influence and continues to inspire and speak with relevance now no less than when the scrolls were first composed. During this course, students will examine the background and composition of this collection of literature as well as the major themes contained in the documents. This course is divided into two sections: the Former Prophets and the Later Prophets.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 363: Hebrew Bible III: Writings

This course is an introduction to the literature of the third part of the Hebrew Bible: the Ketuvim, containing books that some will find familiar (Psalms) as well as books that, to many, seem strange and distant (Qohelet—Ecclesiastes). This course will examine the composition and history of the books, their themes, and the contribution the books make to the overall collection of Hebrew sacred text.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 365: The Synoptic Gospels

A course in biblical theology that studies the Synoptic Gospels and Acts of the Apostles so as to understand both the figure of Jesus, including his life, teaching, work, passion, death, resurrection, and ascension, and the development of the Christian community of faith.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 367: The Theology of John and Paul

A course in biblical theology that studies theological themes such as justification, eternal life, grace, covenant, faith and love, contained in the Letter of Paul, the Letter to the Hebrews, the Catholic Letters, the Gospel of John and the Book of Revelation. As a synthesis of the results of biblical exegesis, the overview of the New Testament writings draws out foundations for Trinitarian theology, Christology, Soteriology, Ecclesiology, Sacramental Theology, Christian Anthropology and Eschatology.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 368: Archaeology and the Bible

This course will offer a basic survey of the archaeological culture and history of the ancient Near East, including the Biblical Lands of Israel and Transjordan and contemporary societies in neighboring Mesopotamia and Egypt. The purpose of this particular course is specifically to introduce the student to a broad sweep of civilizations, peoples, and ancient lifeways, dating primarily to the Bronze and Iron Ages (4th – 1st millennia BCE roughly).

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 371: The Catholic Tradition

A study of some of the basic Roman Catholic beliefs concerning Jesus Christ, the Church, Worship and Sacrament.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 372: Jesuit: Saints or Scoundrels

An examination of the historical development and spirituality of the Society of Jesus (Jesuits) from St. Ignatius of Loyola to Pope Francis. The analysis will include a close reading of the Autobiography and Spiritual Exercises of the founder St. Ignatius, the contributions of former Superior General Fr. Pedro Arrupe, and the distinctively Ignatian pontificate of Pope Francis.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 373: The Protestant Tradition

A study of the development of Christianity with special emphasis on the Protestant Reformation and the thinking of significant contemporary Protestant theologians.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 374: Protestant Christianity in the Twenty-First Century

The Protestant Christianity course is an examination of contemporary Protestant expressions and the interface of religion, politics, and social movements. The course provides a context by investigating the nature of Protestantism beginning with its origins in the Reformation of the 16th century. The defining characteristics of the movement are examined, as are the ways in which these characteristics influenced subsequent church formation both in Europe and in North America. An overview of the different traditions within the Protestant movement provides the basis for the examination of several expressions of Protestantism within the Erie area.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 377: Ancient Christianity from Jerusalem to Rome

This course examines the origins of Christianity and traces its development and institutional expansion until the end of antiquity, when the Roman church of the western Mediterranean began to resemble the Catholic Church. Central themes include the diversity of early Christian traditions, theological controversy in the service of unity, and the effects of changes in intellectual trends on ordinary people.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 381: Christianity and World Religions: Western Tradition

This course will consider the teachings of the monotheistic world religions (Christianity, Judaism, Zoroastrianism, Islam) in the context of Christian belief, emphasizing both the openness of a post-conciliar Catholicism to insights from other faiths, points of similarity in beliefs and in practice between Christianity and other religions, and also the distinctiveness of different religious traditions.

Prerequisites: LTHE 101 and LTHE 201

3 credits

Liberal Studies/LTHE 383: Christianity and World Religions: Eastern Tradition

The course will consider the teachings of the South and East Asian world religions (Hinduism, Buddhism, Confucianism, Taoism), as well as primal (pre-literate) religions, in the context of Christian belief, emphasizing both the openness of a post-conciliar Catholicism to insight from other faiths, points of similarity in beliefs and in practice between Christianity and other religions, and also the distinctiveness of different religious traditions.

Prerequisites: LTHE 101 and LTHE 201

3 credits

MINOR IN INNOVATION & CREATIVITY

KURT HERSCH, MBA, *Assistant Teaching Professor*

The Minor in Innovation & Creativity has been developed in response to a growing recognition of the importance of developing in students the skills, attitudes and mindsets that will allow them to address the complex problems of our society. Creativity and innovation have emerged over the past decade as essential to success in our rapidly changing world.

The Minor in Innovation & Creativity has been constructed to develop the key elements of creativity through a series of courses in which students will be asked to question respectfully, think divergently, and act collaboratively. As students work their way through these courses, they will be given opportunity to grow creative thought into actionable innovation. Creativity has been seen as the fuel of innovation, but innovation itself requires particular micro- and macro-environments that are fueled by interdisciplinary collaboration, distributed reasoning, planned failure, creativity modeling, and personal reflection, which will serve as the thread which ties the courses in the minor together.

The 15-credit MIC minor requires completion all of the following courses:

Minor in Innovation & Creativity (15 credits)

Take the following six courses

MIC 201 The Launch (1 credit)

MIC 205 The Pitch (3 credits)

MIC 301 The Lore (3 credits)

MIC 305 The Labyrinth (3 credits)

MIC 310 The Prototype (3 credits)

MIC 401 The Blastoff (2 credits)

MIC COURSE DESCRIPTIONS

MIC 201: The Launch

Creativity is serious business. Whether in the not-for-profit or public or business sector, organizations increasingly need people who understand the creative process, who know how to manage creative professionals and who develop an organizational climate that fosters innovation. Students will be introduced to several creative problem solving methodologies that complement traditional organizational processes and systems. Using a heavy-dose of experiential exercises, paired with readings, case examples, discussions and challenging team projects, students explore and apply the principles of creativity and innovation in interdisciplinary teams further developing the ability to identify, recruit, cultivate, manage, retain and collaborate with other creative people.

Prerequisite: Sophomore standing

1 credit, Fall

MIC 205: The Pitch

Everyone loves a good story—and every good story requires a great storyteller. The Pitch is a course that provides students with multiple opportunities to design, write and deliver stories created to inform, persuade and entertain. Students will be assessed on the creative storytelling process, including the research, synthesis and delivery of information in a rhetorical strategy particular to speech communication. Special emphasis will be given to teamwork strategies and public presentations. “The Pitch” or idea/product promotion (as a persuasive communication event) supported by audience analysis and persuasive strategies will be part of the final presentation. This course satisfies the Liberal Studies Speech requirement.

Prerequisite: MIC 201

3 credits, Spring

MIC 301: The Lore

Creators and innovators hold “rock star” status in the minds of many. Why? It’s not only because they’ve given the world a work of art or a life-changing invention, but also because of the way they’ve lived. The lives of creators and innovators often involve sacrifice, failure and strict discipline. They order their lives against the grain in order to imagine the world around them being different, better. This course will examine not only what is gained but also what is lost in the process of this imagining. The course will move from an initial examination of why art and innovation are necessary to an investigation of the American tradition of success being linked to individualism and the idea of the self-made person; the course will then transition into an exploration of the lives of famous historical and fictional innovators from a variety of cultures. Along the way, students will consider the role of collaborative creativity and “data-based” creativity. This course satisfies the Liberal Studies Literature requirement.

Prerequisite: MIC 201, LENG 111, LENG 112

3 credits, Fall/Spring

MIC 305: The Labyrinth

Creators and innovators are explorers, dedicated to navigating uncharted pathways in the mind. The 21st century requires outside-the-box thinking, values innovators, and seeks creators. Although we cherish and encourage creativity, we are still learning its inner mechanisms, as well as how to cultivate, employ and navigate it. We can see creativity as a problematic but crucial virtue, as a means of productivity that is experienced as child-like play, as a window into what makes human beings so distinct and as a means to insight into reality and ethical flourishing. However, the more we work to understand creativity, the more creativity shakes up neighboring paradigms about ourselves and reality. The examination of the labyrinth of creativity provides a journey into the more philosophical sides of such topics as insight, virtue, happiness, work, education and the mind. Examining the seed of creativity—imagination—also provides labyrinth-like journeys into the more philosophical sides of perception, reasoning and learning. Let *The Labyrinth* be a tour-guide into the philosophical undertow of creativity and maybe we could foster some newer insights into ourselves and reality. This course satisfies the Liberal Studies Philosophy II requirement.

Prerequisite: MIC 201, PHIL 131

3 credits, Fall/Spring

MIC 310: The Prototype

Paper, Clay, Cardboard, String, Pixels and Metal are “such stuff as dreams are made on.” Prototypes are the visual explanation of a possible design solution. Creators enrolled in this course will be using the principles of Design Thinking to focus on the process and production of prototypes. The course will provide opportunities for the student to build several scalable artifacts for their portfolio use. Prototype development, build, testing and feedback will be part of the final presentation process. This course also satisfies the Liberal Studies Fine Arts requirement.

Prerequisite: MIC 201, MIC 205, MIC 301, MIC 305

3 credits, Spring

MIC 401: The Blastoff

The blastoff is the point in a rocket’s launch when it finally leaves the ground. You may think this is the end of your journey, but it’s actually the beginning. In this course, you will take everything you’ve learned in the previous Minor in Innovation and Creativity (MIC) courses and apply it. It could be to solve some organization’s challenging problem, create a new product/service or start a non-profit. Regardless, you will apply your knowledge and passion to creating something great with a team of like-minded creators and innovators through a series of mini-project “sprints” leading up to one amazing, final project that will be one of the highlights of your creative journey. So buckle up!

Prerequisite: MIC 201, MIC 205, MIC 301, MIC 305, MIC 310

2 credits, Fall

College of Engineering and Business

KARINNA VERNAZA, PH.D., *Dean*

AMY DOOLAN, DBA., *Associate Dean, Dahlkemper School of Business*

SUSANTHA HERATH, PH.D., *Associate Dean, School of Engineering and Computing*

The College of Engineering and Business (CEB) is composed of the School of Engineering and Computing and the Dahlkemper School of Business. The curriculum of each program builds upon coursework to develop strong analytical skills and emphasizes the application of theory and technology to problem solving in industry and society. Graduates have the necessary knowledge, skills, and values to compete in a global market. All the programs within the college build upon the mission of Gannon University and provide the foundation for life-long learning.

Mission Statement

The College of Engineering and Business prepares our students to be leaders by teaching theory, problem-solving skills, and socially responsible decisions-making. Our students and faculty collaborate with external organizations in design projects, internships, and research projects to promote excellence in education, decision, and life-long learning.

The College of Engineering and Business continuously strives to be regionally recognized for its outstanding faculty who are scholars as well as innovators in the classroom; excellent students who excel through active and collaborative learning; continued service to the local and global community through classroom projects, research, and internships; cutting-edge curriculum that involves external partners to build practical skills with an emphasis on entrepreneurship, and renewable and alternative energy; and interdisciplinary research that contributes new knowledge to the field.

The College of Engineering and Business holds the following values:

1. Respect for others
2. Integrity and honesty in all actions
3. Commitment to continuous improvement
4. Creativity in finding solutions
5. Working collaboratively

Undergraduate Programs

The School of Engineering & Computing offers Bachelor of Science degrees in eleven different fields of engineering and science: Biomedical Engineering, Computer Science, Cyber Engineering, Cybersecurity, Electrical Engineering, Environmental Engineering, Environmental Science, Industrial and Robotics Engineering, Information Systems, Mechanical Engineering and Software Engineering.

The Dahlkemper School of Business offers a Bachelor of Science in Business Administration (BSBA) degree with concentrations in: Accounting, Business Administration, Economics, Entrepreneurship, Finance, Healthcare Management, International Management, Management, Marketing, Risk Management and Insurance, Sport Management and Marketing, and Supply Chain Management. A two-year Associate's Degree program in Business Administration is also available.

Applied Professional Experience and Curricular Practical Training (CPT)

Students are expected to participate (when possible) in applied experiences related to their major/coursework.

For CPT purposes, students can engage in for credit and/or non-credit bearing experiences. Students interested in these options should contact their faculty advisors.

Facilities

The College opened three new buildings since 2015: the Center for Business Ingenuity (CBI) at 900 State Street and the Center for Advanced Engineering (CAE). CBI houses the Dahlkemper School of Business, a Small Business Development Center (SBDC), the Northwest PA Innovation Beehive, and the Erie Technology Incubator (ETI). Faculty and students can interact with regional entrepreneurs some of whom are resident within the building.

In August of 2015, CEB opened the Center for Advanced Engineering (CAE). CAE houses offices of the Mechanical Engineering Department and the newly formed Biomedical, Industrial and Systems Engineering Department. The remaining engineering programs continue to have offices and laboratory spaces in the Zurn Science Center. Engineering programs are ABET accredited (except Cybersecurity and Cyber Engineering).

In August of 2019, CEB started two new undergraduate programs in Cybersecurity and Cyber Engineering. These degree programs are joint offerings from the Computer and Information Science and Electrical and Computer Engineering departments. In November of 2018, Gannon unveiled its Institute for Health and Cyber Knowledge (I-HACK) which will serve as a headquarters for academic, industry and business owners to design, integrate and protect cybernetic intelligence and data systems worldwide. The Pierre McCormick Cyber Learning Center in the I-HACK facility opened in Spring 2021, featuring a Cyber Attack Lab, a Cyber Defense Lab, a Cyber Innovation Lab, and classrooms.

DAHLKEMPER SCHOOL OF BUSINESS (DSB)

FACULTY: Professor: Michael Messina, PH.D. Associate Professors: Eric Brownlee, PH.D., Department Chairperson – Market Focused Systems, Richard Hauser, PH.D., Joseph Kuvshnikov, PH.D., William McAndrew, PH.D., Department Chairperson – Financial and Economic Analysis. Assistant Professors: Renee Castrigano, DBA, Terry Holmes, J.D. Bruce Kibler, PH.D., Duane R. Prokop, DSL, M. Garrett Roth, PH.D., Richard Stachel, DSc., Program Director, MHA. Xiangjing Wei, PH.D., Jinhee Yoo, PH.D. Teaching Assistant Professors: George Couch, DHA, Kurt Hersch, MBA, Celene Kalivoda, DBA, MBA, Program Director; Department Chairperson – Operational Systems, Blase Nicolia, Jr., MBA. Instructor: David Smith, M.S.

Dahlkemper School of Business Mission Statement

Our mission is to serve as a center of ethical business leadership and innovation to provide an excellent education in all areas of business from a values-centered and global perspective and to develop leaders to transform the world of business.

Dahlkemper School of Business Vision Statement

Our vision is to be recognized as a leading school of business thought, practice, and action by developing a reputation for preparing leaders to transform business and make the world a better place to work and live.

Dahlkemper School of Business Core Values

The Dahlkemper School of Business provides and promotes:

- ethical leadership in business
- excellence in teaching, scholarship and service
- entrepreneurship, innovation and creativity in business
- ethical and socially responsible learning experiences and behaviors in business
- the lifelong pursuit of knowledge and understanding by both the faculty and students through continued learning and development
- a strong relationship with the community.

Dahlkemper School of Business Honor Code

Inspired by the Catholic Intellectual Tradition, the faculty and students of the Dahlkemper School of Business at Gannon University are dedicated to the promotion of ethical, legal, socially responsible and professional behavior. They believe in engaging at all times with honesty, integrity, respect, trustworthiness and superior work ethics.

Dahlkemper School of Business Points of Distinction

- Gannon University offers a unique combination of the Dahlkemper School of Business (DSB), the Small Business Development Center (SBDC), the Erie Technology Incubator (ETI), and the Innovation Beehive Network within the Center for Business Ingenuity (CBI). The Center for Business Ingenuity is designed to look and operate like a corporate headquarters with a focus on meeting and satisfying the needs of our students and the business community. This collaboration allows our students and faculty to put into practice the knowledge and skills taught in the classroom.
- The School of Business is home to many doctorally qualified faculty who also have professional business experience.
- The Dahlkemper School of Business is fully accredited by ACBSP (Accreditation Council for Business Schools and Programs). ACBSP accreditation emphasizes excellence in teaching and continuous improvement. There is a rigorous and ongoing process to maintain this accreditation.
- Our faculty and students are community focused and engage in service-learning.
- Opportunities exist for international internships, travel, and study abroad because of partnerships developed with international universities.
- Small classes are taught by faculty, not graduate teaching assistants.
- Students are advised and mentored by the business faculty and staff.
- The Center for Business Ingenuity is located in the heart of the central business district of Erie, Pennsylvania.
- The Dahlkemper School of Business has been offering innovative and ethics-based business programs for over 70 years with a world-wide network of alumni.
- The business programs' curriculum is flexible enough to allow students to pursue a second major or minor in a business area.
- Students can potentially earn the Bachelor of Science in Business Administration (BSBA) and a Master of Business Administration (MBA) or Master of Healthcare Administration (MHA) through Gannon's accelerated 5-year program.
- Graduates from the Dahlkemper School of Business have the knowledge, skills, and abilities to succeed in business and the ethical values to make the world a better place.

Dahlkemper School of Business Curriculum

The business curriculum reflects current practices and issues in the business arena, including the importance of critical thinking, effective communication, global awareness, and analytical/problem-solving skills.

The Bachelor of Science in Business Administration (BSBA) degree requirements consist of the following: 1) the liberal studies curriculum (required of all Gannon undergraduates) which enables a student to acquire and apply the knowledge and skills necessary to be a significant contributor to an organization, a community, and society; 2) the business core curriculum which span all the functional areas of business; 3) the major curriculum provides the depth for a career in a specific business function or industry.

Dahlkemper School of Business Academic Standards

- 1) Each business core course from the lower and upper division must be completed with a minimum grade of C;
- 2) Students cannot progress in any business core required course unless its prerequisite(s) course(s) is (are) completed with a grade of C or better;
- 3) Students must complete the capstone course (BCOR 480) at Gannon University;
- 4) Students must have a minimum business GPA of 2.00 and a minimum overall GPA of 2.00 to qualify for graduation.

Dahlkemper School of Business Program Outcomes

- 1) **Core Business Knowledge:** Dahlkemper School of Business Students evaluate and integrate core knowledge across the breadth of functional business areas to solve problems and capture opportunities.
- 2) **Leadership and Team Building Skills:** Dahlkemper School of Business Students apply leadership and team building skills to develop strategies, manage resources and achieve goals.
- 3) **Ethics and Social Responsibility:** Dahlkemper School of Business Students recognize the importance of ethical issues, integrity, inclusiveness, and social responsibility in real-world business behavior.
- 4) **Critical Thinking and Analytical Skills:** Dahlkemper School of Business Students identify, analyze, evaluate, and solve business problems using both discipline specific and cross functional integrative thinking.
- 5) **Communication Skills:** Dahlkemper School of Business Students utilize written and oral communication skills to effectively interact with stakeholders.
- 6) **Global Perspective:** Dahlkemper School of Business Students recognize global business concepts and practices that present opportunities and challenges in an environment of diversity and multiculturalism.
- 7) **Concentration Competency:** Dahlkemper School of Business Students demonstrate concentration knowledge and appropriate application of the business concepts, opportunities, and practices in their respective business major.

DAHLKEMPER SCHOOL OF BUSINESS CURRICULUM PLAN
Bachelor of Science in Business Administration Curriculum Plan (129 credits)
(Numerals in front of courses indicate credits)
FRESHMAN YEAR
Fall Semester

| | |
|----------|-----------------------------------|
| 3 | Fund Business Enterprise/BCOR 105 |
| 3 | Appl Math for Business/MATH 115 |
| 3 | College Composition/LENG 111 |
| 2 | First Year Seminar |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Business Technology/CIS 150 |
| <u>3</u> | |
| 17 | |

Spring Semester

| | |
|----------|--|
| 3 | Prin of Microeconomics/BCOR 111 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | ** Principles of Systems/CIS 195 or Intro to Data Analytics/CIS 210 * |
| 3 | Intro to Philosophy/LPHI 131 |
| <u>3</u> | |
| 15 | |
| 32 | <i>Freshman Year Total</i> |

SOPHOMORE YEAR
Fall Semester

| | |
|----------|--|
| 3 | Prin of Macroeconomics/BCOR 112 |
| 3 | Principles of Accounting I/BCOR 214 |
| 3 | Intro to Statistical Analysis/ BCOR 220 |
| 3 | History Without Borders/LHST 111 |
| 3 | Literature Series/LENG |
| 3 | Natural Science/LS |
| <u>3</u> | |
| 18 | |

Spring Semester

| | |
|----------|-----------------------------------|
| 3 | Principles Accounting II/BCOR 215 |
| 3 | Mktg in Global Environ/BCOR 240 |
| 3 | Mgmt Theory & Practice/BCOR 250 |
| 3 | Fine Arts Series/LFIN |
| 3 | The Bible: An Intro/LTHE 201 |
| <u>3</u> | |
| 15 | |
| 33 | <i>Sophomore Year Total</i> |

JUNIOR YEAR
Fall Semester

| | |
|----------|-------------------------------|
| 3 | International Elective Course |
| 3 | Financial Mgmt I/BCOR 311 |
| 3 | Philosophy II Series/LPHI |
| 3 | Major Course 1 |
| 3 | Major Course 2 |
| 3 | * Free Elective |
| <u>3</u> | |
| 18 | |

Spring Semester

| | |
|----------|-----------------------------------|
| 3 | Legal Env of Business/BCOR 303 |
| 3 | Oper and Supply Chain/BCOR 440 |
| 3 | Advanced Business Elective Course |
| 3 | Major Course 3 |
| 3 | Major Course 4 |
| <u>3</u> | |
| 15 | |
| 33 | <i>Junior Year Total</i> |

SENIOR YEAR
Fall Semester

| | |
|----------|-----------------------------------|
| 3 | LPHI 237 or LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | Major Course 5 |
| 3 | Major Course 6 |
| 3 | * Free Elective |
| 3 | * Free Elective |
| <u>3</u> | |
| 16 | |

Spring Semester

| | |
|----------|----------------------------------|
| 3 | Business Policy/BCOR 480 |
| 3 | Major Course 7 or *Free Elective |
| 3 | Major Course 8 or *Free Elective |
| 3 | * Free Elective |
| 3 | * Free Elective |
| <u>3</u> | |
| 15 | |
| 31 | <i>Senior Year Total</i> |

* Depending on the area of concentration, students will have a varying number of free elective credits required to meet the 128 credit hour graduation requirement. Students should check with their faculty advisors regarding major course sequencing and offerings to ensure all major courses are completed in the proper semester. Swapping a major course for a free elective in a particular semester may be necessary due to the timing of course offerings.

** Students in all concentrations except Business Administration must take CIS 210.

**Bachelor of Science in Business Administration Curriculum Plan
with Study Abroad (129 credits)**

(Numerals in front of courses indicate credits)

FRESHMAN YEAR

Fall Semester

| | |
|-----------|-----------------------------------|
| 3 | Fund Business Enterprise/BCOR 105 |
| 3 | Appl Math for Business/MATH 115 |
| 3 | College Composition/LENG 111 |
| 2 | First Year Seminar |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Business Technology I/CIS 150 |
| <u>17</u> | |

Spring Semester

| | |
|-----------|--|
| 3 | Prin of Microeconomics/BCOR 111 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | ** Principles of Systems/CIS 195 or Intro to Data Analytics/CIS 210 * |
| 3 | Intro to Philosophy/LPHI 131 |
| <u>15</u> | |
| 32 | <i>Freshman Year Total</i> |

SOPHOMORE YEAR

Fall Semester

| | |
|-----------|--|
| 3 | Prin of Macroeconomics/BCOR 112 |
| 3 | Principles of Accounting I/BCOR 214 |
| 3 | Intro to Statistical Analysis/BCOR 220 |
| 3 | History Without Borders/LHST 111 |
| 3 | Literature Series/LENG |
| 3 | Natural Science/LS |
| <u>18</u> | |

Spring Semester

| | |
|-----------|-----------------------------------|
| 3 | Principles Accounting II/BCOR 215 |
| 3 | Mktg in Global Environ/BCOR 240 |
| 3 | Mgmt Theory & Practice/BCOR 250 |
| 3 | Philosophy II Series/LPHI |
| 3 | The Bible: An Intro/LTHE 201 |
| <u>15</u> | |
| 33 | <i>Sophomore Year Total</i> |

JUNIOR YEAR

Fall Semester/STUDY ABROAD

| | |
|-----------|-------------------------------|
| 3 | International Elective Course |
| 3 | Fine Arts Series/LFIN |
| 3 | * Free Elective |
| 3 | * Free Elective |
| 3 | * Free Elective |
| <u>15</u> | |

Spring Semester

| | |
|-----------|-----------------------------------|
| 3 | Legal Env of Business/BCOR 303 |
| 3 | Financial Management I/BCOR 311 |
| 3 | Advanced Business Elective Course |
| 3 | Major Course 1 |
| 3 | Major Course 2 |
| 3 | * Free Elective |
| <u>18</u> | |
| 33 | <i>Junior Year Total</i> |

SENIOR YEAR

Fall Semester

| | |
|-----------|-----------------------------------|
| 3 | Operation & Supply Chain/BCOR 440 |
| 3 | LPHI 237 or any LTHE 300 course |
| 1 | Leadership Seminar |
| 3 | Major Course 3 |
| 3 | Major Course 4 |
| 3 | Major Course 5 |
| <u>16</u> | |

Spring Semester

| | |
|-----------|----------------------------------|
| 3 | Business Policy/BCOR 480 |
| 3 | Major Course 6 |
| 3 | Major Course 7 or *Free Elective |
| 3 | Major Course 8 or *Free Elective |
| 3 | * Free Elective |
| <u>15</u> | |
| 31 | <i>Senior Year Total</i> |

* Depending on the area of concentration, students will have a varying number of free elective credits required to meet the 128 credit hour graduation requirement. Students should check with their faculty advisors regarding major course sequencing and offerings to ensure all major courses are completed in the proper semester. Swapping a major course for a free elective in a particular semester may be necessary due to the timing of course offerings.

** Students in all concentrations except Business Administration must take CIS 210.

Bachelor of Science in Business Administration Curriculum Plan with an Organizational Internship Abroad (129 credits)

(Numerals in front of courses indicate credits)

FRESHMAN YEAR

Fall Semester

| | |
|-----------|-----------------------------------|
| 3 | Fund Business Enterprise/BCOR 105 |
| 3 | Appl Math for Business/MATH 115 |
| 3 | College Composition/LENG 111 |
| 2 | First Year Seminar |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Business Technology I/CIS 150 |
| <u>17</u> | |

Spring Semester

| | |
|-----------|---|
| 3 | Prin of Microeconomics/BCOR 111 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | ** Principles of Systems/CIS 195 <i>or</i> Intro to Data Analytics/CIS 210 * |
| 3 | Intro to Philosophy/LPHI 131 |
| <u>15</u> | |
| 32 | <i>Freshman Year Total</i> |

SOPHOMORE YEAR

Fall Semester

| | |
|-----------|--|
| 3 | Prin of Macroeconomics/BCOR 112 |
| 3 | Principles of Accounting I/BCOR 214 |
| 3 | Intro to Statistical Analysis/BCOR 220 |
| 3 | History Without Borders/LHST 111 |
| 3 | Literature Series/LENG |
| 3 | Natural Science/LS |
| <u>18</u> | |

Spring Semester

| | |
|-----------|-----------------------------------|
| 3 | Principles Accounting II/BCOR 215 |
| 3 | Mktg in Global Environ/BCOR 240 |
| 3 | Mgmt Theory & Practice/BCOR 250 |
| 3 | Fine Arts Series/LFIN |
| 3 | The Bible: An Intro/LTHE 201 |
| <u>15</u> | |
| 33 | <i>Sophomore Year Total</i> |

JUNIOR YEAR

Fall Semester

| | |
|-----------|-------------------------------|
| 3 | International Elective Course |
| 3 | Financial Mgmt I/BCOR 311 |
| 3 | Philosophy II Series/LPHI |
| 3 | Major Course 1 |
| 3 | Major Course 2 |
| 3 | * Free Elective |
| <u>18</u> | |

Spring Semester

| | |
|-----------|-----------------------------------|
| 3 | Legal Env of Business/BCOR 303 |
| 3 | Oper and Supply Chain/BCOR 440 |
| 3 | Advanced Business Elective Course |
| 3 | Major Course 3 |
| 3 | Major Course 4 |
| <u>15</u> | |
| 33 | <i>Junior Year Total</i> |

Summer Semester/INTERNSHIP ABROAD
0-6 Organizational Internship

SENIOR YEAR

Fall Semester

| | |
|-----------|--|
| 3 | LPHI 237 <i>or</i> LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | Major Course 5 |
| 3 | Major Course 6 |
| 3 | * Free Elective |
| 3 | * Free Elective |
| <u>16</u> | |

Spring Semester

| | |
|-----------|---|
| 3 | Business Policy/BCOR 480 |
| 3 | Major Course 7 <i>or</i> *Free Elective |
| 3 | Major Course 8 <i>or</i> *Free Elective |
| 3 | * Free Elective |
| 3 | * Free Elective |
| <u>15</u> | |
| 31 | <i>Senior Year Total</i> |

* Depending on the area of concentration, students will have a varying number of free elective credits required to meet the 128 credit hour graduation requirement. Students should check with their faculty advisors regarding major course sequencing and offerings to ensure all major courses are completed in the proper semester. Swapping a major course for a free elective in a particular semester may be necessary due to the timing of course offerings.

** Students in all concentrations except Business Administration must take CIS 210

Associate Degree Program – Business Administration (65 credits)
(Numerals in front of courses indicate credits)
FIRST YEAR
First Semester

- 3 College Composition/LENG 111
- 3 Business Technology I/CIS 150
- 3 College Algebra/MATH 111
- 3 Found Bus. Enterprs/BCOR 105
- 2 First Year Seminar

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Second Semester

- 3 Crit Analysis & Comp/LENG 112
- 3 Foundations of Theology/LTHE 101
- 3 Business Technology II/CIS 250
- 3 Prin of Microeconomics/BCOR 111
- 3 Intro to Philosophy/LPHI 131
- 3 Intro to Psychology/PSYC 111

 18

SECOND YEAR
First Semester

- 3 Prin Macroeconomics/BCOR 112
- 3 Prin of Accounting I/BCOR 214
- 3 History Without Borders/LHST 111
- 3 Busn/Prof Comm/ENGL 212
- 3 Intro Stat Analysis/BCOR 220
- 3 Basic Sociology/SOCI 110

 18

Second Semester

- 3 Prin of Accounting II/BCOR 215
- 3 LPHI 237 or LTHE 300 level course
- 3 Mktg Global Environ/BCOR 240
- 3 Mgmt Theory & Practice/BCOR 250
- 3 Speech/SPCH 111

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THE NEXT STEP PROGRAM IN BUSINESS ADMINISTRATION
Baccalaureate Degree Program for Graduates of Two Year Colleges – for all BSBA majors (67 credits)
PRE-SENIOR YEAR
Fall Semester

- 3 Foundations of Theology/LTHE 101
- 3 Found Busn Enterprise/BCOR 105
- 3 Financial Mgmt I/BCOR 311
- 3 Advanced Business Elective
- 3 Principles of Systems/CIS 195 or Intro to Data Analytics/CIS 210
- 3 Major Course 1

 18

Spring Semester

- 3 Legal Environ Busn/BCOR 303
- 3 International Elective Course
- 3 Introduction to Phil/LPHI 131
- 3 Major Course 2
- 3 Major Course 3

 15

SENIOR YEAR
Fall Semester

- 3 Op/Supply Chain Mgmt/BCOR440
- 3 Major Course 4
- 3 Major Course 5
- 3 Literature Series/LENG
- 3 LPHI 237 or LTHE 300 level course
- 1 Leadership Seminar

 16

Spring Semester

- 3 Business Policy/BCOR 480*
- 3 Major Course 6
- 3 Major Course 7 or *** Elective
- 3 Major Course 8 or *** Elective
- 3 Fine Arts
- 3 Speech/SPCH 111

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* *Fulfills LBST 383, Senior Seminar*

** *Students in all concentrations except Business Administration must take CIS 210*

*** *Elective credits will vary in number depending upon the concentration area chosen by the student.*

Students are required to complete 7-19 credits in the Liberal Studies Core. Students may transfer courses equivalent to Sacred Scripture, Introduction to Philosophy, the Literature Series and/or the Fine Arts Series. Students must take the Leadership Seminar, the Theology/Philosophy III Series, and the Senior Seminar or approved capstone at Gannon.

Prerequisites:

Students enrolling in the Next Step Program in business are required to have completed the following courses or their equivalent, typically found in an Associate degree program in business, prior to matriculation. If the following courses, or their equivalent, have not been completed in the Associate degree program, the student will be admitted as a regular transfer student. The required prerequisite courses are:

| | |
|---------------------------------|---|
| Accounting (BCOR 214 & 215) | Applied Mathematics for Business (MATH 115) |
| Economics (BCOR 111 & 112) | Marketing (BCOR 240) |
| Business Technology I (CIS 150) | Management (BCOR 250) |
| Composition (LENG 111 & 112) | Statistics (MATH 213 or BCOR 220) |

Dual Degree Agreement**Bachelor of Science in Business Administration with a Concentration in International Management and International Industrial Management**

The Dahlkemper School of Business partners with Esslingen University of Applied Sciences (EUAS) in Esslingen am Neckar, Germany, to offer a dual-degree opportunity. The unique partnership between Gannon and Esslingen University offers students the ability to complete two undergraduate degrees – an accredited BS degree in Business Administration with a concentration in International Management (BSBA) from Gannon University and a Bachelor of Science in International Industrial Management (B.Sc. IIM) from Hochschule Esslingen – University of Applied Sciences.

This dual-degree program is generally a 4.5 year plan. Students must complete at least 128 semester credit hours, of which at least 30 credits, including an internship, will be completed in Germany. This uniquely prepares students with real-world experience that marks European bachelors studies, and the breadth and depth of the small-school, business experience from Gannon. Students should meet with their academic advisor to review the Student Exchange Criteria relative to this program. Then, a plan of study will be developed that both universities will review and approve. Generally, students spend their junior year studying at Hochschule Esslingen.

Interested students should contact the Associate Dean in the Dahlkemper School of Business.

The Accelerated Bachelor of Science in Business Administration (BSBA) and Master of Business Administration (MBA) Program

Gannon University offers an option for students who meet all the requirements, to earn a Bachelor's degree and a Master's degree in Business Administration (MBA) with only one extra year of study beyond that of the Bachelor's degree. Students can choose to earn the MBA in either the on-ground format (MBA in Business Analytics) or the online format. The description of both options follows. Interested students should discuss these options with their faculty advisor and the Director of the MBA program.

Accelerated 5-year Bachelor of Science in Business Administration (BSBA) and Master of Business Administration in Business Analytics (MBA)

The Five-Year Bachelor Degree/MBA in Business Analytics Degree Program is designed to allow outstanding undergraduate students the opportunity to earn both an undergraduate degree and an MBA within a five year period. Students from any major may apply and should do so before they begin their junior year. Applicants to the program must have a 3.0 undergraduate GPA. Students will take 6 credits of MBA classes during their senior year of undergraduate coursework. These classes can be taken in fall and/or spring semesters.

SENIOR YEAR COURSES

| | |
|----------|--|
| GMBA 615 | Technological Environment of Business |
| GMBA 625 | Data Driven Strategic Planning & Decision-Making |

Students will continue to take 9 credits in each of the following fall and spring with 6 credits in the summer for a total of 30 credits.

Students who do not have business undergraduate courses will be required to obtain the core competencies through the Peregrine Academic Leveling Courses (ALC's).

The following competencies are required:

- Foundations of Accounting
- Foundations of Quantitative Research Techniques and Statistics
- Foundations of Marketing
- Foundations of Business Integration & Strategic Management
- Foundations of Business Finance
- Foundations of Microeconomics

GANNON MBA IN BUSINESS ANALYTICS CORE COURSES (30 credits)

| | |
|----------|--|
| GMBA 615 | Technological Environment of Business – Fall & Spring |
| GMBA 625 | Data Driven Strategic Planning & Decision-Making – Fall & Spring |
| GMBA 635 | Financial Management & Modeling – Fall & Spring (Prerequisites: GMBA 615 and GMBA 625) |
| GMBA 645 | Strategic Global Marketing & Analytics – Spring (Prerequisite: GMBA 615 and GMBA 625) |
| GMBA 655 | Socially Responsible Leadership – Fall & Summer (Prerequisite or Concurrent: GMBA 615 and GMBA 625) |
| GMBA 665 | Operations & Supply Chain Analytics – Spring (Prerequisite: GMBA 615 and GMBA 625) |
| GMBA 675 | Managing Organizational Behavior and Dynamics – Spring & Summer (Prerequisite or Concurrent: GMBA 615 and GMBA 625) |
| GMBA 685 | Organizational Communication & Data Visualization – Fall (Prerequisite: GMBA 615 and 625) |
| GMBA 695 | Entrepreneurship in a Technological Environment – Fall (Prerequisite: GMBA 615 and GMBA 625) |
| GMBA 725 | Integrated Business Strategy & Analytics – Fall & Spring (Course must be taken during the student's last semester in the MBA Program) |

Accelerated 5-year Bachelor of Science in Business Administration (BSBA) and Online Master of Business Administration (MBA)

The Five-Year Bachelor Degree/Online MBA Degree Program is designed to allow undergraduate students the opportunity to earn both an undergraduate degree and an MBA within a five year period. Students from any major may apply and should do so before they begin their junior year. Applicants to the program must have a 3.0 undergraduate GPA. Students can take 6 credits of MBA classes during their senior year of undergraduate coursework. These classes can be taken in fall and/or spring semesters. Students will continue to take the additional 24 credits throughout the next year for a total of 30 credits.

Students who do not have business undergraduate courses will be required to obtain the core competencies through the Peregrine Academic Leveling Courses (ALC's).

The following competencies are required:

- Foundations of Accounting
- Foundations of Quantitative Research Techniques and Statistics
- Foundations of Marketing
- Foundations of Business Integration & Strategic Management
- Foundations of Business Finance
- Foundations of Microeconomics
- Foundations of Macroeconomics

GANNON ONLINE MBA CORE COURSES (24 credits)

| | |
|----------|--|
| GMBA 601 | Managerial Accounting – FA1 & SP2 |
| GMBA 631 | Organizational Culture, Creativity and Change – FA1 & SP1 |
| GMBA 641 | Operations and Supply Chain Management – SP1 & SU1 |
| GMBA 651 | Marketing Management – FA1 & SU1 |
| GMBA 661 | Financial Management – FA2 & SU1 |
| GMBA 686 | Leadership and Business Ethics – SP1 & SU2 |
| GMBA 736 | Human Resource Management – FA1 & SP2 |
| GMBA 799 | Business Policy and Strategy – FA2, SP2 & SU2 (Course must be taken during the student's last semester in the MBA Program) |

GANNON ONLINE MBA ELECTIVES (6 credits) (Select two (2) MBA electives)

| | |
|---|---|
| GMBA 735 | Employee Relations and Employment/Labor Law – SP2 (Prerequisite: GMBA 631) |
| GMBA 752 | Consumer Behavior – SU2 (Prerequisite: GMBA 651) |
| GMBA 764 | Investments – SU2 (Prerequisite: GMBA 661) |
| GMBA 774 | Strategic Management – FA2 |
| GMHA Courses that have been approved by the MHA and MBA Program Directors | |
| GCYSEC 501 | Networking Fundamental (3 credits) Prerequisite: None |
| GCYSEC 502 | Cybersecurity Foundation (3 credits) Prerequisite: GCYSEC 501 |
| GCYSEC 503 | Security Leadership (3 credits) Prerequisite: GCYSEC 501 |
| GCYSEC 504 | Cybersecurity Management (3 credits) Prerequisite: GCYSEC 501 |

The Accelerated Bachelor of Science in Business Administration (BSBA) and Master of Healthcare Administration (MHA) Program

Gannon University offers an option for students who meet all the requirements, to earn a Bachelor's degree and a Master's degree in Healthcare Administration (MHA) with only one extra year of study beyond that of the Bachelor's degree. The MHA program consists of 36 credits of fully online coursework. Courses run in fall, spring and summer semesters. The online courses are all 7-weeks in length. Interested students should discuss this option with their faculty advisor and the Director of the MHA program.

Accelerated 5-year Bachelor of Science in Business Administration (BSBA) and Master of Healthcare Administration (MHA)

The Five-Year Bachelor Degree/MHA Degree Program is designed to allow outstanding undergraduate students the opportunity to earn both an undergraduate degree and an MHA degree in an accelerated timeframe. Students from any major may apply and should do so before they begin their junior year. Applicants to the program must have a 3.0 undergraduate GPA. Students must have the equivalent of an undergraduate course in Statistics and the equivalent of an undergraduate course in either Accounting or Finance. Students without prior coursework can obtain these competencies through Peregrine's Academic Leveling Courses (ACLs).

The following competencies are required:

- Foundations of Accounting OR Foundations of Business Finance
and
- Foundations of Quantitative Research Techniques and Statistics

Ideally, students will start MHA coursework by taking 3 credits in the Fall Semester, 3 credits in the Spring semester, and 12 credits in the summer of their senior year. The remaining 24 credits are taken in year 5.*

UNDERGRADUATE SENIOR YEAR (YEAR 4) – 12 credits

Fall Semester

FA1 – GMHA 602 Introduction to US Healthcare System (3 credits)

Spring Semester

SP 1 – GMHA 606 Healthcare Information Systems and Technology (3 credits)

Summer Semester

SU 1 – GMHA 605 Quality Management in Healthcare Systems (3 credits)

SU 2 – GMHA 615 Healthcare Policy (3 credits)

YEAR 5 (24 credits)

Fall Semester

FA 1 – GMHA 610 Healthcare Management and Leadership (3 credits)

FA 2 – GMHA 611 Healthcare Research and Quantitative Methods (3 credits)

FA 2 – GMHA 625 Healthcare Law and Ethics (3 credits)

Spring Semester

SP 1 – GMHA 603 Healthcare Services Marketing (3 credits)

SP 2 – GMHA 661 Healthcare Finance (3 credits)

SP 2 – GMBA 736 Human Resource Management (3 credits)

Summer Semester

SU 1 – GMHA 641 Operations and Supply Chain Management (3 credits)

SU 2 – GMHA 799 Strategic Management (3 credits)

* Students who do not plan to begin the MHA coursework until the Spring Semester of their senior year should consult the MHA program director for the revised 5th year plan to complete their undergraduate and MHA degrees in the accelerated format.

DAHLKEMPER SCHOOL OF BUSINESS MINORS

All prerequisites must be completed and minimum grade requirement satisfied prior to pursuing business minors.

ACCOUNTING MINOR (15 Credits)

BCOR 214 Principles of Accounting I
BCOR 215 Principles of Accounting II
ACCT 305 Intermediate Financial Accounting
And six credits in Accounting at the 300 level or above

BUSINESS ADMINISTRATION MINOR (18 credits) Non-Business majors only.

BCOR 105 Foundations of the Business Enterprise
BCOR 111 Principles of Microeconomics or ECON 285 Project Economics
BCOR 214 Principles of Accounting I
BCOR 240 Marketing in the Global Environment
BCOR 250 Management Theory and Practice
Business elective from any business concentration or BCOR 112 Principles of Macroeconomics

ECONOMICS MINOR (15 Credits)

BCOR 111 Principles of Microeconomics
BCOR 112 Principles of Macroeconomics
And nine credits in Economics electives planned with the student advisor.

ENTREPRENEURSHIP MINOR (15 Credits)

BCOR 240 Marketing in the Global Environment
BCOR 250 Management Theory and Practice
ENTR 310 Organizational Innovation
ENTR 330 Entrepreneurial Finance
ENTR 410 New Venture Creation

FINANCE MINOR (15 Credits)

BCOR 215 Principles of Accounting II
BCOR 311 Financial Management I
FINC 312 Financial Management II
And six credits in Finance at the 300 level or above.

GLOBAL BUSINESS MINOR (15 Credits)

BCOR 240 Marketing in the Global Environment
BCOR 250 Management Theory and Practice
IMGT 306 Global Business
And six credits of advanced International electives planned with the student's advisor.

MARKETING MINOR (15 Credits)

BCOR 240 Marketing in the Global Environment
BCOR 250 Management Theory and Practice
And nine credits in Marketing at the 300 level or above.

RISK MANAGEMENT AND INSURANCE MINOR (15 Credits)

BCOR 250 Management Theory and Practice
BCOR 303 Legal Environment of Business
RISK 300 Introduction to Risk Management & Personal Lines Insurance
RISK 321 Commercial Property and Liability Insurance
RISK 415 Enterprise Risk Management

SPORT MANAGEMENT AND MARKETING MINOR (15 credits)

BCOR 240 Marketing in the Global Environment

BCOR 250 Management Theory and Practice

And nine credits in Sports Management and Marketing at the 300 level or above.

SUPPLY CHAIN MANAGEMENT MINOR (15 credits)

BCOR 220 Introduction to Statistical Analysis

BCOR 250 Management Theory and Practice

And nine credits in Supply Chain Management at the 300 level or above.

THE BUSINESS CORE CURRICULUM**BCOR COURSE DESCRIPTIONS****BCOR 105: Foundations of the Business Enterprise**

This is the gateway course to the business program and helps students to gain a solid understanding of the components of a business, its external environment, and the interactions between them. Students will engage in decision making and problem solving in that setting. Ethics, leadership, employee empowerment, the impact of technology, and the global market are topics of discussion. Students will develop critical thinking, written and oral communication, and team skills through case-based learning and a term project.

Prerequisite: None

*3 credits***BCOR 111: Principles of Microeconomics**

This course develops the techniques necessary for an understanding of basic economics from a microeconomic standpoint. The specific topics explored include the fact of scarcity, concepts of supply and demand, cost-production decision making, the operation of a firm in the product market under varying assumptions of competition, monopolistic competition, monopoly, and oligopoly, plus the operation of the firm in the factor market. This course is approved as a Social Science course for the Liberal Studies Core.

Prerequisite: None

*3 credits***BCOR 112: Principles of Macroeconomics**

This course develops tools for an understanding of macroeconomic issues and theory, including the application to current social issues such as unemployment, economic growth, and inflation. The role of money and financial institutions are also examined. The use and effectiveness of economic policy to control the macroeconomy is explored. This course is approved as a Social Science course for the Liberal Studies Core.

Prerequisite: None

*3 credits***BCOR 214: Principles of Accounting I**

This course introduces the main aspects of the accounting structure. The fundamental accounting principle is presented in the form of the balance sheet equation and is followed by the logical development of the subject of debits and credits, journal entries, special journals, and specific account classifications. The course provides a thorough review of how accounting transactions affect the financial statements and analysis of financial statement information.

Prerequisite: Minimum grade of C in BCOR 105

*3 credits***BCOR 215: Principles of Accounting II**

This course continues the focus on the application of accounting principles inside the enterprise, i.e., the proprietorship, the partnership, and the corporation. An additional focus is the use of accounting information to better aid in the planning, controlling, and evaluation of company performance. These additional topics include budgeting, job costing, and break-even analysis.

Prerequisite: Minimum grade of C in BCOR 214

3 credits

BCOR 220: Introduction to Statistical Analysis

This course introduces the student to the statistical tools used in business decision-making. Course topics include the use of descriptive statistics to explore data; elements of probability theory, including basic probability concepts and Bayes's theorem; and the major discrete and continuous probability distributions all within the context of business applications.

Populations/samples, parameters/statistics, sampling and sampling distributions, and hypothesis tests for means and proportions are also introduced. Emphasis is placed on understanding the concepts underlying the computations and the ability to communicate the meaning of computed values.

Prerequisite: Minimum grade of C in MATH 115 or MATH 140 and CIS 150

3 credits

BCOR 240: Marketing in the Global Environment

This course helps students to understand and apply the fundamentals of marketing from a global perspective. The major strategic decisions of marketing are covered including capturing marketing insights, connecting with customers, shaping market offerings, delivering and communicating value, and creating successful long term growth. These topics, along with the examination of buyer behavior, marketing research, marketing planning, and the societal, consumer and ethical issues of marketing are examined through readings, experiential exercises, class discussions, and a comprehensive marketing planning project.

The marketing planning project calls for each student to apply marketing research and planning skills by creating and presenting a marketing plan for the successful marketing of a specific product to a specific target market in the global business environment.

Prerequisite: Minimum grade of C in BCOR 105

3 credits

BCOR 250: Management Theory and Practice

This course will introduce students to the principles of management. From the organizational and behavioral aspects to process and management techniques of everyday business, this course is designed to give students a social, historical, legal, economic, and environmental knowledge and understanding of today's complex business world. The crux of management can be summed up as the combination of interpersonal skills, work competence, specific tools and methods (e.g., Project Management, Quality Management), understanding of business processes, their measurement and interdependency as well as the ability to successfully cope within an ambiguous setting. This is a seminar style course and not a lecture. This puts the onus on students to be prepared and to engage in relevant discussion.

Prerequisite: Minimum grade of C in BCOR 105

3 credits

BCOR 303: Legal Environment of Business

This course addresses the global, political, social, environmental, and regulatory legal issues confronting businesses. Students will explore important topics in business law, including entity formation, corporations, contracts, agency, Sarbanes-Oxley, the UCC and other topical areas. Because decision making at all levels in the firm must take legal consequences into account, the study of the legal environment requires and develops critical thinking skills, logic, and reasoning.

Prerequisites: Minimum grade of C in BCOR 250

3 credits

BCOR 311: Financial Management I

This course introduces the financial and economic concepts necessary to understand, analyze, and resolve corporate investment, financing, and dividend decisions. The course also establishes the goal of the firm, the ethical behavior appropriate for the achievement of this goal, an elementary knowledge of financial markets and instruments, and insight into the international aspects of these topics.

Prerequisites: Minimum grade of C in BCOR 111, BCOR 112, BCOR 215, and BCOR 220

3 credits

BCOR 375 Organizational Internship

Select students will be able to spend (at least) 50 hours (to earn 1 credit) working as an Intern. The position and hours must be confirmed by the faculty member overseeing the internship, in advance. The student must maintain a journal, will meet regularly with a faculty member and his/her internship supervisor. The faculty and supervisor will provide continuing evaluation of quality and progress of the students work. At the conclusion of the experience the student will submit a paper to the supervisor and faculty member and make an oral presentation.

Prerequisite: Junior standing

1 credit

BCOR 440: Operations and Supply Chain Management

This course studies the processes required to create and distribute goods and services which are increasingly taking place outside the boundaries of the traditional enterprise. Students will learn how to analyze processes, ensure quality, create value, and manage the flow of information, products, and services across a network of customer enterprises and supply chain partners. Case studies give students a hands-on experience with analytical models and require cogent written analysis.

Prerequisites: BCOR 220, BCOR 250, Junior Standing

3 credits

BCOR 480: Business Policy

This is a comprehensive capstone course requiring students to integrate previous analytical skills in analyzing corporate problems. The course concentrates on organizational strategy and policy and focuses on the responsibilities of senior management and the analysis of situations having significant impact on the organization. The emphasis throughout the course is that of top management and this emphasis takes an integrative, multi-functional perspective with emphasis on ethics and responsibility to society. The basic concepts studied apply to all forms of organizations, both public and private, but the major emphasis of the cases studied will be that of business organizations.

Prerequisite: BCOR 311 and BCOR 440

3 credits

With the Bachelor of Science in Business Administration (BSBA) students can choose from concentrations available in: Accounting, Business Administration, Economics, Entrepreneurship, Finance, Healthcare Management, International Management, Management, Marketing, Risk Management and Insurance, Sport Management and Marketing, or Supply Chain Management. The requirements for each concentration are found (alphabetically) in the following pages.

ACCOUNTING (BSBA)

Accounting is a promising and rewarding career. The aim of the Accounting curriculum is to develop a sound understanding of accounting theory and practice, as well as the ethical principles necessary to prepare students for professional careers in public accounting, business, or government. The Accounting program prides itself in bringing practical knowledge into the classroom based on personal professional experiences of the accounting faculty.

The Accounting program provides an excellent base for graduate work in Accounting, Business Administration, Law, or related fields. The Dahlkemper School of Business offers business students the opportunity to participate in the accelerated BSBA/MBA program that meets the needs of the public accounting profession on a national basis in support of the 150-hour education requirement initiated by the American Institute of CPA's and many state boards of accountancy.

Depending upon the student's interest and future career goals they can choose from two tracks, accounting and forensic accounting.

Both tracks qualify the student to earn the Certified Public Accountant (CPA) designation after meeting all other CPA requirements.

Track A: Accounting

The following courses (21 credits) must be completed to satisfy the requirements for the BSBA in Accounting with the accounting track:

ACCT 305/Intermediate Financial Accounting I
 ACCT 313/Accounting Information Systems
 ACCT 315/Intermediate Financial Accounting II
 ACCT 320/Cost Management
 ACCT 415/Advanced Financial Accounting
 ACCT 420/Income Taxes
 ACCT 440/Financial Auditing

**Bachelor of Science in Business Administration Curriculum Plan –
 Accounting Track (129 credits)**

(Numerals in front of courses indicate credits)

FRESHMAN*Fall Semester*

| | |
|----------|-----------------------------------|
| 3 | Fund Business Enterprise/BCOR 105 |
| 3 | Appl Math for Business/MATH 115 |
| 3 | College Composition/LENG 111 |
| 2 | First Year Seminar |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Business Technology/CIS 150 |
| <u>3</u> | |
| 17 | |

Spring Semester

| | |
|----------|-----------------------------------|
| 3 | Prin of Microeconomics/BCOR 111 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Intro to Data Analytics/CIS 210 |
| 3 | Intro to Philosophy/LPHI 131 |
| <u>3</u> | |
| 15 | |
| 32 | <i>Freshman Year Total</i> |

SOPHOMORE*Fall Semester*

| | |
|----------|--|
| 3 | Prin of Macroeconomics/BCOR 112 |
| 3 | Principles of Accounting I/BCOR 214 |
| 3 | Intro to Statistical Analysis/BCOR 220 |
| 3 | History Without Borders/LHST 111 |
| 3 | Literature Series/LENG |
| 3 | Natural Science/LS |
| <u>3</u> | |
| 18 | |

Spring Semester

| | |
|----------|-----------------------------------|
| 3 | Principles Accounting II/BCOR 215 |
| 3 | Mktg in Global Environ/BCOR 240 |
| 3 | Mgmt Theory & Practice/BCOR 250 |
| 3 | Fine Arts Series/LFIN |
| 3 | The Bible: An Intro/LTHE 201 |
| <u>3</u> | |
| 15 | |
| 33 | <i>Sophomore Year Total</i> |

JUNIOR*Fall Semester*

| | |
|----------|-------------------------------|
| 3 | International Elective Course |
| 3 | Financial Mgmt I/BCOR 311 |
| 3 | Philosophy II Series/LPHI |
| 3 | Major Course 1 |
| 3 | *Free Elective |
| 3 | *Free Elective |
| <u>3</u> | |
| 18 | |

Spring Semester

| | |
|----------|------------------------------------|
| 3 | Legal Env of Business/BCOR 303 |
| 3 | Oper and Supply Chain/ BCOR 440 |
| 3 | Advanced Business Elective Course |
| 3 | Major Course 2 |
| 3 | Major Course 3 |
| <u>3</u> | |
| 15 | |
| 33 | <i>Junior Year Total</i> |

SENIOR

Fall Semester

| | |
|----------|-----------------------------------|
| 3 | LPHI 237 or LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | Major Course 4 |
| 3 | Major Course 5 |
| 3 | *Free Elective |
| 3 | *Free Elective |
| <u>3</u> | |
| 16 | |

Spring Semester

| | |
|-----------|--------------------------|
| 3 | Business Policy/BCOR 480 |
| 3 | Major Course 6 |
| 3 | Major Course 7 |
| 3 | *Free Elective |
| 3 | *Free Elective |
| <u>15</u> | |
| 31 | <i>Senior Year Total</i> |

* Depending on the area of concentration, students will have a varying number of free elective credits required to meet the 128 credit hour graduation requirement. Students should check with their faculty advisors regarding major course sequencing and offerings to ensure all major courses are completed in the proper semester. Swapping a major course for a free elective in a particular semester may be necessary due to the timing of course offerings.

Track B: Forensic Accounting

The following courses must be completed to satisfy the requirements for the BSBA in Accounting with the forensic accounting track. They include 24 credits of Accounting coursework, 9 credits of requirements from Criminal Justice, and electives should be chosen from the fields of accounting, criminal justice, information systems, or cybersecurity as outlined below.

ACCT 305/Intermediate Financial Accounting I
 ACCT 315/Intermediate Financial Accounting II
 ACCT 320/Cost Management
 ACCT 355/Forensic Analysis
 ACCT 365/Internal Audit
 ACCT 415/Advanced Financial Accounting
 ACCT 420/Income Taxes
 ACCT 440/Financial Auditing

Bachelor of Science in Business Administration Curriculum Plan –***Forensic Accounting Track (129 credits)***

(Numerals in front of courses indicate credits)

FRESHMAN

Fall Semester

| | |
|----------|-----------------------------------|
| 3 | Fund Business Enterprise/BCOR 105 |
| 3 | Appl Math for Business/MATH 115 |
| 3 | College Composition/LENG 111 |
| 4 | First Year Seminar |
| 5 | Foundations of Theology/LTHE 101 |
| 3 | Business Technology/CIS 150 |
| <u>3</u> | |
| 17 | |

Spring Semester

| | |
|-----------|--|
| 3 | Prin of Microeconomics/BCOR 111 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Intro to Forensic Investigation/CRJS 210 |
| 3 | Intro to Philosophy/LPHI 131 |
| <u>15</u> | |
| 32 | <i>Freshman Year Total</i> |

SOPHOMORE

Fall Semester

| | |
|----------|--|
| 3 | Prin of Macroeconomics/BCOR 112 |
| 3 | Principles of Accounting I/BCOR 214 |
| 3 | Intro to Statistical Analysis/BCOR 220 |
| 3 | History Without Borders/LHST 111 |
| 3 | Literature Series/LENG |
| 3 | Criminal Law & Procedure/CRJS 320 |
| <u>3</u> | |
| 18 | |

Spring Semester

| | |
|----------|-----------------------------------|
| 3 | Principles Accounting II/BCOR 215 |
| 3 | Mktg in Global Environ/BCOR 240 |
| 3 | Mgmt Theory & Practice/BCOR 250 |
| 3 | Natural Science/LS |
| 3 | The Bible: An Intro/LTHE 201 |
| <u>3</u> | |
| 15 | |
| 33 | <i>Sophomore Year Total</i> |

JUNIOR

Fall Semester

| | |
|----------|--|
| 3 | Intro to Data Analytics/CIS 210 |
| 3 | Financial Mgmt I/BCOR 311 |
| 3 | Philosophy II Series/LPHI |
| 3 | Major Course 1 |
| 3 | Major Course 2 |
| 3 | Digital Evidence & Computer Crime/ CRJS 363 |
| <u>3</u> | |
| 18 | |

Spring Semester

| | |
|----------|---|
| 3 | Legal Env of Business/BCOR 303 |
| 3 | Database Management & Administration/CIS 255 |
| 3 | *Free Elective |
| 3 | Major Course 3 |
| 3 | Major Course 4 |
| <u>3</u> | |
| 15 | |
| 33 | <i>Junior Year Total</i> |

SENIOR

Fall Semester

| | |
|----------|---|
| 3 | Oper and Supply Chain Mgmt/ BCOR 440 |
| 3 | LPHI 237 or LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | Major Course 5 |
| 3 | Major Course 6 |
| 3 | *Free Elective |
| <u>3</u> | |
| 16 | |

Spring Semester

| | |
|----------|--------------------------|
| 3 | Business Policy/BCOR 480 |
| 3 | Major Course 7 |
| 3 | Major Course 8 |
| 3 | Fine Arts/LFIN |
| 3 | *Free Elective |
| <u>3</u> | |
| 15 | |
| 31 | <i>Senior Year Total</i> |

*Below are the recommended options for the 9 credits of free electives in the above matrix.

- International Business Elective
- ACCT 313/ Acct Information Systems
- ACCT 340/Governmental Accounting
- ACCT 375/Accounting Internship
- CRJS 212/Intro to Forensic Psychology
- CRJS 241/Cyber Crime & Society
- CRJS 326/White Collar, Occupational Crime
- CRJS 361/Crime Scene Forensics
- CRJS 362/Expert Witness
- CRJS 365/Forensic Interview & Interrogation
- CRJS 490/Criminal Justice Internship
- CYSEC 303/Data Security
- CYSEC 306/Information Assurance

ACCT COURSE DESCRIPTIONS

ACCT 305: Intermediate Financial Accounting I

An in-depth investigation of accounting theory and practice through the examination of major financial statement accounts. Specific topics include a study of the conceptual framework of accounting, income determination, reporting and financial statement presentation, and evaluation of sustainable and transitory earnings components.

Prerequisite: BCOR 215

3 credits

ACCT 313: Accounting Information Systems

A theoretical and practical discussion of the process and procedures for accounting information systems analysis, design, and implementation with emphasis on the organizational decision making inherent in a broad range of computerized systems applications. A computer lab is included to examine an automated accounting system. Prerequisite: BCOR 215

3 credits

ACCT 315: Intermediate Financial Accounting II

An in-depth investigation of accounting theory and practice through an examination of major financial statement accounts. Specific topics include a study of accounting for investments, liabilities, leases, shareholders' equity changes, earnings per share and preparation of the statement of cash flows.

Prerequisite: ACCT 305

3 credits

ACCT 320: Cost Management

This course provides in-depth study of theory and practice of cost accounting. It emphasizes internal accounting reporting and managerial use of cost accounting data for planning, controlling and decision making. Topical coverage includes: cost behavior, product costing, budgeting, performance measurement, cost-volume-profit analysis, and managerial decision making.

Prerequisites: BCOR 215

3 credits

ACCT 340: Governmental and not-for-profit Accounting

This course is designed to cover financial reporting, auditing, managerial, information systems, and taxation issues in governmental and nonprofit entities. Analytical skills, communication, ethics, and professional standards are developed. Students will find this course satisfies the state's requirement for coverage in governmental and nonprofit entities sufficient to perform successfully on the CPA exam. This course will benefit all accounting students but especially those who are interested in managerial accounting positions in universities, health care organizations, public schools, state and local governments, or nonprofit organizations. Students preparing for the certified government financial manager (CGFM) exam will also find Chapters 1 through 11 useful for Examination 2.

Prerequisites: BCOR 215

3 credits

ACCT 355: Forensic Analysis

This course provides a solid foundation for building skills in forensic accounting techniques, including gathering, interpreting, and documenting evidence. In this course, we examine the investigative techniques used by accountants to conduct forensic examinations as well as the common schemes and techniques used to commit fraud. The skills acquired will enable you to assist businesses in detecting through financial statement analysis, investigating, documenting, and preventing fraud. The course also introduces you to the many professional opportunities available to forensic accountants.

Prerequisites: BCOR 215

3 credits

ACCT 365: Internal Audit

This course is an introduction to internal auditing and risk assessment techniques with an emphasis on internal control evaluation and reporting. The course will generate reports to provide managers with definitive information about situations which might interfere with the accomplishment of the organization's goals and with feedback concerning extraordinary accomplishments.

Prerequisites: BCOR 215

3 credits

ACCT 375: Organizational Internship

Select students will be able to spend a period of time (50 hours per credit hour) working as an Intern with a local organization. During this period the student will maintain a journal, will meet regularly with a faculty member, and with a supervisor to provide continuing evaluation of quality and progress of the students work. At the conclusion of the experience the student will submit a paper to the supervisor and faculty member and make an oral presentation.

Prerequisite: Junior standing 3 credits

ACCT 415: Advanced Financial Accounting

The course covers advanced accounting topics about partnerships accounting, parent and subsidiary accounting, consolidation and mergers, foreign transactions and translations, and government and non-profit accounting.

Prerequisite: ACCT 315 3 credits

ACCT 420: Income Taxes

This course is a study of the Federal Income taxation of individuals, partnerships, and some consideration of estates and trusts. This course includes an introduction to income tax research and places an emphasis on effective tax planning.

Prerequisite: BCOR 215 3 credits

ACCT 431: Advanced Taxes

Taxation of corporations, partnerships, S corporations, estates and trusts, and tax accounting issues. Additional coverage includes an examination of the sources of tax laws and related tax research and planning. This course involved a service learning component in which the students participate in the Internal Revenue Service's Volunteer Tax Assistance (VITA) program and prepare individual tax returns at a local community center. This component is required and may, at the option of the student, be used for one credit under ACCT 375 Organizational Internship.

Prerequisite: ACCT 420 3 credits

ACCT 440: Financial Auditing

This course introduces the theory and practice of auditing, duties and responsibilities of the auditor, and standards, procedures, internal control and management services performed by public accountants. The course is designed to be taken in spring of senior year.

Prerequisites: ACCT 313 or ACCT 315 3 credits

ACCT 490: Special Topics

A specially designed course which consists of topical issues in accounting.

This is not a regularly scheduled course.

Prerequisite: BCOR 215 1-3 credits

BUSINESS ADMINISTRATION (BSBA)*129 credits*

The Business Administration curriculum offers a strong foundation in business complemented by advanced coursework selected to meet personal, professional and career interests. The knowledge, skills, and abilities acquired through the Business Administration major will allow students to pursue employment with large or small companies, non-profit organizations or government agencies.

The flexibility of the Business Administration major allows students the opportunity to select a variety of advanced courses across two different fields. Students will have flexibility to study more than one field, but, by taking 12 credits in each of the two subject areas, will gain a sufficient depth of knowledge in both areas.

Specifically, to satisfy the requirements for the BSBA in Business Administration students will take **12 credits from any two distinct concentration areas; for a total of 24 credits**. Any of the current DSB Concentration areas are available to choose from: Accounting (ACCT),

Economics (ECON), Entrepreneurship (ENTR), Finance (FINC), Healthcare Management (HCMG), International Management (IMGT), Management (MGMT), Marketing (MKTG), Risk Management and Insurance (RISK), Sport Management and Marketing (SMGT), and Supply Chain Management (SCMG).

Students cannot double count requirements within the two areas of concentration. The 12 credits from each of the two concentrations must be distinct.

ECONOMICS (BSBA)

129 credits

The Economics curriculum provides an excellent background in financial and quantitative modeling that business professionals use to conduct analysis and research. Economists are needed to analyze issues such as health care, taxes, energy and international trade policy. Students who complete an Economics major are able to summarize their findings after analysis of economic trends and factors, industries, business competition and risk profiles. An Economics major will enable a student to prepare for advanced study in fields such as law, political science and economics.

The following courses (21 credits) must be completed to satisfy the requirements for the BSBA in Economics:

| | |
|----------|-------------------------------------|
| ECON 311 | Intermediate Microeconomic Analysis |
| ECON 312 | Intermediate Macroeconomic Analysis |
| FIN 310 | Financial Markets and Institutions |

And twelve credits of advanced economics electives planned with the student's advisor.

ECON COURSE DESCRIPTIONS

ECON 285: Project Economics

This course develops the techniques necessary for understanding economic price theory, the time-value of money, and the basic issues surrounding organizational architecture. These include issues surrounding supply and demand, cost-production, decision making and market models. In particular, the course focuses on the application of these economic theories to projects, including issues surrounding risk analysis and triage, budgeting, planning, and scheduling necessary to the successful completion of a project.

Prerequisite: MATH 140 or MATH 115

3 credits

ECON 311: Intermediate Microeconomic Analysis

An intermediate level course in the methods of microeconomic analysis, emphasizing supply and demand analysis, elasticity, production and cost principles, and pricing and output decisions under different market structures.

Prerequisite: Minimum grade of C in BCOR 111

3 credits

ECON 312: Intermediate Macroeconomic Analysis

An intermediate level course in the methods of macroeconomic analysis emphasizing national income determination and monetary and fiscal policy.

Prerequisite: Minimum grade of C in BCOR 112

3 credits

ECON 325: Game Theory

The course will cover the major elements of game theory, beginning with the basic components of a game: players, strategies, and payoffs. These components will then be used to model games of both sequential and simultaneous moves. The concept of a Nash equilibrium is used to "solve" such games, both where players must choose only one strategy (i.e. a pure strategy equilibrium) and where they may randomize over actions (i.e. a mixed strategy equilibrium). Having established the basic tools of game theoretic analysis, we will then apply game theoretic principles to situations in business, finance, public policy, and everyday life.

Students will thereby learn how game theory can distill real world situations into their essential elements, guide one's own actions, and predict the actions of others. We will extend this analysis to repeated games, and, time permitting, principal-agent models and the concept of evolutionary stability.

Prerequisite: Minimum grade of C in BCOR 111 3 credits

ECON 351: Managerial Economics

An application of economic and statistical methods to managerial decision making.

Prerequisites: Minimum grade of C in BCOR 111, BCOR 112, CIS 150 or equivalent 3 credits

ECON 375: Organizational Internship

Selected students will be able to spend a period of time (50 hours per credit hour) working as an Intern with a local organization. During this period, the student will maintain a journal; will meet regularly with a faculty member and with a supervisor to provide continuing evaluation of the quality and progress of the student's work. At the conclusion of the experience the student will submit a paper to the supervisor and faculty member and make an oral presentation.

Prerequisites: Junior standing and department chair permission 3 credits

ECON 396: Discussions in International Political Economy

A series of weekly discussions of readings, lectures, and debates relating to topics in international and comparative political economy. Particular topics will vary by semester but will fall under the broad umbrella of economics, political science, philosophy, and public policy.

Prerequisite: Minimum grade of C in BCOR 111 or BCOR 112 or instructor approval 1 credit

ECON 397: Discussions in U.S. Political Economy

A series of weekly discussions of readings, lectures, and debates relating to topics in domestic political economy and U.S. economic history. Particular topics will vary by semester but will fall under the broad umbrella of economics, political science, philosophy, and public policy.

Prerequisite: Minimum grade of C in BCOR 111 or BCOR 112 or instructor approval 1 credit

ECON 398: Discussions in Public Choice and Austrian Economics

A series of weekly discussions of readings, lectures, and debates relating to topics in Public Choice and Austrian economics. Particular topics will vary by semester but will fall under the broad umbrella of non-technical economics, political science, philosophy, and public policy.

Prerequisite: Minimum grade of C in BCOR 111 or BCOR 112 or instructor approval 1 credit

ECON 401: Monetary Finance

The influence of the quantity of money on prices, growth and employment and its relation to the central banking system's control of the money supply.

Prerequisite: Minimum grade of C in BCOR 112 3 credits

ECON 421: Forecasting Methods

A study of forecasting methods and their application. Topics covered include data collection, time-series decomposition, moving average, exponential smoothing, correlation and regression.

Prerequisites: BCOR 220, CIS 150 or the equivalent 3 credits

ECON 427: Economic Methods

A study of the application of statistical methods to estimation and analysis of economic models.

Prerequisites: BCOR 220, CIS 150 or the equivalent 3 credits

ECON 431: Public Finance

An application of microeconomic theory to the study of how government policies influence the economy. The course emphasizes the study of how government tax and expenditure policies affect the allocation of resources, the distribution of income, and the welfare of the citizens.

Prerequisite: Minimum grade of C in BCOR 111 and BCOR 112 3 credits

ECON 441: International Economics

A study of the basis for trade between nations, balance of payment problems and the influence of national policies in dealing with trade, monetary problems and the multinational business firms in the global economy.

Prerequisite: Minimum grade of C in BCOR 111 and BCOR 112

3 credits

ECON 442: Economic Development

A study of the economics of growth as applied to less developed nations. There is an emphasis on the prerequisites for growth, the factors which retard growth, and public policies appropriate for achieving the desired rate of growth.

Prerequisite: Minimum grade of C in BCOR 111 or BCOR 112

3 credits

ECON 443: Comparative Economic Systems

A study of how societies with differing social, political and economic preferences have organized themselves to satisfy human needs with an emphasis on the theory and practice of socialism, capitalism and modern variations.

Prerequisites: Minimum grade of C in BCOR 111 or BCOR 112

3 credits

ECON 453: Environmental Economics

A study of environmental issues and of policies that propose to address them. Topics include property rights, public goods, externalities, Coase's Theorem, and the institutions and policies designed to address problems associated with the environment.

Prerequisite: Minimum grade of C in BCOR 111

3 credits

ENTREPRENEURSHIP (BSBA)

129 credits

The word entrepreneur came to the English language from the Old French word *entreprendre* which means "to undertake or to begin". Another closely related word is enterprise which is "a project or undertaking, typically one that is difficult or requires effort". Accepting risk and using initiative, the entrepreneur creates new ideas, products, business ventures, industries, and even markets.

The student who majors in entrepreneurship will take a unique set of courses designed to develop the thought processes and skills required to turn possibility into reality. The core idea that drives the entrepreneur is creating value for the customer by recognizing opportunities and identifying the resources needed to capitalize on them.

The Small Business Development Center (SBDC), Erie Technology Incubator (ETI), and the Innovation Beehive Network housed in the Center of Business Ingenuity, provide a unique opportunity to interact with and complete projects for small business owners and new business creators. Students will be qualified for many business opportunities such as sales, management, product development, business consulting, business development, business startup, and business ownership.

The following courses (21 credits) must be completed to satisfy the requirements for the BSBA in Entrepreneurship:

ENTR 310/Organizational Innovation

ENTR 330/Entrepreneurial Finance

ENTR 410/New Venture Creation

MKTG 320/Professional Selling & Sales Management

MKTG 325/Marketing Communications

MKTG 400/Market Research

And three credits of advanced Entrepreneurship, or Marketing electives planned with the student's advisor.

ENTR COURSE DESCRIPTIONS

ENTR 310: Organizational Innovation

Organizational Innovation provides an overview of the entrepreneurial process. In this course, we discuss where entrepreneurs get their ideas and the different types of entrepreneurial opportunities, such as start-ups, franchises and family-owned businesses, which are available to someone wanting to start a business. The two primary focuses of this course are around understanding the process of idea generation/evaluation and providing a complete understanding of the components of a business plan. By the end of the semester, students will have evaluated several start-up companies as well as identified and evaluated original product, service and non-profit ideas of their own. This course is also listed as MGMT 311.

Prerequisites: BCOR 240, BCOR 250

3 credits

ENTR 330: Entrepreneurial Finance

Entrepreneurial Finance focuses on the financial issues confronting start-up ventures. These ventures do not have the same standing as well-established, publicly traded corporations; therefore, a start-up must raise capital differently. We will address key questions relevant to these companies: how financial statements are created and interpreted; how much money can and should be raised; when should it be raised and from whom; what is a reasonable valuation of the company; and how funding should be structured. In this course, start-up companies will be examined at all phases of their life cycles, from initial idea generation to the ultimate harvesting of the venture. We will also investigate various organizational forms, financing options and ways to harvest the venture. This course is also listed as FINC 330.

Prerequisite: BCOR 311

3 credits

ENTR 375: Organizational Internship

Selected students will be able to spend a period of time (50 hours per credit hour for a total of 150 hours for the 3-credit class) working as an Intern with a local organization. During this period the student will maintain a journal, will meet regularly with a faculty member, and with a supervisor to provide continuing evaluation of quality and progress of the student's work. At the conclusion of the experience the student will submit a paper to the supervisor and faculty member and make an oral presentation.

Prerequisite: Junior standing

3 credits

ENTR 410: New Venture Creation

New Venture Creation represents the culmination of the entrepreneurship program. In this class, students integrate all of their knowledge from business core courses, as well as their advanced course work, to create a fully integrated business plan around an original business idea. Throughout the semester, the professor will act as a consultant to various student teams guiding them through the creation of a business plan including the creation of an executive summary, detailed product/service description, market analysis, operations plan and financial plan. At the end of the semester, this information will be presented to an outside group of business executives in the form of a business plan, elevator pitch and business plan presentation where the students will earn their final grade for the class.

Prerequisites: ENTR 310, ENTR 330

3 credits

FINANCE (BSBA)

129 credits

The Finance curriculum promotes the understanding of financing, business investments, optimal dividend payments, lending regulations, and financial products and services as preparation for a competitive career entry position in finance. In the Finance program, students participate in a hands-on stock track simulation that gives them an opportunity to explore investing in real time. Furthermore, the Student Investment Trust allows students to apply investment concepts by investing Trust money in stock and bond markets. Finance graduates are prepared to take a Series 7 brokerage license and the level 1 CFA certification. Finance

graduates have also completed the background for preparation for the CFP exam. Coupling degrees in finance with a second major (such as risk management and insurance or accounting) can help a graduate become more marketable. There are a wide variety of rewarding careers in finance that are in high demand. The career path for most finance majors follows tracks in corporate finance or financial services.

The following courses (21 credits) must be completed to satisfy the requirements for the BSBA in Finance:

FINC 310/Financial Markets and Institutions

FINC 312/Financial Management II

FINC 313/Investments

FINC 420/Security Analysis and Portfolio Management

FINC 450/Retirement and Estate Planning

FINC 423/Financial Models

And three credits of advanced Finance electives planned with the student's advisor.

FINC COURSE DESCRIPTIONS

FINC 300: Introduction to Risk Management and Insurance

The primary focus of this introductory course includes the Risk Management Process, the nature of the Insurance Industry and the evaluation of life, health, property and liability risks. The course will place an emphasis on Personal Lines Property and Casualty Insurance Products. Life Insurance, Health Insurance and Financial Planning topics will be outlined at the end of the course. This course is also listed as RISK 300.

Prerequisite: Sophomore standing

3 credits

FINC 310: Financial Markets and Institutions

This course is an introduction to the relationship between financial markets and the rest of the economy emphasizing the role that financial institutions play in channeling funds from savers to investors. The course includes a survey of the functions of financial institutions (emphasizing commercial banks), securities markets, and financial instruments.

Prerequisites: BCOR 111, BCOR112, BCOR 215

3 credits

FINC 312: Financial Management II

The practical aspects of financial decision-making, including computation of the cost of capital, risk measurement, and capital budgeting under risk. Evaluate the strategic financing decisions of the firm.

Prerequisites: Minimum grade of C in BCOR 311

3 credits

FINC 313: Investments

This course is a survey of the characteristics of investments including stocks, bonds, cash, options, futures, and precious metals. Taxation of investment returns is also discussed.

Prerequisite: BCOR 311

3 credits

FINC 318: International Financial Management

This course integrates international economics and financial management. The course discusses foreign exchange and money markets and considers theories for the determination of spot and forward exchange rates over time.

Prerequisite: BCOR 111

3 credits

FINC 330: Entrepreneurial Finance

Entrepreneurial Finance focuses on the financial issues confronting start-up ventures. These ventures do not have the same standing as well-established, publicly traded corporations; therefore, a start-up must raise capital differently. We will address key questions relevant to these companies: how financial statements are created and interpreted; how much money can and should be raised; when should it be raised and from whom; what is a reasonable valuation of the company; and how funding should be structured. In this course, start-up companies

will be examined at all phases of their life cycles, from initial idea generation to the ultimate harvesting of the venture. We will also investigate various organizational forms, financing options and ways to harvest the venture.

Prerequisite: BCOR 311

3 credits

FINC 375: Organizational Internship

Selected students will be able to spend a period of time (50 hours per credit hour) working as an Intern with a local organization. During this period the student will maintain a journal, will meet regularly with a faculty member, and with a supervisor to provide continuing evaluation of quality and progress of the student's work. At the conclusion of the experience the student will submit a paper to the supervisor and faculty member and make an oral presentation.

Prerequisite: Junior standing

3 credits

FINC 420: Security Analysis and Portfolio Management

This course is a study of security analysis and portfolio construction using statistical and theoretical analysis.

Prerequisite: BCOR 311

3 credits

FINC 423: Financial Models

The intent of this course is to integrate finance, accounting, statistics and computer skills into activities frequently encountered in finance related jobs. This course requires the completion of an appropriate theory course, and a familiarity with PC's and spreadsheets.

Prerequisite: BCOR 311

3 credits

FINC 450: Retirement and Estate Planning

This is a comprehensive course consisting of two parts: Retirement Planning and Estate Planning. The practical knowledge needed for choosing the best retirement plan and designing a plan that will meet a client's needs from a tax and retirement standpoint is discussed.

Retirement planning topics include qualified plans, non-qualified plans, and IRAs. Estate Planning will include various aspects and strategies of estate and gift tax planning, including the nature, valuation, transfer, administration, and taxation of property. Emphasis is given to a basic understanding of the estate and gift tax system.

Prerequisite: BCOR 311

3 credits

FINC 499: Special Topics in Finance

A comprehensive study of a special topic or multiple special topics in finance.

Prerequisite: BCOR 311

1-3 credits

HEALTHCARE MANAGEMENT (BSBA)

129 credits

Healthcare accounts for a significant and rapidly growing segment of the US economy.

The Healthcare Management program focuses on such issues as, how and where healthcare is delivered, who is providing healthcare services, how healthcare is financed and regulated.

Healthcare management requires talented people to manage the dynamic business environment of healthcare. In their roles, healthcare executives have an opportunity to make a significant contribution to improving the health of the communities their organizations serve. Large hospitals, long-term care facilities, physician's offices and many other health care organizations require managers with broad business skills. The Healthcare Management curriculum prepares students to enter a wide variety of managerial positions in the healthcare industry.

The following courses (21 credits) must be completed to satisfy the requirements for the BSBA in Healthcare Management:

HCMG 305/Introduction to U.S. Healthcare Systems

HCMG 340/Healthcare Economics

HCMG 410/Healthcare Law and Regulation

HCMG 450/Healthcare Informatics

HCMG 461/Healthcare Management and Policy
MGMT 340/Human Resource Management
MGMT 380/Executive Leadership

HCMG COURSE DESCRIPTIONS

HCMG 305: Introduction to the U.S. Healthcare System

This course provides an introduction to the evolution and current structure of the US Healthcare system and examines its features in the context of providers (hospitals, integrated delivery systems, long term care, and disease management); payers (sources of spending, managed care, employer-based health insurance, access by the poor, and cost containment); and suppliers (pharmaceutical industry, medical devices, information technology, and biotechnology). Healthcare systems in other industrialized nations are presented to provide comparisons and contrasts.

Prerequisite: BCOR 250

3 credits

HCMG 340: Healthcare Economics

This course examines the economics of health care, healthcare insurance markets, and their structures in the context of traditional microeconomic analysis; production functions, marginal analysis, supply and demand analysis, market efficiencies, utility, rational behavior by both buyers and sellers; and the optimum allocation of healthcare. Underlying assumptions, such as the ability of competitive markets to exist in the healthcare sector, are also addressed. The course will also consider social values surrounding healthcare availability and various criteria for evaluating national health insurance plans.

Prerequisite: HCMG 305

3 credits

HCMG 375: Organizational Internship

Selected students will be able to spend a period of time (50 hours per credit hour) working as an Intern with a local, regional or national organization. During this period the student will maintain a journal, will meet regularly with a faculty member, and a supervisor to provide continuing evaluation of quality and progress of the student's work. At the conclusion of the experience the student will submit a paper to the supervisor and faculty member and make an oral presentation.

Prerequisite: Junior standing

3 credits

HCMG 410: Healthcare Law and Regulation

This course presents an overview of the legal and regulatory issues facing the healthcare industry with a basic working knowledge of health law along with its application to the real world of health care administration and management. The student is provided with the necessary background on a broad range of current healthcare topics, enabling professionals to deal with common legal and regulatory issues facing the industry. Because healthcare law and regulations are continually evolving, healthcare professionals must possess a basic understanding of the law and regulations as it relates to their areas of responsibility. Healthcare regulations will be addressed as each section of the law is covered, and lectures will be devoted toward providing students with the knowledge and ability to retrieve, review, apply and remain current on healthcare regulations as they may apply to healthcare management responsibilities.

Prerequisite: HCMG 340

3 credits

HCMG 450: Healthcare Informatics

The application of information technology to patient care has created a sea change in health care management. The Electronic Medical Record (EMR) requirement created by the Patient Protection and Affordable Care Act affects many different actors in the health care ranks, from physician practices to hospitals. This course develops an understanding of and appreciation for healthcare analytics and their contributions to the advancement of health care. The intent of this course is not to make the student an expert in analytics; rather it is to demonstrate the power

of information derived from data to improve care in clinical settings. The course will assist the non-technical student in developing an understanding of Electronic Medical Records (EMR), how they are created, shared, and stored; and how data mining is conducted. The course is as much a study in change management as it is a study of informatics and the knowledge that can be constructed from the captured data.

Prerequisite: HCMG 410

3 credits

HCMG 461: Healthcare Management and Policy

Today's healthcare industry is in a crisis with change being one of the most constant aspects facing its leaders. All students pursuing a livelihood in healthcare will, undoubtedly, find themselves in a leadership position at one time or another. This course addresses leadership through a study of the individual and the values that create the basis for all decisions made by leaders and prepares health care managers for leadership roles in organizations that deliver, regulate or provide health care services. The second part of this course covers challenges faced by the U.S. healthcare delivery system and how health policy, both historically and today, has sought to address these challenges. This system is compared with those of other nations to highlight its relative strengths and weaknesses. We consider health care concerns associated with population and public health, including how the behavior of the individuals and groups influences health. We will explore the logistic of the health care system, including how it is organized, who makes up the role of information technology in this sector. Finally, the future of healthcare delivery in the U.S. and of health care policy is presented.

Prerequisite: HCMG 450

3 credits

INTERNATIONAL MANAGEMENT (BSBA)

129 credits

International Management students will learn how business is conducted within domestic and global markets. Students will learn how to serve global customers and how to strategically capture global business opportunities. International Management students are strongly encouraged to participate in Gannon's study abroad and global service opportunities.

The following courses (18 credits) must be completed to satisfy requirements for the BSBA in International Management:

FINC 318/International Finance

MKTG 330/Global Marketing

IMGT 420/Issues in Global Management

ECON 443/Comparative Economic Systems or POLI 220/Comparative Government

And six credits of advanced International Management electives planned with the student's advisor.

IMGT COURSE DESCRIPTIONS

IMGT 306: Global Business

This course investigates the international environment. Topics include multi-national organizations, international trade, effects of import/export on balance of trade, exchange rates, the international business environment, international financial markets, multi-national marketing, multi-national financial management. The course will also address the issue of cross cultural sensitivity.

Prerequisite: Junior standing

3 credits

IMGT 375: Organizational Internship

Selected students will be able to spend a period of time (50 hours per credit hour) working as an Intern with a local organization. During this period the student will maintain a journal, will meet regularly with a faculty member, and with a supervisor to provide continuing evaluation

of quality and progress of the student's work. At the conclusion of the experience the student will submit a paper to the supervisor and faculty member and make an oral presentation.

Prerequisite: Junior standing

3 credits

IMGT 382: China Studies

The purpose of this course is to study in depth the effect on all elements of an international business firm's external environment if it were to do business in China. The geography, level of economic development, economic system, legal system, political system, business environment, culture (including history, language, religion, education, concept of the family, time perception, etc.) and current issues of China are studied. This course is to be open to students of all majors and includes a travel component.

Prerequisite: None

3 credits

IMGT 420: Issues in Global Management

This course explores the management discipline in an international/global context. Specific topics include international/global strategy, international/global human resource management, cross cultural management, historical and developmental processes which have determined the current system of socio-political and economic disparities, international organizations & governance and international/global organizational structure and managing business and government relations in an international/global context.

Prerequisite: BCOR 250

3 credits

IMGT 490: Directed Study Abroad in International Management

This course is designed to allow students to explore areas of management study while at a non-U.S. (geographically) university. The course content must be pre-approved by the fulltime faculty. Topics are chosen in discussions with the faculty member responsible and approved by the faculty member responsible for the management curriculum. This course can be credit bearing from 1-6 credits depending on topic and extent of work. The culminating work for this course is a written paper which must address all aspects of the international management curriculum learning goals. Topics chosen for investigation must be within the framework of international management and also address all of the learning goals of the management curriculum. This work can also be completed at a foreign university under the tutelage of a professor at the foreign institution and with the approval of the responsible Gannon professor.

Prerequisite: Permission of supervising faculty member

1-6 credits

MANAGEMENT (BSBA)

129 credits

The Management curriculum prepares students to successfully plan, organize, staff, lead, and control the business enterprise. In today's business environment, managers must think critically and analyze organizational and market changes. This demands an understanding of process measurement, forecasting, functional interdependence, forward thinking and analytics. Management students learn firsthand how to develop and manage projects and people by engaging in real-world projects for both for-profit and non-profit organizations.

The following courses (18 credits) must be completed to satisfy the requirements for the BSBA in Management:

MGMT 305/Corporate Social Responsibility and Sustainability

MGMT 330/Project Management

MGMT 350/Quality Management

IMGT 420/Issues in Global Management

SCMG 340/Sourcing and Supply Chain Management

And three credits of advanced Management electives planned with the student's advisor.

MGMT COURSE DESCRIPTIONS

MGMT 305: Corporate Social Responsibility and Sustainability

This course delves into the aspects of business and the future critical success factors (CSF) of sustainability and corporate social responsibility (CSR). The basis for sustainability and CSR lie in the growing body of human knowledge and the historical dilemma of Principle Agency Theory, the development and changing aspects of power and institutions within politics, society and the environment. There will be an emphasis on these issues from a historical and international context. This course will also look at alternative political, social and economic approaches to overcoming the many hurdles placed before us by our currently accepted paradigms. Additionally, students will become familiarized with many international standards and tools being developed or already used in understanding and realizing the CSFs of the future.

Prerequisites: BCOR 250

3 credits

MGMT 311: Organizational Innovation

Organizational Innovation provides an overview of the entrepreneurial process. In this course, we discuss where entrepreneurs get their ideas and the different types of entrepreneurial opportunities, such as start-ups, franchises and family-owned businesses, which are available to someone wanting to start a business. The two primary focuses of this course are around understanding the process of idea generation/evaluation and providing a complete understanding of the components of a business plan. By the end of the semester, students will have evaluated several start-up companies as well as identified and evaluated original product, service and non-profit ideas of their own. This course is also listed as ENTR 310

Prerequisites: BCOR 240, BCOR 250

3 credits

MGMT 316: Organizational Behavior

This course examines individual and group behavior in relationships and organizations. Students learn about their own behaviors, to what these are attributed and how to adapt behaviors to meet group needs. Several tools are introduced which can be used to accommodate individual differences with relationships and organizations. This course is approved as a Social Science course for the Liberal Studies Core.

3 credits

MGMT 330: Project Management

A project is a temporary or limited work effort focused on creating a unique outcome or product. This course is an introduction to the techniques for planning, scheduling, reporting, controlling and managing projects. Particular emphasis is given to the project planning process including project life cycle, requirements, and scope. Team roles and responsibilities, risk and contingency, budgeting, resource allocation and scheduling are also introduced. This course includes using a real project.

Prerequisites: BCOR 220, BCOR 250

3 credits

MGMT 340: Human Resource Management

This course will familiarize students with the basic principles and techniques of human resource management (HR), which is a central and strategic organizational activity of increasing complexity and importance. HR management is the effective use of human capital in an organization by managing people-related activities. It involves: leadership; values; employment planning; recruitment and selection; onboarding, ongoing training and compensation; and evaluation of employee performance. HR also significantly influences corporate culture and norms. Not everyone who takes this course will become a human resource professional. However, all managers, no matter their specialization, play an integral role in carrying out HR policies and practices in their organization – and they have to work with their organization's human resources department.

Prerequisite: BCOR 250

3 credits

MGMT 350: Quality Management

This course introduces the concepts and practices of quality management (QM). QM is a systems approach to management that aims to always increase value to the customer by designing and continuously improving organizational processes and systems. The approach encompasses all employees and extends backwards and forwards in the supply chain to encompass the entire product life cycle. Coverage specifically includes Six Sigma, Lean Manufacturing, and Statistical Process Control, as well as other improvement methods. The course begins with a historical review of QM.

Prerequisites: BCOR 220, BCOR 250

3 credits

MGMT 360: Ethical and Social Responsibility

This course explores the natures of various interrelationships within the environment of the firm, particularly the relationship with societies and governments, including the effects of globalization on the firm. The responsibilities the firm has when pursuing its objectives and critically assessing the ethical issues associated with managerial decision making are the major focus of the course. This course satisfies the LPHI Philosophy II series Liberal Studies Requirement.

Prerequisite: LPHI 131

3 credits

MGMT 374: Applied Management Science

This course introduces the concept of model-building and focuses on the application of standard management science models to solve practical business problems. Inventory models, queuing theory, linear programming (and its various applications), probabilistic decision models, and simulation are included. The emphasis is on the reasoning required to formulate problems correctly and the ability to accurately articulate computer-generated results.

Prerequisites: MATH 115, BCOR 220

3 credits

MGMT 375: Organizational Internship

This student works under faculty mentorship with a for-profit or not for profit organization and applies knowledge and skills learned throughout the curriculum. The student will maintain a journal, meet regularly with the mentor, submit paper reflecting on the work experience in the context of the academic experience, and make a final presentation. Credit is awarded based on the time spent with the organization (50 hours per credit).

Prerequisite: Junior standing

3 credits

MGMT 380: Executive Leadership

This course is designed to equip students with the critical leadership skills and a solid understanding of the latest theories needed to become effective business leaders in a constantly changing business environment. Students will explore the latest principals and developments in leadership theory and contemporary practices at work within organizations worldwide. Existing and emerging leadership topics that will be examined including: enhancing emotional intelligence; leadership of virtual teams; leadership vision; leader courage; organizational innovation; leader presentation skills; and connecting leadership topics relevant to the United States and world events that rely on effective leadership. The course is grounded in scholarly research, making the information shared, methods, and skills learned indispensable for students aspiring to become high-level business and organizational leaders.

Prerequisite: BCOR 250

3 credits

MGMT 399: Special Topics in Management

A specially designed course which consists of topical issues in management. This is not a regularly scheduled course.

3 credits

MGMT 490: Directed Studies in Management

This course is designed to allow students to explore areas of specific interest under the tutelage of a fulltime faculty member. Topics are chosen in discussions with the faculty member responsible and approved by the faculty member responsible for the management curriculum. This course can be credit bearing from 1-6 credits depending on topic and extent of work.

The culminating work for this course is a written paper which must address all aspects of the management curriculum learning goals. This course will serve as a conduit towards more and better undergraduate research. Papers written within the framework of this course should be of a quality to be submitted for publication and/or presentation by the student/professor team at an appropriate forum, e.g. conference, journal. Alternatively, papers can be presented before a panel chosen by the student and/or professor.

Prerequisite: Permission of supervising faculty member

1-6 credits

MARKETING (BSBA)

129 credits

Students majoring in Marketing have the opportunity to analyze consumers and effectively plan product, price, promotion and distribution decisions. The Marketing curriculum emphasizes the importance, scope and purpose of marketing by providing experiences in critical thinking, problem solving and managerial decision making. Marketing students learn firsthand how effectively target customers and plan marketing strategies by engaging in real world projects.

Career opportunities in Marketing include such areas as customer relationship management, global marketing management, marketing communications, marketing analytics, marketing consulting, marketing research, marketing management, product and brand management, professional sales and sales management.

The following courses (18 credits) must be completed to satisfy the requirements for the BSBA in Marketing:

MKTG 320/Professional Selling and Sales Management

MKTG 325/Marketing Communications

MKTG 330/Global Marketing

MKTG 400/Marketing Research

MKTG 420/Strategic Marketing Management

And three credits of advanced Marketing electives planned with the student's advisor.

MKTG COURSE DESCRIPTIONS

MKTG 305: Customer Relationship Management

This course examines customer relationship management (CRM) as a key strategic process within all organizations. CRM is defined as the overall process of building and maintaining profitable customer relationships by delivering value and satisfaction to the customer. Focusing on process, strategy and technology, this course leads students from understanding the fundamentals of CRM through the implementation of CRM systems and analysis of customer data. The course examines the CRM philosophy as well as the systems in place that incorporate and integrate information from sales, marketing and service.

Prerequisites: BCOR 240

3 credits

MKTG 320: Professional Selling and Sales Management

A comprehensive survey of contemporary concepts and techniques related to the management of a sales force. The personal selling process of giving an effective sales presentation is examined and applied in the course.

Prerequisite: BCOR 240

3 credits

MKTG 325: Marketing Communications

This course examines the process by which integrated marketing communications programs are planned, developed, executed and measured. Emphasis is placed on understanding the role of various promotional methods in the marketing communication program of an organization to achieve effective marketing campaigns based on clear objectives, market segmentation, target marketing and cost and time parameters.

Prerequisite: BCOR 240

3 credits

MKTG 330: Global Marketing

This course examines the environment of global marketing by assessing different political, social, cultural, economic and legal contexts. This course also examines the strategic approaches to global markets with specific reference to the global marketing mix of product, pricing, promotion and distribution decisions. The primary goal of this course is to provide students with the tools to effectively market in a competitive and dynamic global marketplace.

Prerequisite: BCOR 240

3 credits

MKTG 360: Digital Marketing

Marketing has undergone a radical transformation over the last two decades. Whether to create an e-marketing strategy is not an option: organizations must efficiently allocate resources to establish a unique market position, differentiate its goods or services, counter competitive challenges, and exceed marketplace expectations by seamlessly blending offline and online channels. This approach has evolved to one that is multi-channel and you will learn how to create strategies that incorporate this progressive understanding. Gaining this big picture background will allow you to achieve the first two objectives of this course: what digital marketing is all about and how to develop a sound business strategy that incorporates digital marketing best practices.

Prerequisite: BCOR 240

3 credits

MKTG 375: Organizational Internship

Selected students will be able to spend a period of time (50 hours per credit hour) working as an Intern with a local organization. During this period the student will maintain a journal, will meet regularly with a faculty member, and with a supervisor to provide continuing evaluation of quality and progress of the student's work. At the conclusion of the experience the student will submit a paper to the supervisor and faculty member and make an oral presentation.

Prerequisite: Junior standing

3 credits

MKTG 399: Special Topics in Marketing

A specially designed course which consists of topical issues in marketing. This is not a regularly scheduled course.

Prerequisite: BCOR 240

3 credits

MKTG 400: Marketing Research

This course examines the concepts and techniques used in marketing research as problem-solving aids in managerial decision making. Problem definition, research design, types of information and measurement scales, and evaluation, and utilization of secondary data with an emphasis on electronic access are discussed. Students are trained in the basic methods of primary data collection including structured and unstructured interviews, focus groups, observational techniques, experiments and surveys. Practical and intensive applications on sample size, questionnaire design, data analyses, and interpretation are emphasized.

Prerequisite: BCOR 220 and BCOR 240

3 credits

MKTG 420: Strategic Marketing Management

This capstone course provides an in-depth study of marketing theories, concepts, and practices as they relate to the management of the marketing function in an organization. Emphasis is placed on the managerial aspects of developing, implementing and evaluating a marketing plan.

Prerequisites: MKTG 400 and Senior standing

3 credits

RISK MANAGEMENT AND INSURANCE (BSBA)

129 credits

The Risk Management and Insurance curriculum enables students to gain an understanding of the principles and mechanics of insurance, financial planning, employee benefits and risk management. Students will also study ways to mitigate business risk. Graduates of the program will have the knowledge, skills and abilities necessary for careers in risk management and insurance firms. Career opportunities in the field of risk management and insurance include

claims adjusting, cyber and IT risk management, industrial safety management, insurance sales, insurance fraud investigation, risk management, strategic risk consulting and underwriting.

The following courses (21 credits) must be completed to satisfy the requirements for the BSBA in Risk Management and Insurance:

RISK 300/Introduction to Risk Management and Insurance

RISK 321/Commercial Insurance and Risk Management

RISK 325/Life and Health Insurance: Introduction to Employee Benefits, Retirement, and Estate Planning

RISK 415/Enterprise Risk Management

RISK 425/Insurance Operations

RISK 430/Industrial Safety

RISK 499/Business Continuity and Emergency Management

RISK COURSE DESCRIPTIONS

RISK 300: Introduction to Risk Management and Insurance

The primary focus of this introductory course includes the Risk Management Process, the nature of the Insurance Industry and the evaluation of life, health, property and liability risks. The course will place an emphasis on Personal Lines Property and Casualty Insurance Products. Life Insurance, Health Insurance and Annuity topics will be introduced at the end of this course. This course is also listed as FINC 300.

Prerequisite: Sophomore standing

3 credits

RISK 321: Commercial Insurance and Risk Management

This course examines the major types of commercial property and liability insurance. The structure, scope, and limitations of commercial property and liability contracts are analyzed. The course will conclude with at least three on-site commercial case studies in which the student will be expected to apply insurance and other risk management techniques.

Prerequisite: RISK 300

3 credits

RISK 325: Life and Health Insurance; Introduction to Employee Benefits, Retirement, and Estate Planning

This course covers the nature and importance of life and health risks. It explores the uses of individual, business and group products designed to treat these exposures. It will explore individual, group and commercial life, health and annuity products and provide an overview of employee benefits. Current and pending government insurance programs, will be reviewed to demonstrate their integration into a financial plan.

Prerequisite: Junior standing

3 credits

RISK 375: Organizational Internship

Selected students will be able to spend a period of time (50 hours per credit hour) working as an Intern with a local organization. During this period the student will maintain a journal, will meet regularly with a faculty member, and with a supervisor to provide continuing evaluation of quality and progress of the student's work. At the conclusion of the experience the student will submit a paper to the supervisor and faculty member and deliver an oral presentation.

Prerequisite: Junior standing

3 credits

RISK 415: Enterprise Risk Management

This course is designed to provide students with a conceptual framework for evaluating and managing an organization's risks using an enterprise-wide, or holistic, approach. The course starts with an overview of an enterprise risk management (ERM) integrated framework, including in depth discussions and exercises on developing business objectives and applying risk assessment techniques to those objectives. Risk control concepts and alternative risk financing techniques are also presented. After making sure that the students have a good

understanding of these concepts, the course concludes with several classes dedicated to the practice of ERM and the practical application of ERM concepts. Students will learn and apply these concepts through lectures, exercises, cases, and guest speakers.

Prerequisite: RISK 300

3 credits

RISK 425: Insurance Operations

This course focuses on the key operational activities of insurance organizations. It specifically covers marketing and distribution systems, underwriting, an introduction to claims adjusting, the principles of ratemaking, reinsurance and financial statement analysis. These functional areas are studied in the context of regulatory and public policy issues. Students will analyze the operational and financial aspects of an insurance company.

Prerequisite: RISK 300

3 credits

RISK 430: Industrial Safety

This course will provide students with practical knowledge and tools necessary to identify, evaluate, and control safety hazards within the industrial workplace. Topics to be covered will include: OSHA regulations, injury surveillance, system safety analysis, electrical hazards, fire protection, machine hazards and chemical safety. A course project provides students the opportunity to problem-solve, analyze and develop solutions to real-world safety problems. This course is also listed as ENV 449.

This course is also listed as ENV 449.

Prerequisite: Junior standing

3 credits

RISK 450: Retirement and Estate Planning

This is a comprehensive course consisting of two parts: Retirement Planning and Estate Planning. The practical knowledge needed for choosing the best retirement plan and designing a plan that will meet a client's needs from a tax and retirement standpoint is discussed.

Retirement planning topics include qualified plans, non-qualified plans, and IRAs. Estate Planning topics include various aspects and strategies of estate and gift tax planning, including the nature, valuation, transfer, administration, and taxation of property. Emphasis is given to a basic understanding of the estate and gift tax system. This course is also listed as FINC 450.

Prerequisite: BCOR 311

3 credits

RISK 499: Business Continuity and Risk Management

This course explores the area of Business Continuity and Risk Management in a comprehensive manner to provide for organizational resilience. Particular emphasis is placed on assessing threats which may lead to disastrous events, evaluating control alternatives and implementing strategies. Practical solutions to enable an organization to mitigate risk, to manage crisis and to recover after a disaster are discussed and emphasized. The course is designed to expose the student to all aspects of a holistic Business Continuity and Risk Management program and to determine the most appropriate requirements. This class will involve development of a business continuity plan for a local business.

Prerequisites: RISK 300, RISK 321

3 credits

SPORT MANAGEMENT AND MARKETING (BSBA) 129 credits

With the proliferation of sports teams, facilities and business there is a growing need for professionals interested in combining both a passion and talent for the marketing and management of sport industries. The major provides students the opportunity to combine their dual interests in marketing and management with applications to sport professions. Students in the major advance their education while drawing on multiple areas of knowledge and skills learned and experienced in the classroom, lab setting and on sports-specific sites at the local, regional and national level. The major seeks to combine a strong foundation in theory and practice in preparing the student for advanced degree programs or entry-level careers in a variety of fields including the marketing and management of professional sports, collegiate sports, recreational management, sports marketing and sports communications.

The following courses (18 credits) must be completed to satisfy the requirements for the BSBA in Sport Management & Marketing:

SMGT 300/Principles of Sport Management
SMGT 318/Sport in Society
SMGT 325/Team Sports Organization and Management
SMGT 375/Sport Facilities and Event Management
SMGT 460/Sports Ethics
SMGT 480/Principles of Sport Marketing

SMGT COURSE DESCRIPTIONS

SMGT 300: Principles of Sport Management

The intention of this course is to cover, in detail, the business of sport. Students will be introduced to a variety of sport business topics and complete various experiential learning projects with sports organizations. This class will help students to better understand the unique aspects of the sport business industry and apply traditional business theory and practice to the sport business setting.

Prerequisite: BCOR 250

3 credits

SMGT 315: Business Golf

A comprehensive introduction to the culture of business golf and how developing the skill of playing golf for business will enhance professional relationships and expand business networks. Topics include: Golf as a diagnostic business tool, relationship building, networking, mentoring and leadership opportunities, the various types of business golf venues and experiences, and formats. The class will be a combination of class instruction, on course golf experiences and student research.

Prerequisite: Junior standing

3 credits

SMGT 317: Sport Communications

This course examines the field of sport communication today and the aspects within it as it relates to the sports industry. Students will be introduced to the relationship between sports and the media today, while analyzing the historical development. Additionally, students will be introduced to sports through media outlets today, while analyzing sports media management. Lastly, students will assess the future of sports media and the different trends and strategies present within the industry today.

Prerequisite: BCOR 240

3 credits

SMGT 318: Sport in Society

Examination of social and ethical issues in sport. Part one exclusively discusses Socialization to sport: who plays and why, racism, sexism and classism in sport. Course makes extensive use of mainstream media materials including popular magazines and movies.

Prerequisite: BCOR 250

3 credits

SMGT 325: Team Sports Organization and Management

In this course students will learn how to effectively manage sport organizations and events within the context of the rules, principles, and guidelines of sport governing bodies such as the National Collegiate Athletic Association (NCAA) or the National Football League (NFL). Students will also learn about the organizational structures and theories related to the management and governance of a variety of sport organizations. This course has an international emphasis and students will also learn about the governance and organization of sports across the globe.

Prerequisite: BCOR 250

3 credits

SMGT 340: Economics of Sport

This course will introduce students to the economics of sport today, while exploring the concepts and analysis of topics such as economic sport theories, economic motives of sport organizations, economic profits, economic sport models, etc. Additionally, students will be

introduced to economic issues and factors affecting the sport industry today such as demand and supply, economic market structure, sport industry delivery, sport economic trends, etc.
Prerequisite: BCOR 111 and BCOR 112 *3 credits*

SMGT 372: International Sports Management

This course is designed to provide students with an introduction to International Sport, Wellness and Recreation observed through a different culture. The course will cover international sport management and governing body selection of host markets, the economic impact of hosting sport events, managing security, media, communications, working with athletes, marketing, event operations, logistics, ticketing, organizational structure of host markets, host infrastructure, macroeconomics of the event and politics and culture of the host. The course involves international travel and experiential learning.

Prerequisite: Junior standing *3 credits*

SMGT 375: Sport Facilities and Event Management

This course is a comprehensive investigation of the components of managing athletic facilities and events staged by those facilities. The course combines both theory and real world application in describing the comprehensive and time consuming behind the scenes organization that goes in to the day to day maintenance of and event planning in athletic facilities. Topics include, but are not limited to, liability, facility planning, concessions and merchandising, systems, staffing, budgeting, crowd management and security, and post event analysis.

Prerequisite: BCOR 250 *3 credits*

SMGT 390: Sustainability in Sport Management

This course is a combination of online learning modules focused on sustainability in sport and practical experience. This includes sustainability training, learning green operations at a major sports venue, and implementing the training through work at a major national/international sports event.

Prerequisite: Junior standing *3 credits*

SMGT 450: Internship in Sport Business

This is an individually arranged course that combines work experience with a related academic project. The course is intended to afford students an opportunity to apply theoretical classroom information in a real world environment, and develop skills beneficial to students seeking careers in sport management. The course is a culmination of major coursework, allowing students to demonstrate mastery of sport management and marketing content, apply critical thinking skills to an authentic issue, and reflect on accumulated content and experiences. Students are required to complete a minimum of 50 hours of internship experience with a sports organization per academic credit earned.

Prerequisite: Junior standing *3 credits*

SMGT 460: Sports Ethics

The objective of this course is to explore broad issues in the philosophy of sport by examining the ethical presuppositions of competitive athletics and their connections to moral and ethical theory. The discussion of each topic deals with examples from the world of sport and illuminates them in light of philosophical work on such values as fairness, justice, integrity, and respect for rights.

Prerequisite: Junior standing *3 credits*

SMGT 480: Principles of Sport Marketing

This course is designed to acquaint students with comprehensive fundamental theories and issues in sport marketing, grounded within traditional marketing principles, and emphasizing unique application to the sport business industry. This course includes several real-world projects that require a high level of professionalism and mutually benefit the sports organizations and students in the course.

Prerequisite: BCOR 240 *3 credits*

SUPPLY CHAIN MANAGEMENT (BSBA)

129 credits

The supply chain is defined as the entire system of organizations, people, activities, information, and resources involved in moving a raw material, input, or service from supplier to end user. Managing a firm's supply chain is a complex task and requires the firm to plan its own operations in concert with its suppliers' and customers' operations. The introduction of just-in-time and continuous flow operations in production facilities has created the need for such intensive planning and control. The supply chain management curriculum includes the study of inventory management, transportation management, enterprise resource planning, sourcing, logistics, and decision modeling.

The following courses (21 credits) must be completed to satisfy the requirements for the BSBA in Supply Chain Management:

MGMT 374/Applied Management Science
 MGMT 330/Project Management
 MGMT 350/Quality Management
 SCMG 310/Global Logistics
 SCMG 340/Sourcing and Supply Chain Management
 SCMG 415/Supply Chain Risk Management
 SCMG 425/Supply Chain Network Design

SCMG COURSE DESCRIPTIONS

SCMG 310: Global Logistics

Logistics is that activity in the supply chain that focuses on the transportation and storage of materials from supplier to user and represents a significant cost in the value chain. This course examines the implications of globalization, the impact supply chain strategies have for logistics decisions, optimization, information flows and the use of technology. Case studies and service learning will provide the opportunity for applying knowledge to actual problems.

Prerequisite: Sophomore standing

3 credits

SCMG 340: Sourcing and Supply Chain Management

The sourcing function in the firm is of critical importance. Purchasing's task is to provide a continuous flow of the goods and services the firm consumes in the creation of its product. Organization of the sourcing function, process, policy, strategy, supplier selection and relationships, analytical tools, quality, and performance measures are addressed. Case studies will be used throughout the course.

Prerequisite: Sophomore standing

3 credits

SCMG 415: Supply Chain Risk Management

Supply chain risk refers to unplanned events, such as piracy and earthquakes, which cause disruption at any point in the supply chain. Integrated supply chains exacerbate risk by affecting multiple operations or inventory points. This course examines supply chain vulnerability; reviews specific types of risk; considers the relationship between actions that improve efficiency and risk; presents methods for identifying risks; and closes with a comprehensive study of continuity planning.

Prerequisite: SCMG 340

3 credits

SCMG 425: Supply Chain Network Design

This course will integrate many of the concepts learned in earlier supply chain management courses and the business core. Supply chain design serves an important role in the competitive strategy of the firm. Key concepts and the scientific foundations underlying them are introduced, then, applied in case studies. The course takes a step-by-step approach to model-building, by starting with a simple set of assumptions and adding complexities at each solution stage. This is considered the capstone course in the supply chain management curriculum and is to be taken in spring of the senior year.

Prerequisite: SCMG 415

3 credits

SCMG 450: Internship in Supply Chain Management

The student works under faculty mentorship with a for-profit or not-for-profit organization and applies knowledge and skills learned throughout the curriculum. The student will maintain a journal, meet regularly with the mentor, submit a paper reflecting on the work experience in the context of the academic experience, and make a final presentation. Credit is awarded based on the time spent with the organization (50 hours per credit).

Prerequisite: Junior standing

3 credits

SCHOOL OF ENGINEERING AND COMPUTING (SEC)

SEC Mission Statement

To transform students into ethical, passionate, and competent engineering and computing professionals.

SEC Vision Statement

An intentional, inviting, active learning environment for engineering and computing students to develop as cross-disciplinary, solutions-oriented professionals.

SEC Value Statement

The School of Engineering and Computing values design and design-thinking. SEC works to develop, promote and practice the professional values of adaptability, attention to detail, collaboration, curiosity, initiative, responsibility and responsiveness in its students, faculty, staff and administrators.”

The School of Engineering and Computing is composed of five academic departments:

1. Biomedical, Industrial and Systems Engineering (BISE)
2. Computer and Information Science (CIS)
3. Electrical and Computer Engineering (ECE)
4. Environmental Science and Engineering (ESE)
5. Mechanical Engineering (ME)

The School of Engineering and Computing offers Bachelor of Science degrees in eleven different fields of engineering and computing:

1. Biomedical Engineering (BME)
2. Computer Science (CS)
3. Cyber Engineering (CYENG)
4. Cybersecurity (CYSEC)
5. Electrical Engineering (ECE)
6. Environmental Engineering (ENV)
7. Environmental Science (ES)
8. Industrial and Robotics Engineering (IRE)
9. Information Systems (IS)
10. Mechanical Engineering (ME)
11. Software Engineering (SE)

BIOMEDICAL ENGINEERING

DAVIDE PIOVESAN, Ph.D., *Program Director*

FACULTY: *Professor: Davide Piovesan. Associate Professor: Saeed Tiari.*
Assistant Professor: Xiaoxu Ji.

ADJUNCT FACULTY: Allen Madura, Nicholas Devine, Sheldon Bailey

The Program

The Biomedical Engineering (BME) program aims to provide students with fundamental engineering design and analysis skills to solve medical and biological problems. Biomedical Engineers work with health care professionals to design medical devices and equipment that enhance patients' quality of life by applying engineering product and process design strategies to medical problems.

The program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

A five-year Biomedical Engineering/Pre-Health program is also available.

Program Educational Objectives

- A. Gannon graduates apply and synthesize information to become leaders in biomedical engineering, particularly in biomechanics and rehabilitation engineering.
- B. Gannon graduates participate in scholarly and/or professional development activities by attending graduate school, post-professional health schools, or medical school.
- C. Gannon graduates share the value of their profession in the community by participating in educational outreach activities to promote rehabilitation engineering.
- D. Gannon graduates show an appreciation for global innovation by integrating new technologies in rehabilitation engineering and biomechanics.

Student Learning Outcomes

The program has set forth the following student learning outcomes and an assessment process to provide feedback for continuous improvement in the program. Graduates of the Biomedical Engineering program must demonstrate:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics;
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors;
3. an ability to communicate effectively with a range of audiences;
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts;
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions;
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies
8. an ability to apply in-depth knowledge of biology
9. an ability to apply knowledge of statistics

Biomedical Engineering Curriculum – Bio-Mechanics Track (135 credits)

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|--|
| 3 | History Without Borders/LHST 111 |
| 3 | College Composition/LENG 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Lab/ME 206 |
| 2 | First-Year Seminar/ENG 100 |
| 2 | Engineering Graphics/ME 207 |
| 1 | Engineering Computer Graphics Lab/ME 208 |
| 1 | Technical Communication/SPCH 110 |
| <u>17</u> | |

Second Semester

| | |
|-----------|---|
| 3 | Critical Analysis and Comp/LENG 112 |
| 3 | Calculus 2/MATH 141 |
| 3 | Fund. Physics 1: Mechanics/PHYS 210 |
| 3 | General Chemistry 1/CHEM 111 |
| 1 | General Chemistry 1 Lab/CHEM 112 |
| 3 | Molecular and Cell Biology/BIOL 122 |
| 1 | Molecular and Cell Biology Lab/BIOL 123 |
| <u>17</u> | |

SOPHOMORE YEAR

First Semester

| | |
|-----------|--|
| 3 | Calculus 3/MATH 242 |
| 3 | Fund Physics 2: Fluids and Thermodynamics/PHYS 212 |
| 3 | Statics/ME 201 |
| 3 | Materials Science/ME 315 |
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| <u>16</u> | |

Second Semester

| | |
|-----------|------------------------------------|
| 3 | Dynamics/ME 204 |
| 3 | Differential Equations/MATH 304 |
| 3 | Engr Thermodynamics/ME 312 |
| 3 | Calculus 4/MATH 243 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Biomaterials/BME 310 (was BME 410) |
| <u>18</u> | |

JUNIOR YEAR

First Semester

| | |
|-----------|---|
| 3 | Strength of Materials/ME 214 |
| 3 | Fluid Mechanics/ME 336 |
| 3 | The Bible: An Intro/LTHE 201 |
| 2 | Comp Sim of Human Movement/BME 355 (was BME 450) |
| 1 | Motion Capture Lab/BME 356 (was BME 451) |
| 3 | Intro Philosophy/LPHI 131 |
| 3 | Fund. of Phys. 3: Electricity and Magnetism./PHYS 214 |
| <u>18</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Engineering Statistics/IE 320 |
| 3 | Fine Arts/LFIN |
| 3 | Technical Elective |
| 1 | Strength of Materials Lab/ME 215 |
| 3 | Philosophy II Series/LPHI |
| 2 | Bioengineering Research Method/BME 307 |
| 1 | Res Proj in Clin Biomech/BME 308 |
| 1 | Instrumentation Lab/ME 332 |
| <u>17</u> | |

SENIOR YEAR

First Semester

| | |
|-----------|---------------------------------|
| 3 | Intro to Electrical Eng/ECE 231 |
| 1 | Intro to EE Lab/ECE 232 |
| 2 | Biomedical Engineering/BME 350 |
| 1 | Bioengineering Lab/BME 440 |
| 3 | Technical Elective |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Biomechanics/BME 420 |
| 1 | Leadership Seminar |
| <u>17</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Senior Design Lab in BME/BME 354 |
| 3 | Technical Elective |
| 3 | Social Science |
| 3 | Biomedical Systems Modeling/BME 430 |
| 3 | Literature Series/LENG |
| <u>15</u> | |

Biomedical Engineering Curriculum – Bio-Electric Track (136 credits)*(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

| | |
|-----------|--|
| 3 | History Without Borders/LHST 111 |
| 3 | College Composition/LENG 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Engineering Tools App./ECE 105 |
| 1 | Engineering Tools lab/ECE 106 |
| 2 | First-Year Seminar/ENG 100 |
| 2 | Engineering Graphics/ME 207 |
| 1 | Engineering Computer Graphics Lab/ ME 208 |
| 1 | Technical Communication/SPCH 110 |
| <u>17</u> | |

Second Semester

| | |
|-----------|---|
| 3 | Critical Analysis and Comp/LENG 112 |
| 3 | Calculus 2/MATH 141 |
| 3 | Fund. Physics 1: Mechanics/PHYS 210 |
| 3 | General Chemistry 1/CHEM 111 |
| 1 | General Chemistry 1 Lab/CHEM 112 |
| 3 | Molecular and Cell Biology/BIOL 122 |
| 1 | Molecular and Cell Biology Lab/ BIOL 123 |
| <u>17</u> | |

SOPHOMORE YEAR*First Semester*

| | |
|-----------|---|
| 3 | Calculus 3/MATH 242 |
| 3 | Fund Physics 2: Fluids and Thermodynamics/PHYS 212 |
| 3 | Statics/ME 201 |
| 3 | Materials Science/ME 315 |
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| <u>16</u> | |

Second Semester

| | |
|-----------|----------------------------------|
| 3 | Biomaterials/BME 310 |
| 3 | Found Theo & Morality/LTHE 101 |
| 3 | Intro to C and C++/ECE 111 |
| 3 | Digital Logic Design/ECE 140 |
| 1 | Digital Logic Design Lab/ECE 141 |
| 3 | Circuit I/ECE 228 |
| 1 | Circuit I Lab/ECE 229 |
| <u>17</u> | |

JUNIOR YEAR*First Semester*

| | |
|-----------|--|
| 3 | Strength of Materials/ME 214 |
| 3 | Differential Equations/MATH 304 |
| 3 | The Bible: An Intro/LTHE 201 |
| 2 | Comp Sim of Human Movement/ BME 355 (was BME 450) |
| 1 | Motion Capture Lab/BME 356 (was BME 451) |
| 3 | Intro Philosophy/LPHI 131 |
| 3 | Calculus 4/MATH 243 |
| <u>18</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Engineering Statistics/IE 320 |
| 3 | Biosignal Processing/BME460 |
| 3 | Electronics/ECE238 |
| 1 | Strength of Materials Lab/ME 215 |
| 3 | Philosophy II Series/LPHI |
| 2 | Bioengineering Research Method/ BME 307 |
| 1 | Res Proj in Clin Biomech/BME 308 |
| 1 | Instrumentation Lab/ME 332 |
| <u>17</u> | |

SENIOR YEAR*First Semester*

| | |
|-----------|--------------------------------------|
| 3 | Fine Art Series/LFIN |
| 3 | Intro to IoT with Microcont./ECE 245 |
| 2 | Biomedical Engineering/BME 350 |
| 1 | Bioengineering Lab/BME 440 |
| 3 | Technical Elective |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Biomechanics/BME 420 |
| <u>18</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Senior Design Lab in BME/BME 354 |
| 3 | Technical Elective |
| 3 | Social Science |
| 3 | Biomedical Systems Modeling/BME 430 |
| 3 | Literature Series/LENG |
| 1 | Leadership Seminar |
| <u>16</u> | |

*Add one from ECE 3xx or 4xx course (in embedded software field)
to obtain a minor in Computer Engineering.*

For Students Choosing to Study Abroad at the University of Canterbury (New Zealand)

(Numerals in front of courses indicate credits)

SOPHOMORE YEAR

Fall Semester – Abroad

- 3 ENGR 102 Engineering Mechanics (ME 201)
- 3 MATH 365 Applications of Complex Variables (MATH 242)
- 3 PHYS 101 Engineering Physics A (PHYS 212)
- 3 BIOL 210 Vertebrate Biology (BIOL 124)
- 3 ENME 207 Materials Science and Engineering (ME 315)

15

** Animal Form & Function Lab/BIOL 125 will be taken the second semester of Junior year*

Five Year Program – Biomedical Engineering/Pre-Health (minimum 152-155 credits)

The School of Engineering and Computing, in cooperation with the Morosky College of Health and Science, offers a special curriculum satisfying the requirements of both the Biomedical Engineering and Pre-Health programs. The program may be completed in five years of full-time study.

(Numerals in front of courses indicate credits)

YEAR 1

Semester I

- 3 Calculus I/MATH 140
- 1 Digital Computer Usage/ME 205
- 1 Digital Computer Lab/ME 206
- 2 First-Year Seminar/ENG 100
- 3 General Chemistry I/CHEM 111
- 1 General Chemistry I Lab/CHEM 112
- 3 College Composition/LENG 111
- 1 Technical Communication/SPCH 110

15

Semester II

- 3 Calculus II/MATH 141
- 3 Fundamentals of Physics 1: Mechanics/PHYS 210
- 1 Fundamentals of Physics 1 Lab/PHYS 211
- 3 General Chemistry II/CHEM 114
- 1 General Chemistry II Lab/CHEM 115
- 3 Molecular and Cellular Biology/BIOL 122
- 1 Molecular and Cellular Biology Lab/BIOL 123
- 3 Critical Analysis & Comp/LENG 112

18

YEAR 2

Semester III

- 2 Engineering Graphics/ME 207
- 1 Engineering Computer/ME 208
Graphics Lab
- 3 Calculus 3/MATH 242
- 3 Fundamentals of Physics 2: Fluids
and Thermodynamics/PHYS 212
- 1 Fundamentals of Physics 2 Lab/
PHYS 213
- 3 Organic Chemistry I/CHEM 221
- 1 Organic Chemistry I Lab/CHEM 222
- 3 Animal Form and Function/BIOL 124
- 1 Animal Form and Function Lab/
BIOL 125

18

YEAR 3

Semester V

- 3 Statics/ME 201
- 3 Materials Science/ME 315
- 3 Structural Biochemistry/CHEM 366
- 3 LPHI Philosophy II Series†
- 3-4 Technical Elective **

15-16

YEAR 4

Semester VII

- 3 Strength of Materials/ME 214
- 3 Fluid Mechanics/ME 336
- 2 Comp Sim of Human Movement/
BME 355 (was BME 450)
- 1 Motion Capture Lab/BME 356
(was BME 451)
- 3 Foundations of Theology/LTHE 101
- 3 History Without Borders/LHST 111

15

YEAR 5

Semester IX

- 3 Intro to Electrical Engineering/ECE 231
- 1 Intro to EE Lab/ECE 232
- 2 Biomedical Engineering/BME 350
- 1 Bioengineering Lab/BME 440
- 3 Biomechanics/BME 420
- 3 LTHE 300 course * or LPHI 237
- 1 Leadership Seminar

14*Semester IV*

- 3 Differential Equations/MATH 304
- 3 Calculus 4/MATH 243
- 3 Organic Chemistry II/CHEM 224
- 1 Organic Chemistry II Lab/CHEM 225
- 3 Intro to Philosophy/LPHI 131
- 3 Fundamentals of Physics 3: Electricity
and Magnetism/PHYS 214

16*Semester VI*

- 3 Dynamics/ME 204
- 3 Engr Thermodynamics/ME 312
- 3 Biomaterials/BME 310 (was BME 410)
- 3 Social Science††
- 3-4 Technical Elective **

15-16*Semester VIII*

- 3 Engineering Statistics/IE 320
- 3-4 Technical Elective**
- 1 Strength of Materials Lab/ME 215
- 2 Bioengineering Research Method/
BME 307
- 1 Res Proj in Clin Biomech/BME 308
- 1 Instrumentation Lab ME 332
- 3 The Bible: An intro/LTHE 201

14-15*Semester X*

- 3 Senior Design Lab in BME/BME 354
- 3 Biomedical Systems Modeling/BME 430
- 3 LFIN Fine Arts Series*
- 3 LENG Literature Series*

12

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended: Human Gross Anatomy (BIOL 365/366); Animal Physiology (BIOL 368/369); and Biochemical Pathways (CHEM 368); advisor permission is required.

† The following philosophy coursework is recommended: Logic (PHIL 210).

†† The following social science coursework is recommended: Introduction to Psychology (PSYC 111); Basic Sociology (SOCI 110); and Social Psychology (PSYCH 225).

Five Year Program – Biomedical Engineering/Mechanical Engineering (167 credits)

The School of Engineering and Computing offers a special curriculum satisfying the requisite of both the Biomedical Engineering and Mechanical Engineering programs. The program may be completed in five years of full-time study.

(Numerals in front of courses indicate credits)

YEAR 1

Semester I

| | |
|-----------|----------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Lab/ME 206 |
| 2 | Engineering Graphics/ME 207 |
| 1 | Engr Comp Graphics Lab/ME 208 |
| 2 | First-Year Seminar/ENG 100 |
| 1 | Technical Communication/SPCH 110 |
| <u>17</u> | |

Semester II

| | |
|-----------|---|
| 3 | Critical Analysis and Comp/LENG 112 |
| 3 | Calculus 2/MATH 141 |
| 3 | Fund. of Physics 1: Mechanics/PHYS 210 |
| 3 | General Chemistry 1/CHEM 111 |
| 1 | General Chemistry 1 Lab/CHEM 112 |
| 3 | Molecular and Cell Biology/BIOL 122 |
| 1 | Molecular and Cell Biology Lab/BIOL 123 |
| <u>17</u> | |

YEAR 2

Semester III

| | |
|-----------|--|
| 3 | Calculus 3/MATH 242 |
| 3 | Fund. of Physics 2: Fluids and Thermo/PHYS 212 |
| 3 | Statics/ME 201 |
| 3 | Materials Science/ME 315 |
| 3 | Animal Form and Function/BIOL 124 |
| 1 | Animal Form and Func Lab/BIOL 125 |
| <u>16</u> | |

Semester IV

| | |
|-----------|------------------------------------|
| 3 | Dynamics/ME 204 |
| 3 | Calculus 4/MATH 243 |
| 3 | Differential Equations/MATH 304 |
| 3 | Engr Thermodynamics/ME 312 |
| 3 | Biomaterials/BME 310 (was BME 410) |
| 3 | Found Theo & Morality/LTHE 101 |
| <u>18</u> | |

YEAR 3

Semester V

| | |
|-----------|--|
| 2 | Comp Sim of Hum Move/BME 355 |
| 1 | Motion Capture Lab/BME 356 |
| 3 | Strength of Materials/ME 214 |
| 3 | Fund. of Phys. 3: Electricity and Magnetism/PHYS 214 |
| 3 | Fluid Mechanics/ME 336 |
| 3 | Intro Philosophy/LPHI 131 |
| 3 | The Bible: An Intro/LTHE 201 |
| <u>3</u> | |
| <u>18</u> | |

Semester VI

| | |
|-----------|----------------------------------|
| 3 | LPHI Philosophy II Series |
| 3 | Engineering Statistics/IE 320 |
| 3 | LFIN Fine Arts Series |
| 1 | Strength of Materials Lab/ME 215 |
| 2 | Bioengr Res Methods/BME 307 |
| 1 | Res Proj in Clin Biomech/BME 308 |
| 1 | Instrumentation Lab/ME 332 |
| 3 | BME Technical Elective* |
| <u>3</u> | |
| <u>17</u> | |

YEAR 4

Semester VII

| | |
|-----------|--------------------------------|
| 3 | Intro to EE/ECE 231 |
| 1 | Intro to EE Lab/ECE 232 |
| 1 | Bioengineering Lab BME 440 |
| 3 | Materials Processing/ME 329 |
| 3 | LTHE or LPHI III series |
| 3 | Biomechanics/BME 420 |
| 1 | Leadership seminar |
| 3 | Advanced Thermodynamics/ME 440 |
| <u>18</u> | |

Semester VIII

| | |
|-----------|------------------------------------|
| 3 | Heat Transfer/ME 337 |
| 3 | Engineering Analysis/ME 403 |
| 3 | Project Economics/ECON 285 |
| 3 | Biomedical System Modeling/BME 430 |
| 3 | Machine Design/ME 360 |
| 1 | Manufacturing Lab/ME 330 |
| 1 | Fluid Mechanics Lab/ME 338 |
| <u>17</u> | |

YEAR 5

Semester IX

| | |
|-----------|----------------------------------|
| 1 | Heat Transfer Lab/ME 339 |
| 3 | System Dynamics & Control/ME 326 |
| 3 | Vibrations/ME 461 |
| 3 | Engineering Design/ME 350 ++ |
| 3 | BME/ME Technical Elective** |
| <u>13</u> | |

Semester X

| | |
|-----------|------------------------------|
| 1 | Automatic Control Lab/ME 327 |
| 3 | BME Technical Elective* |
| 3 | ME Technical Elective† |
| 3 | Senior Design Lab/ME 354 ++ |
| 3 | LENG literature Series |
| 3 | ME Technical Elective† |
| <u>16</u> | |

* Any BME Technical Elective can be taken.

** BME 479 Bio-Robotics or BME465 Bio-heat and mass transfer count for BME/ME Technical Elective.

† If BME 479 is taken ME electives must be in system mechanics. If BME 465 is taken ME electives must be in thermal science.

++ Senior design project MUST be a multidisciplinary project addressing both BME and ME competences

Five Year Program – Biomedical Engineering/Graduate Biomedical Engineering (165 credits)

The School of Engineering and Computing offers a special curriculum satisfying the requisite of both the Biomedical Engineering Undergraduate Program and Biomedical Engineering Graduate programs. The program may be completed in five years of full-time study.

(Numerals in front of courses indicate credits)

YEAR 1

Semester I

| | |
|-----------|----------------------------------|
| 3 | LENG 111 College Composition |
| 3 | LHST 111 History Without Borders |
| 3 | MATH 140 Calculus 1 |
| 1 | ME 205 Digital Computer Usage |
| 1 | ME 206 Digital Computer Lab |
| 2 | ME 207 Engineering Graphics |
| 1 | ME 208 Engr Comp Graphics Lab |
| 2 | ENG 100 First-Year |
| 1 | SPCH 110 Technical Communication |
| <u>17</u> | |

Semester II

| | |
|-----------|---|
| 3 | LENG 112 Critical Analysis and Comp |
| 3 | MATH 141 Calculus 2 |
| 3 | PHYS 210 Fund. of Physics 1 |
| 3 | CHEM 111 General Chemistry 1 |
| 1 | CHEM 112 General Chemistry 1 Lab |
| 3 | BIOL 122 Molecular and Cell Biology |
| 1 | BIOL 123 Molecular and Cell Biology Lab |
| <u>17</u> | |

YEAR 2

Semester I

| | |
|-------|-----------------------------------|
| 3 | MATH 242 Calculus 3 |
| 3 | PHYS 212 Fund. of Physics 2 |
| 3 | ME 201 Statics |
| 3 | ME 315 Materials Science |
| 3 | BIOL 124 Animal Form and Function |
| 1 | BIOL 125 Animal Form and Func Lab |
| <hr/> | |
| 16 | |

Semester II

| | |
|-------|---------------------------------|
| 3 | ME 204 Dynamics |
| 3 | MATH 243 Calculus 4 |
| 3 | MATH 304 Differential Equations |
| 3 | ME 312 Engr Thermodynamics |
| 3 | BME 310 Biomaterials |
| 3 | LTHE 101 Found Theo & Morality |
| <hr/> | |
| 18 | |

YEAR 3

Semester I

| | |
|-------|------------------------------|
| 2 | BME 355 Comp Sim of Hum Move |
| 1 | BME 356 Motion Capture Lab |
| 3 | ME 214 Strength of Materials |
| 3 | PHYS 214 Fund. of Phys. 3 |
| 3 | ME 336 Fluid Mechanics |
| 3 | LPHI 131 Intro Philosophy |
| 3 | LTHE 201 The Bible: An Intro |
| <hr/> | |
| 18 | |

Semester II

| | |
|-------|----------------------------------|
| 3 | LPHI Philosophy II Series |
| 3 | IE 320 Engineering Statistics |
| 3 | LFIN Fine Arts Series |
| 1 | ME 215 Strength of Materials Lab |
| 2 | BME 307 Bioengr Res Methods |
| 1 | BME 308 Res Proj in Clin Biomech |
| 1 | ME 332 Instrumentation Lab |
| 3 | Technical Elective |
| 1 | Leadership Seminar |
| <hr/> | |
| 18 | |

SUMMER

| | |
|-------|---|
| 3 | LTHE or LPHI Theology or Philosophy III Series |
| <hr/> | |
| 3 | |

YEAR 4

Semester I

| | |
|-------|---------------------------------------|
| 3 | ECE 231 Intro to Electrical Eng |
| 1 | ECE 232 Intro to EE Lab |
| 2 | BME 350 Biomedical Engineering Design |
| 1 | BME 440 Bioengineering Lab |
| 3 | Graduate Track Course |
| 3 | BME 420 Biomechanics |
| 3 | GR Programming Course |
| <hr/> | |
| 16 | |

Semester II

| | |
|-------|-------------------------------------|
| 3 | BME 354 Senior Design Lab |
| 3 | Graduate Track Course |
| 3 | Social Science |
| 3 | BME 430 Biomedical Systems Modeling |
| 3 | GR Advanced Math Course |
| 3 | LENG Literature Series |
| <hr/> | |
| 18 | |

YEAR 5

Semester I

| | |
|-------|-------------------------------|
| 3 | Systems Development Course |
| 3 | Graduate Technical Elective * |
| 3 | Graduate Technical Elective * |
| <hr/> | |
| 9 | |

Semester II

| | |
|-------|-------------------------------|
| 3 | Graduate Track Course |
| 3 | Graduate Track Course |
| 3 | Graduate Technical Elective * |
| <hr/> | |
| 9 | |

* Up to 6 credits of graduate Technical Electives can be substituted with Thesis or Project depending on the Plan chosen by the student

The Biomedical Engineering Graduate Technical Electives (GBME) offered in the spring and fall semesters (these courses currently have no pre-requisites listed on the catalog) are shown below. The choice of the semester within which these courses are offered is as stipulated in the current graduate catalog, or at the discretion of service department teaching these courses:

- GBME 562: Surface Science and Engineering (3 credits)
- GBME 554: Tribology (3 credits)
- GBME 560: Biosignal Processing (3 credits)
- GBME 565: Biomedical Heat and Mass Transfer (3 credits)
- GBME 566 Energy Storage Systems (3 credits)
- GBME 567 Biofluid Mechanics (3 credits)
- GBME 571: Continuum Biomechanics (3 credits)
- GBME 579: Biomedical Robotics and Biomimetics (3 credits)
- GBME 580: Haptics (3 credits)
- GBME 590-599: Special Topics in Biomedical Engineering (3 credits)
- GECE 502 Embedded C Programming (3 credits)
- GECE 501 Engineering Project & Management
Prerequisite: GECE 502, GECE 704. (3 credits)
- GECE 704 Advanced Engineering Analysis (3 credits)
- GENG 570 Introduction to Systems Engineering (3 credits)
- GENG 580 Requirements Engineering (3 credits)
- GME 630 Computational Fluid Dynamics (3 credits)
- GBME 583 Polymer Engineering (3 credits)
- GBME 589 Nanotechnology for Engineers (3 credits)
- GENG 603 Engineering Analysis I (3 credits)
- GENG 796 Directed Research Project (3 credits)
- GENG 797 Thesis (6 credits)

Five Year Program – Biomedical Engineering/Graduate Mechanical Engineering (168 credits)

The School of Engineering and Computing offers a special curriculum satisfying the requisite of both the Biomedical Engineering Undergraduate Program and Mechanical Engineering Graduate programs. The program may be completed in five years of full time study.

(Numerals in front of courses indicate credits)

YEAR 1

Semester I

| | |
|---|----------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Lab/ME 206 |
| 2 | Engineering Graphics/ME 207 |
| 1 | Engr Comp Graphics Lab/ME 208 |
| 2 | First-Year Seminar/ENG 100 |
| 1 | Technical Communication/SPCH 110 |
| <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> | |
| 17 | |

Semester II

| | |
|---|---|
| 3 | Critical Analysis and Comp/LENG 112 |
| 3 | Calculus 2/MATH 141 |
| 3 | Fund. of Physics 1: Mechanics/PHYS 210 |
| 3 | General Chemistry 1/CHEM 111 |
| 1 | General Chemistry 1 Lab/CHEM 112 |
| 3 | Molecular and Cell Biology/BIOL 122 |
| 1 | Molecular and Cell Biology Lab/BIOL 123 |
| <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> | |
| 17 | |

YEAR 2

Semester I

| | |
|-----------|--|
| 3 | Calculus 3/MATH 242 |
| 3 | Fund Physics 2: Fluids and Thermodynamics/PHYS 212 |
| 3 | Statics/ME 201 |
| 3 | Materials Science/ME 315 |
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| <u>16</u> | |

Semester II

| | |
|-----------|------------------------------------|
| 3 | Dynamics/ME 204 |
| 3 | Differential Equations/MATH 304 |
| 3 | Engr Thermodynamics/ME 312 |
| 3 | Calculus 4/MATH 243 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Biomaterials/BME 310 (was BME 410) |
| <u>18</u> | |

YEAR 3

Semester I

| | |
|-----------|---|
| 3 | Strength of Materials/ME 214 |
| 3 | Fluid Mechanics/ME 336 |
| 3 | The Bible: An Intro/LTHE 201 |
| 2 | Comp Sim of Human Movement/BME 355 (was BME 450) |
| 1 | Motion Capture Lab/BME 356 (was BME 451) |
| 3 | Intro Philosophy/LPHI 131 |
| 3 | Fund. of Phys. 3: Electricity and Magnetism./PHYS 214 |
| <u>18</u> | |

Semester II

| | |
|-----------|--|
| 3 | Engineering Statistics/IE 320 |
| 3 | Heat Transfer/ME 337 |
| 3 | Technical Elective |
| 1 | Strength of Materials Lab/ME 215 |
| 3 | Philosophy II Series/LPHI |
| 2 | Bioengineering Research Method/BME 307 |
| 1 | Res Proj in Clin Biomech/BME 308 |
| 1 | Instrumentation Lab/ME 332 |
| <u>17</u> | |

Semester III (Summer)

| | |
|----------|---------------------------------|
| 3 | Fine Art Series/LFIN |
| 3 | LPHI 237 or any LTHE 300 course |
| 1 | Leadership Seminar |
| <u>7</u> | |

YEAR 4

Semester I

| | |
|-----------|---------------------------------------|
| 3 | Intro to Electrical Eng/ECE 231 |
| 1 | Intro to EE Lab/ECE 232 |
| 2 | Biomedical Engineering/BME 350 |
| 1 | Bioengineering Lab/BME 440 |
| 3 | Technical Elective |
| 3 | Computer Assisted Engineering/GME 565 |
| 3 | Biomechanics/BME 420 |
| <u>16</u> | |

Semester II

| | |
|-----------|--|
| 3 | Senior Design Lab in BME/BME 354 |
| 3 | Technical Elective |
| 3 | Social Science |
| 3 | Biomedical Systems Modeling/BME 430 |
| 3 | Literature Series/LENG |
| 3 | Graduate Engineering Analysis/GENG 603 |
| <u>18</u> | |

YEAR 5

Semester I

| | |
|-----------|-------------------------------|
| 3 | Graduate technical Elective * |
| 3 | Graduate technical Elective * |
| 3 | Graduate technical Elective * |
| 3 | Graduate technical Elective * |
| <u>12</u> | |

Semester II

| | |
|-----------|-------------------------------|
| 3 | Graduate technical Elective * |
| 3 | Graduate technical Elective * |
| 3 | Graduate technical Elective * |
| 3 | Graduate technical Elective * |
| <u>12</u> | |

* Graduate Technical Electives

The Mechanical Engineering Graduate Technical Electives (GME) offered in the spring and fall semesters (these courses currently have no pre-requisites listed on the catalog) are shown below. The choice of the semester within which these courses are offered is as stipulated in the current graduate catalog, or at the discretion of service department teaching these courses:

- GME 511: Alternative Energy Systems (3 credits)
- GME 505: Finite Element Method 1 (3 credits)
- GME 527: Internal Combustion Engines (3 credits)
- GME 590-599: Special Topics in Engineering (3 credits)
- GME 525: Advanced Fluid Mechanics (3 credits)
- GME 507: Optimization in Engineering (3 credits)
- GME 510: Thermal Systems Design (3 credits)
- GME 511: Alternative Energy Systems (3 credits)
- GME 524: Turbomachinery Design (3 credits)
- GME 525: Advanced Fluid Mechanics (3 credits)
- GME 526: Advanced Thermodynamics (3 credits)
- GME 530: Advanced Strength of Materials (3 credits)
- GME 555: Computer Aided Manufacturing (3 credits)
- GME 567: Lubrication System Design (3 credits)
- GME 528: Heat Exchanger Design (3 credits)
- GME 561: Vibrations (3 credits)
- GME 563: Machine Dynamics (3 credits)
- GME 564: Thermal Environmental Engineering (3 credits)
- GME 583: Polymer Engineering (3 credits)
- GME 589: Nanotechnology for Engineers (3 credits)
- GME 605: Finite Element Method 2 (3 credits)
- GME 612: Distributed Parameter Systems (3 credits)
- GME 615: Acoustics and Noise Control (3 credits)
- GME 625: Convection Heat Transfer (3 credits)
- GME 628: Fundamentals and Applications of Combustion (3 credits)
- GME 629: Continuum Mechanics (3 credits)
- GME 630: Computational Fluid Dynamics (3 credits)
- GME 635: Structural Dynamics (3 credits)
- GME 641: Elasticity (3 credits)
- GME 643: Plasticity (3 credits)
- GME 645: Plates and Shells (3 credits)
- GME 646: Advanced Machine Design (3 credits)
- GME 648: Modeling and Simulation of Dynamic Systems (3 credits)
- GME 650: Robotics (3 credits)
- GME 655: Advanced Dynamic Systems (3 credits)
- GME 657: Active Suspension Systems (3 credits)
- GME 661: Advanced Mechanics of Vibrations (3 credits)
- GME 670: Mechanics of Composites (3 credits)
- GME 680: Design of Experiments (3 credits)
- GME 690-699: Special Topics in Engineering (3 credits)

**Five Year Program – Biomedical Engineering/
Master in Business administration (GROUND) (165 credits)**

The School of Engineering and Computing offers a special curriculum satisfying the requisite of both the Biomedical Engineering Undergraduate Program and Master in Business administration Graduate programs. The program may be completed in five years of full time study and requires on-campus classes.

(Numerals in front of courses indicate credits)

YEAR 1

Semester I

| | |
|-------|----------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Lab/ME 206 |
| 2 | Engineering Graphics/ME 207 |
| 1 | Engr Comp Graphics Lab/ME 208 |
| 2 | First-Year Seminar/ENG 100 |
| 1 | Technical Communication/SPCH 110 |
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| 17 | |

Semester II

| | |
|-------|---|
| 3 | Critical Analysis and Comp/LENG 112 |
| 3 | Calculus 2/MATH 141 |
| 3 | Fund. of Physics 1: Mechanics/PHYS 210 |
| 3 | General Chemistry 1/CHEM 111 |
| 1 | General Chemistry 1 Lab/CHEM 112 |
| 3 | Molecular and Cell Biology/BIOL 122 |
| 1 | Molecular and Cell Biology Lab/BIOL 123 |
| <hr/> | |
| 17 | |

YEAR 2

Semester I

| | |
|-------|--|
| 3 | Calculus 3/MATH 242 |
| 3 | Fund Physics 2: Fluids and Thermodynamics/PHYS 212 |
| 3 | Statics/ME 201 |
| 3 | Materials Science/ME 315 |
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| <hr/> | |
| 16 | |

Semester II

| | |
|-------|------------------------------------|
| 3 | Dynamics/ME 204 |
| 3 | Differential Equations/MATH 304 |
| 3 | Engr Thermodynamics/ME 312 |
| 3 | Calculus 4/MATH 243 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Biomaterials/BME 310 (was BME 410) |
| <hr/> | |
| 18 | |

YEAR 3

Semester I

| | |
|-------|---|
| 3 | Strength of Materials/ME 214 |
| 3 | Fluid Mechanics/ME 336 |
| 3 | The Bible: An Intro/LTHE 201 |
| 2 | Comp Sim of Human Movement/ BME 355 (was BME 450) |
| 1 | Motion Capture Lab/BME 356 (was BME 451) |
| 3 | Intro Philosophy/LPHI 131 |
| 3 | Fund. of Phys. 3: Electricity and Magnetism./PHYS 214 |
| <hr/> | |
| 18 | |

Semester II

| | |
|-------|---|
| 3 | Engineering Statistics/IE 320 |
| 3 | Fine Art Series/LFIN |
| 3 | Technical Elective |
| 1 | Strength of Materials Lab/ME 215 |
| 3 | Philosophy II Series/LPHI |
| 2 | Bioengineering Research Method/ BME 307 |
| 1 | Res Proj in Clin Biomech/BME 308 |
| 1 | Instrumentation Lab/ME 332 |
| <hr/> | |
| 17 | |

Semester III (Summer)

| | | | |
|---|--|---|---|
| 0 | *Peregrine Module: Foundations of Accounting | 0 | *Peregrine Module: Foundations of Business Integration and Strategic Management |
| 0 | *Peregrine Module: Foundations of Finance | 0 | *Peregrine Module: Foundations of Marketing |
| 0 | *Peregrine Module: Foundations of Microeconomics | | |

YEAR 4

Semester I

| | |
|-----------|---------------------------------|
| 3 | Intro to Electrical Eng/ECE 231 |
| 1 | Intro to EE Lab/ECE 232 |
| 2 | Biomedical Engineering/BME 350 |
| 1 | Bioengineering Lab/BME 440 |
| 3 | Technical Elective |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Biomechanics/BME 420 |
| 1 | Leadership Seminar |
| <u>17</u> | |

Semester II

| | |
|-----------|--|
| 3 | Senior Design Lab in BME/BME 354 |
| 3 | Technical Elective |
| 3 | Social Science |
| 3 | Biomedical Systems Modeling/BME 430 |
| 3 | Literature Series/LENG |
| 3 | Technological Environment of Business/GMBA 615 |
| <u>18</u> | |

Semester III (Summer)

| | |
|----------|--|
| 3 | Managing Organizational Behavior & Dynamics/GMBA 675 |
| 3 | Socially Responsible Leadership/GMBA 655 |
| <u>6</u> | |

YEAR 5

Semester I

| | |
|-----------|---|
| 3 | Data Driven Strategic Planning & Decision Making/GMBA 625 |
| 3 | Financial Management and Modeling/GMBA 635 |
| 3 | Org. Communication & Data Visualization/GMBA 685 |
| 3 | Entrepreneurship in a Technological Environment/GMBA 695 |
| <u>12</u> | |

Semester II

| | |
|-----------|---|
| 3 | Strategic Global Marketing & Analytics/GMBA 645 |
| 3 | Operations & Supply Chain Analytics/GMBA 665 |
| 3 | Integrated Business Strategy & Analytics/GMBA 725 |
| <u>12</u> | |

* *Peregrines must be completed prior to taking GMBA courses.*

**Five Year Program – Biomedical Engineering/
Master in Business administration (ON-LINE) (165 credits)**

The School of Engineering and Computer Science offers a special curriculum satisfying the requisite of both the Biomedical Engineering Undergraduate Program and Master in Business administration Graduate programs. The program may be completed in five years of full time study and MBA classes are fully online.

(Numerals in front of courses indicate credits)

YEAR 1

Semester I

| | |
|-------|----------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Lab/ME 206 |
| 2 | Engineering Graphics/ME 207 |
| 1 | Engr Comp Graphics Lab/ME 208 |
| 2 | First-Year Seminar/ENG 100 |
| 1 | Technical Communication/SPCH 110 |
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| 17 | |

Semester II

| | |
|-------|---|
| 3 | Critical Analysis and Comp/LENG 112 |
| 3 | Calculus 2/MATH 141 |
| 3 | Fund. of Physics 1: Mechanics/PHYS 210 |
| 3 | General Chemistry 1/CHEM 111 |
| 1 | General Chemistry 1 Lab/CHEM 112 |
| 3 | Molecular and Cell Biology/BIOL 122 |
| 1 | Molecular and Cell Biology Lab/BIOL 123 |
| <hr/> | |
| 17 | |

YEAR 2

Semester I

| | |
|-------|---|
| 3 | Calculus 3/MATH 242 |
| 3 | Fund Physics 2: Fluids and Thermodynamics/PHYS 212 |
| 3 | Statics/ME 201 |
| 3 | Materials Science/ME 315 |
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| <hr/> | |
| 16 | |

Semester II

| | |
|-------|------------------------------------|
| 3 | Dynamics/ME 204 |
| 3 | Differential Equations/MATH 304 |
| 3 | Engr Thermodynamics/ME 312 |
| 3 | Calculus 4/MATH 243 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Biomaterials/BME 310 (was BME 410) |
| <hr/> | |
| 18 | |

YEAR 3

Semester I

| | |
|-------|--|
| 3 | Strength of Materials/ME 214 |
| 3 | Fluid Mechanics/ME 336 |
| 3 | The Bible: An Intro/LTHE 201 |
| 2 | Comp Sim of Human Movement/ BME 355 (was BME 450) |
| 1 | Motion Capture Lab/BME 356 (was BME 451) |
| 3 | Intro Philosophy/LPHI 131 |
| 3 | Fund. of Phys. 3: Electricity and Magnetism./PHYS 214 |
| <hr/> | |
| 18 | |

Semester II

| | |
|-------|--|
| 3 | Engineering Statistics/IE 320 |
| 3 | Fine Art Series/LFIN |
| 3 | Technical Elective |
| 1 | Strength of Materials Lab/ME 215 |
| 3 | Philosophy II Series/LPHI |
| 2 | Bioengineering Research Method/ BME 307 |
| 1 | Res Proj in Clin Biomech/BME 308 |
| 1 | Instrumentation Lab/ME 332 |
| <hr/> | |
| 17 | |

Semester III (Summer)

| | | | |
|---|--|---|---|
| 0 | *Peregrine Module: Foundations of Accounting | 0 | *Peregrine Module: Foundations of Business Integration and Strategic Management |
| 0 | *Peregrine Module: Foundations of Finance | 0 | *Peregrine Module: Foundations of Marketing |
| 0 | *Peregrine Module: Foundations of Microeconomics | | |

YEAR 4

Semester I

| | |
|-----------|---------------------------------|
| 3 | Intro to Electrical Eng/ECE 231 |
| 1 | Intro to EE Lab/ECE 232 |
| 2 | Biomedical Engineering/BME 350 |
| 1 | Bioengineering Lab/BME 440 |
| 3 | Technical Elective |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Biomechanics/BME 420 |
| 1 | Leadership Seminar |
| <u>17</u> | |

Semester II

| | |
|-----------|--|
| 3 | Senior Design Lab in BME/BME 354 |
| 3 | Technical Elective |
| 3 | Social Science |
| 3 | Biomedical Systems Modeling/BME 430 |
| 3 | Literature Series/LENG |
| 3 | Operations & Supply Chain Mgmt/GMBA 641 ONLINE |
| <u>18</u> | |

Semester III (Summer)

| | |
|----------|--------------------------------------|
| 3 | Marketing Management/GMBA 651 ONLINE |
| <u>3</u> | |

YEAR 5

Semester I

| | |
|-----------|---|
| 3 | Organizational Culture, Creativity and Change/GMBA 631 ONLINE |
| 3 | Financial Management/GMBA 661 ONLINE |
| 3 | Elective Course 1/**GMBA ONLINE |
| 3 | Managerial Accounting/GMBA 601 ONLINE |
| <u>12</u> | |

Semester II

| | |
|-----------|--|
| 3 | Human Resource Management/GMBA 736 ONLINE |
| 3 | Business Policy & Strategy/GMBA 799 ONLINE |
| 3 | Leadership & Business Ethics/GMBA 686 ONLINE |
| 3 | Elective Course 2/**GMBA ONLINE: |
| <u>12</u> | |

* *Peregrines must be completed prior to taking GMBA courses.*

** *The GMBA online elective courses are as follows (students should choose two electives from this list):*

- GMBA 735: Employee Relations and Employment/Labor Law
- GMBA 752: Consumer Behavior
- GMBA 764: Investments
- GMBA 774: Strategic Management

BME COURSE DESCRIPTIONS

BME 307: Bioengineering Research Methods

This course is designed to provide an elaborate exposure to wide variety of elements and challenges involved in engineering and life science research. Through the trajectory of scientific proposal writing, a multitude of components including planning, execution and analysis of experiments will be covered. Additionally, the course packages other critical aspects such as hands-on lab experience and rotations, effective public presentation and technical writing, ethics, safety etc. providing a comprehensive awareness of research.

Prerequisite: ME 205-206 (or ECE105-106), ME 207, ME 208

2 credits, Spring

BME 308: Research projects in Clinical Biomechanics

This course is designed to provide an elaborate exposure to clinical experimentation in engineering and life science research. Through the trajectory of development of experimental protocol, consent documents, and IRB applications, a multitude of components including planning, execution and ethical concerns of experiments will be covered. Additionally, the course packages other critical aspects such as effective public presentation and technical writing, ethics, safety etc. providing a comprehensive awareness of research.

Corequisite: BME 307, CITI Training

1 credit, Spring

BME 310: Biomaterials

Introduction to the behavior and application of biomaterials used in prosthetic devices dentures, arterial grafts, orthopedic implants and other medical applications as they relate to humans. Study of surface and mechanical properties. Biocompatibility, biomaterial/tissue interactions, and other factors involved in the design of human implants, biosensors and neuroprostheses are considered. The course will also include a limited review of properties of human cells, nucleic acids, proteins and immunology as these topics relate to biomaterials.

Prerequisite: ME 315, BIOL 122

3 credits, Fall

BME 350: Biomedical Engineering Design

Elements of engineering design and introduction to the design process. Application of computer-aided methods, such as use of Excel, Matlab, and/or Pro/ENGINEER. Development of awareness of multifaceted design issues, such as social, economic, technical and environmental concerns, and their interrelation. Communication of ideas and results. Course culminates in a formal oral and written proposal for the Senior Design project.

Prerequisites: MATH 242, ME 207, BME 310

2 credits, Fall

BME 354: Senior Design Lab in BME

Capstone design project for senior students to be completed individually or by a team. This course is a follow-up course to BME 350. Design projects are to be selected and defined as part of the course work in BME 350. These projects will then have to be completed in BME 354.

Lectures on various engineering issues including, but not limited to safety, environmental concerns and professional ethics will be given throughout the course. Progress reports and meetings are scheduled and a formal engineering report will be required for all projects, in addition to a final oral presentation for each project.

Prerequisite: BME 350, BME 420 (or SPRT 360)

3 credits, Spring

BME 355: Computer Simulation of Human Movement

In this course, students will learn how to simulate human movement (e.g. walking, running) to obtain estimates of immeasurable quantities derived from human physiology principles (e.g. muscle forces). Topics to be covered include inverse kinematics, inverse dynamics, and muscle-actuated forward dynamic simulations. The simulations will be performed using both commercial/open-source software and user-generated code to understand the calculations done by the software.

Prerequisites: ME 201, ME 205-206 (or ECE 105-106)

2 credits, Fall

BME 356: Motion Capture Lab

Laboratory experiences with measurements for motion capture and an instrumented gait analysis. Various motion capture modalities (e.g. markers versus markerless) will be explored as well as other pieces of equipment that are used in conjunction with motion capture (e.g. EMG).

Prerequisites: ME 201, ME 205-206 (or ECE 105-106)

1 credits, Fall

BME 420: Biomechanics

Mechanics of deformable bodies. Mechanical properties of human biomaterials, bone, ligaments, muscle. Uniaxial tension, compression, bending, and torsion applied to orthopedic biomechanics. Rigid body planar kinematics and dynamics, with application to the biomechanics of human walking, running, cycling, and other athletic activities. Also studies functions of orthotics and prostheses, including design considerations.

Prerequisites: BIOL 124 (or BIOL 117), ME 214, BME 355

3 credits, Fall

BME 430: Biomedical Systems Modeling and Analysis

This course aims to apply systems theory and classical feedforward and feedback control in the context of human physiological systems. It introduces the techniques for analysis and modeling of human biological and human physiological systems including musculoskeletal and cardiovascular systems, cells, tissues, diffusion systems, and other organ systems. Students will derive mathematical models of from human anatomy and physiology the systems and apply them to generate simulation data. Time and frequency domain issues will be addressed. Students will use Matlab computer methods to solve problems in human physiology, data analysis, system identification, and model validation. Basic control principles will be introduced.

Prerequisites: ECE 231 (or ECE 228) (may be taken concurrently), BME 355

3 credits, Spring

BME 440: Bioengineering Lab

Laboratory experiences with measurements of human physiological variables for medical devices including the application of statistical techniques.

Prerequisites: BIOL 124 (or BIOL 117), ME 205-206 (or ECE 105-106)

1 credit, Fall

BME 454: Tribology

This course addresses the design of tribological systems: the interfaces between two or more bodies in relative motion. Fundamental topics include: geometric, chemical, and physical characterization of surfaces; friction and wear mechanisms for metal, polymers, and ceramics, including abrasive wear, delamination theory, tool wear, erosive wear, wear of polymers and composites; and boundary lubrication and solid-film lubrication. The course also considers the relationship between nano-tribology and macro-tribology, rolling contacts, tribological problems in magnetic recording and electrical contacts, and monitoring and diagnosis of friction and wear. Case studies are used to illustrate key points.

Prerequisites: ME 315, BME 310

3 credits, Fall

BME 460: Biosignal Processing

In this course, students will learn how to design and choose a filter for processing signals commonly collected in Biomedical Engineering (e.g. electromyography, electrocardiogram, forceplate data). Topics to be covered include FIR filters, IIR filters, Butterworth filters, and residual analysis. Signal processing will be performed using user-generated code to understand how these filters are practically implemented.

Prerequisites: PHYS 214 (or ECE 228), BME 355

3 credits, Fall

BME 462: Surface Science and Engineering

This course provides an introduction to surface properties of materials and an overview of electron microscopy, surface analysis techniques, adhesion and adhesive bonding technology. The course emphasizes conceptual understanding as well as practical industrial-related applications of the material. Topics covered include surface properties of materials, surface wettability and surface tension, surface modification treatments, microscopy and surface analysis techniques, adhesion, adhesive bonding and related industrial applications, bond failure investigations and failure analysis.

Prerequisites: ME 315, BME 310

3 credits, Spring

BME 465: Biomedical Heat and Mass Transfer

This course is an introduction to biomedical heat and mass transfer. The relevant principles of heat transfer will be reviewed. Macroscopic and microscopic approaches to biomedical heat transfer will be covered. An introduction to mass transfer and its applications in biomedical and biological systems will be presented.

Prerequisites: PHYS 212, BME 310

3 credits

BME 466: Energy Storage Systems

In this course energy storage techniques such as thermal, electrochemical, mechanical, and electromagnetic as well as energy storage in organic biofuels will be covered. Different energy storage methods will be compared in terms of cost, size, weight, reliability and lifetimes. The differences, advantages, disadvantages and variety of applications of these techniques will be presented. Specific emphasis will be placed on biomedical systems such rehabilitation systems, implantable and wearable devices.

Prerequisites: PHYS 214, BME 310

3 credits

BME 467: Biofluid Mechanics

This course introduces fundamental physical concepts and mathematical equations describing the dynamics of fluid flows and their application to biomedical problems. At the completion of the course students should be familiar with the basic governing equations of fluid flows, understand a number of basic flows in different human organ systems, understand methods used to study flows in biomedical engineering.

Prerequisites: ME 312

3 credits

BME 471: Continuum Biomechanics

This course is concerned with the study of continuum mechanics applied to biological systems. This subject allows the description of when a bone may fracture due to excessive loading, how blood behaves as both a solid and a fluid, down to how cells respond to mechanical forces that lead to changes in their behavior.

Prerequisite: ME 214, ME 205-206 (or ECE 105-106)
either BME 420 or BME 355

3 credits

BME 479: Biomedical Robotics and Biomimetics

Biomedical Robotics focuses on activities such as rehabilitation, training/simulation, manipulation, surgery. These areas currently depend on labor intensive manual procedures performed by highly trained professionals. The goal of the course is to analyze how to improve and transform these operations through teleoperation and automation. Furthermore, several aspects of biomimetics will be discussed during the course. Biomimetics uses nature as an example to build robots that can swim like a fish, fly like a bird or insect, and walk on rough terrain as many quadrupeds.

Prerequisites: ME 205-206 (or ECE 105-106), BME 355

3 credits

BME 480: Haptics

In this course, students will learn about tactile sensors, how they are programmed, and real world applications of these sensors. Topics to be covered include tactile sensors, piezoelectric sensors, and robotic surgery.

Prerequisites: ME 205-206 (or ECE 105-106), BIOL 124 (or BIOL 117),
PHYS 214 (or ECE 228), BME 355

3 credits

BME 488: Biomedical Engineering Internship

Students are eligible to receive credits either in the semester in which the internship is completed or the subsequent semester. Credits assigned are based on hours worked and breadth and depth of the student's responsibilities. Completion of a brief summary report and a supervisor's evaluation are required.

1-3 Credits, all semesters

BME 490-499: Special Topics in Biomedical Engineering

Special courses developed for students interested in all areas of biomedical engineering. A brief description of current content will be announced in the schedule of classes. Topics can include but are not limited to: biomedical robotics, biomimetic, rehabilitation engineering, continuum

mechanics of biological tissue, tissue engineering, biomedical imaging, hemodynamics, motor control. May be taken more than once.

Prerequisite: Permission of the Chairperson of the department.

1-3 credits

SEECs (101, 102, 201, 202, 301, 302, 401, 402): Professional and Personal Enrichment Seminar

Course description is listed in Computer & Information Science section of the catalog.

0 credit, Fall and Spring

COMPUTER & INFORMATION SCIENCE (CIS)

Susantha Herath Ph.D., *Interim Chair*

FACULTY: Professors: Mei-Huei Tang, Yunkai Liu. Associate Professors: Joshua C. Nwokeji, Bharat Rawalkshatriya. Assistant Professors: Richard Matovu, Tajmilur Rahman. Teaching Assistant Professor: Mark Blair. Instructors: Jeremy Cannell.

The CIS Department has its mission to help students apply problem identification & problem-solving strategies to the development of complex computer-based systems, follow legal and ethical computing principles to analyze computing solutions for ethical ramifications such as global, cultural social, environmental or economic concerns. As a diverse team, the department strives to facilitate students learning to function and communicate effectively as a collaborative member or leader in a professional context and to demonstrate an ability to acquire and apply new knowledge or technology as needed.

The CIS Department maintains educational labs for teaching and project work, and servers using MAC OS X, WINDOWS and LINUX operating systems. The Mac lab offers the hardware and software environment needed for iOS app development. The general-purpose labs provide interactive environments for design and programming classes. The network lab offers hands-on exposure to the hardware and software layers of networks. The advanced systems lab hosts state-of-the-art creation, capture, editing, and synthesis hardware and software for multimedia productions and database functions. A project lab is maintained for faculty research, student work, and on-campus internship work.

A wide-variety of programming environments and application software are available at Gannon University. Specifically within the Department and through its course offerings the following items are presented: Java, Javascript, C++, Swift, C#, and COBOL are core programming environments; UML, Rational Rose™ and VISIO™ as modeling environments, and ORACLE™, SQL Server™, Microsoft Access and other database as database management systems. Gannon University is a CompTIA Authorized Academy Partner and qualifies for several CompTIA incentives, tools, resources, and benefits.

Programs

The Computer and Information Science department offers three Bachelors of Science (BS) degree programs in:

- Computer Science – described under **Computer Science**
- Information Systems – described under **Information Systems**
- Software Engineering – described under **Software Engineering**

These degree programs are accredited by the Computing Accreditation Commission and the Engineering Accreditation Commission of ABET respectively. See <http://www.abet.org>

In conjunction with the Electrical & Computer Engineering Department, support two Bachelors of Science (BS) degree programs in:

- Cybersecurity – described under **Cybersecurity**
- Cyber Engineering – described under **Cyber Engineering**

These degree programs are designed to be accredited by the Computing Accreditation Commission and the Engineering Accreditation Commission of ABET respectively and will be submitted to the Commission after the programs' first round of students graduated.

All department programs include a study-abroad option in the Junior year. In addition to the traditional four-year model, the department supports different means for pursuing these degrees:

- Software Engineering International Dual Degrees (SEID) in cooperation with Esslingen University of Applied Science in Computer Science (BS)/Software Technology (B.Eng) or the Software Engineering (BS)/Software Technology (B.Eng) – curriculum. These are described in the **International Software Engineering Degrees** section.
- Dual Major Program in Computer Science and Software Engineering – the curriculum is described in the **Computer Science-Software Engineering Dual Degree** section.
- Cooperative (CoOp) Programs: A five-year cooperative program is available for each of these three degree programs. The student must meet the same requirements as the four-year programs, and spend a minimum of three semester equivalents in industry. See the **Computer and Information Science Co-Op Curriculum** section below.
- Accelerated 5-Year BS-MS-CIS Program: A set of five-year pathways for students in the CS, IS and SE degree programs to complete a Masters of Science in Computer and Information Science (MS-CIS) degree. Options in Data Science, Information Technology and Software Engineering are available for students to enhance their professional competencies. See the **Accelerated 5-Year CS-MS-CIS Program** section below.

Aims and Objectives

At Gannon, all CIS programs aim to helping students to become employable, accountable professionals, who act as competent problem solvers in multiple settings, and strive to be selfless contributors to their teams, community, church, profession and society. As employable professionals, CIS graduates are well prepared for employment or graduate work in their field, and to continue working in that field or related fields. This includes adaptability to different disciplines, environments, and tasks. CIS graduates are accountable for their professional roles, and pursue their profession in an ethical manner. This includes giving and receiving professional critique and review, communication and the responsibility for, and/or leadership. As competent problem solvers, their focus will be creative; however, they will have different skills and experience depending on the particular degree program(s) they pursue. And as selfless contributors, CIS graduates value collaborative teamwork and contribute to team accomplishment that goes beyond personal development. They voluntarily give their time, talent, and/or resources to their community, profession, church and/or society.

Department-Wide Outcomes

The three computing degree programs managed by the CIS Department are all aimed at helping undergraduate students grow in their abilities to develop computer-based solutions to real problems. As such, all majors share expectations for what every CIS student will know and be able to do by the time they graduate. These department-wide outcomes include:

- Follow legal and ethical computing principles to analyze computing solutions for ethical ramifications such as global, cultural, social, environmental or economic concerns.
- Function and communicate effectively as a collaborative member or leader in a professional context.
- Demonstrate an ability to acquire and apply new knowledge or technology as needed, using appropriate learning strategies.
- Apply problem identification & problem solving strategies to the development of complex computer-based systems.

Computer and Information Science Co-Op Curriculum
Cycles available for Computer Science, Information Systems or Software Engineering:

Plan A

| | | | |
|--------|------------|------------|-------------------|
| Year 1 | Fall 1 | Spring 1 | Summer vacation |
| Year 2 | Fall 2 | Spring 2 | 4 month WP * |
| Year 3 | Fall 3 | 4 month WP | Summer Courses ** |
| Year 4 | 4 month WP | Spring 3 | 4 month WP |
| Year 5 | Fall 4 | Spring 4 | — |

Plan B

| | | | |
|--------|------------|------------|-----------------|
| Year 1 | Fall 1 | Spring 1 | Summer vacation |
| Year 2 | Fall 2 | 4 month WP | Summer Courses |
| Year 3 | 4 month WP | Spring 2 | 4 month WP |
| Year 4 | Fall 3 | Spring 3 | 4 month WP |
| Year 5 | Fall 4 | Spring 4 | — |

Plan C

| | | | |
|--------|------------|------------|-----------------|
| Year 1 | Fall 1 | Spring 1 | Summer vacation |
| Year 2 | Fall 2 | Spring 2 | 4 month WP |
| Year 3 | Fall 3 | 4 month WP | 4 month WP |
| Year 4 | 4 month WP | Spring 3 | Summer Courses |
| Year 5 | Fall 4 | Spring 4 | — |

Additional cycle available for Information Systems:
Plan D

| | | | |
|--------|------------|------------|-------------------|
| Year 1 | Fall 1 | Spring 1 | Summer vacation |
| Year 2 | Fall 2 | Spring 2 | 4 month WP * |
| Year 3 | 4 month WP | Spring 3 | Summer Courses ** |
| Year 4 | Fall 3 | 4 month WP | 4 month WP |
| Year 5 | Fall 4 | Spring 4 | — |

* *Work Period*** *Liberal Studies Core Courses*

NOTES:

- (1) Fall and Spring follow the regular curriculum schedule for a major.
- (2) For maximum financial aid, 12 credits of Liberal Studies Courses should be taken during the 4-month summer session listed.

CIS COURSE DESCRIPTIONS

CIS courses represent content that is cross-disciplinary or foundational to all computing degree requirements. CIS courses form the common core to the CS, SE and IS degrees.

CIS 103: First-Year Seminar: Tech Think

The First-Year Seminar is a discussion/experience-based course intended to orient the new student to Gannon University, to introduce the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life, and to encourage the development

of academic, personal and spiritual aspects of the student's life. Each seminar is unique, depending upon the instructor and/or program in which it is offered.

This course explores how scientific and technical professionals approach significant issues such as faith and religion. Students will engage in service-learning, as well as discuss and reflect upon aspects of philosophy and theology that relate the typical approaches taken by technically-oriented persons toward issues of belief and spiritual practice. Materials include aspects of Catholic Social Teaching relevant to technical and scientific professionals. The course includes aspects of effective academic planning and study habits, as well as instruction in the use of electronic communication to support learning. *2 credits, Fall*

CIS 150: Business Technology I*

A hands-on introduction to the application of personal computers in a modern, networked business environment. Introduction to the Windows operating system, use of the Internet, the World Wide Web, and the components of Microsoft Office, with particular emphasis on Word, Excel, and Powerpoint. *3 credits*

CIS 170: PC OS/Internet*

A detailed discussion of modern personal computers, peripheral devices, operating systems, graphical interfaces and use of the Internet. *1 credit*

CIS 171: PC Word Processing*

An introduction to word processing on a personal computer. Both basic and advanced document preparation capabilities are presented. Use of a word processor to facilitate writing efforts is a course objective. *1 credit*

CIS 172: PC Electronic Spreadsheet

A detailed discussion of electronic spreadsheet functions and operations. Students receive extensive hands-on experience in creating and editing an electronic spreadsheet. *1 credit*

CIS 173: PC Database

An introduction to relational database processing on a personal computer. Database topics of data dictionary construction, data entry, and queries to the database using SQL, form design, reports and labels, and their connection to tables. *1 credit*

CIS 174: PC Graphical Presentation

A detailed discussion of computer-based graphical presentation software. Students receive extensive hands-on experience creating professional graphical presentations and slide shows. *1 credit*

CIS 180: Problem Solving & Computer Programming

The course focuses on problem solving and its relationship to computer programming. The student is introduced to the tools for developing the solution to a problem, and its subsequent implementation as an algorithm in a computer program. Once the introductory concepts of computer algorithm development have been assimilated, the student progresses to creating programs in the Java programming language including sequence, condition, iteration, functional decomposition and object use.

Corequisite: CIS 181

Prerequisite: High School Trigonometry or equivalent

2 credits, Fall

CIS 181: Problem Solving & Computer Programming Lab

The course focuses on problem solving and its relationship to computer programming. The student is introduced to the tools for developing the solution to a problem, and its subsequent implementation as an algorithm in a computer program. Once the introductory concepts of computer algorithm development have been assimilated, the student progresses to creating programs in the Java programming language including sequence, condition, iteration, functional decomposition and object use.

Corequisite: CIS 180

Prerequisite: High School Trigonometry or equivalent

1 credit, Fall

CIS 182: Object-Oriented Programming

The course is aimed at developing advanced object-oriented programming skills, and assumes a foundation in the basic syntax of Java. The student will explore the basis of software development using the major constructs of encapsulation, polymorphism, inheritance and dynamic binding. Topics include GUI objects, event-driven programming, threading, networking and exception handling.

Corequisite: CIS 183

Prerequisite: CIS 180 and CIS 181

2 credits, Spring

CIS 183: Object-Oriented Programming Lab

The course is aimed at developing advanced object-oriented programming skills, and assumes a foundation in the basic syntax of Java. The student will explore the basis of software development using the major constructs of encapsulation, polymorphism, inheritance and dynamic binding. Topics include GUI objects, event-driven programming, threading, networking and exception handling.

Corequisite: CIS 182

Prerequisite: CIS 180 and CIS 181

1 credit, Spring

CIS 195: Principles of Systems

An overview course introducing the concepts and value of data, information, and systems to the decision-making and strategic capabilities of an organization.

Prerequisite: CIS 150 or CIS 180

3 credits, Spring

CIS 207: Introduction to Business Programming – COBOL

A competency-building course focusing on the basic syntax and semantics of the COBOL language. Programming projects are used to introduce the student to system design, documentation, and coordination of programs.

Prerequisite: CIS 180 and CIS 181

3 credits, Fall Even Years

CIS 210: Introduction to Data Analytics

This course introduces students to an analytic framework and prepares them to answer realworld problems encountered by everyday individuals and organizations. The course will teach students how to employ structured analysis techniques used by intelligence professionals to collect, process and analyze information to forecast future events. Emphasis is on analyzing both structured and unstructured data to convert data into executable queries to support decision- makers. Students will additionally learn to utilize information technology, data structures and languages to mirror the techniques executed by intelligence analysts. The conclusion of the course students will produce programs that answer specific questions problems.

Prerequisite: None

3 credits, Spring

CIS 219: Linux Programming

This course introduces the students to the Linux boot and login processes, basic process management techniques, file system, user controlled software build process, and basic application software architecture using the operating system. This course applies the concepts of shells, shell programming, controlling tasks developed with high-level programming languages to understand co-operating tasks by using signals and inter-processing communication (IPC). By applying the various software techniques, the student will comprehend the basic Linux Operating System (OS) concepts.

Prerequisite: CIS 180 and CIS 181 or ECE 111

3 credits, Fall

CIS 239: The User Experience

This course deals with the study of the user experience (UX), and its relationship to human computer interaction. This course includes identifying and assessing usability issues, particularly as they apply to computer-based systems. Includes coverage of UX goals and processes, usability factors and measurements, wireframes and other prototyping technologies, and introductory web implementation. Special attention is given to usability and usability testing.

3 credits, Fall

CIS 240: Web Management and Design

The course aims at providing an introduction to the tools and knowledge necessary to design and manage a web site on the Internet. Topics include servers and clients, HTML, CGI scripting, languages, business and ethical aspects of the web. *3 credits, Fall*

CIS 245: Multimedia Production

Multimedia software uses text, graphics, sound, animation, and video to entertain, inform or educate its users. This course examines all parts of the multimedia software development process and provides hands-on experience with the use of multimedia software authoring tools. Corequisite: CIS 246 *2 credits*

CIS 246: Multimedia Production Lab

Interactive lab taken concurrently with CIS 245.

Corequisite: CIS 245

1 credit

CIS 250: Business Technology II

A hands-on study of the application of personal computers in a modern, networked business environment. Builds on material covered in CIS 150 Business Technology I. Provides instruction in the use of Microsoft Office components, with particular emphasis on advanced modeling using Excel. Other topics covered will be creation of web pages via HTML and other web authoring tools, integration of various Microsoft Office applications.

Prerequisite: CIS 150

3 credits, Spring

CIS 255: Database Management and Administration

Develop skills in query statements usage for programming, database design, as well as implementing and managing SQL servers. The core concept of SQL database design, usage and server configuration will be first introduced. Query statements for programming and SQL server management will be substantially taught. Essential skills for administering a database are covered. *3 credits, Spring*

CIS 277: Mobile Application Development I

This is an introductory course into the methods and tools for developing mobile applications for integrated devices such as iOS, Android and other mobile computing platforms. Topics include introduction to the coding and development platforms for one of the major mobile platforms (e.g., iOS or Android), unit testing, source code control, the development of prototype applications, and deployment.

Prerequisite or Corequisite: CIS 239 and CIS 287

3 credits, Fall

CIS 287: Object-Oriented Design Lab

An advanced treatment of methods for producing a software design. Includes treatment of the developing Unified Modeling Language (UML) models and their application to software development.

Corequisite: CIS 277

Prerequisite: CIS 182 and CIS 183

1 credit, Fall

CIS 290: Introduction to Networks

The theory and techniques of data communications design and analysis are studied. Topics include data communication concepts, terminology, and standards. Error correction and detection, LANs, ISO/OSI layers are also an integral part of this course. *3 credits*

CIS 302: CIS Professional Seminar

The course focuses on current issues facing engineering and software professionals. Included with the focus, is an introduction to technical speaking as well as a review of trends in the software, computing and other engineering fields, job prospects, political issues, team and workplace behavior.

Prerequisite: Junior status and SPCH 110 or 111

1 credit, Spring

CIS 303: CIS Leadership Seminar

The Leadership Seminar introduces students to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in the various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for students' leadership development as reflected both in this course and in the corequisite Theology or Philosophy Series III course. The course provides an introduction to the practices of ethical leadership for technical professionals as well as a review of trends in the software & computing fields, job prospects, political issues, and team and workplace behavior, including current issues facing technical professionals.

This course qualifies as an LS-approved Leadership Seminar.

Corequisite or Prerequisite: LTHE 101 or LTHE/LPHI III series course

1 credit

CIS 305: Essentials of UNIX Administration

Essentials of UNIX administration such as account management, file structure, security features are presented.

Prerequisite: CIS 219

1 credit, Fall

CIS 326: Formal Methods in Software Development

Focusing on the issues and techniques needed to apply formal specification methods to the development of software, the course uses mathematical and logical formalism to develop a precise statement of what software is to do.

Prerequisite: CIS 182, CIS 183 and MATH 223

3 credits, Fall even years

CIS 350: Requirements and Project Management

Focusing on the management of software requirements and projects, particularly teams and stakeholders, the course includes coverage of requirements elicitation, analysis, documentation, and negotiation. It also includes the roles and methods of effective technical project management. Typical coverage includes the cost of quality, and its implications for requirements and project management.

Corequisite or Prerequisite: MATH 213 or MATH 312 or BCOR 220

3 credits, Fall

CIS 353: Global Project Management

This course focuses on experiential learning emphasizing software development with remote, multinational teams using an open-ended group project approach. Students participating in this course will be co-developing an IT project with other remote teams, for a project that is primarily sourced in an off-shore location. Students will help to identify the scope of the overall project, as well as the assignment and responsibility for a portion of that project. Project responsibilities, software and team interfaces will all have to be defined and managed by the team members, facilitated by one or more faculty members from the participating institutions.

The heart of the experience is on project planning, scope management, and coordination amongst a culturally and linguistically diverse development team. Ultimately, the goal is to produce the requirements for, the planning of, and where appropriate, creation of a prototype system components for use by the off-shore stakeholder per their requirements. Students are required to travel to the off-shore location to meet with the client and the development teams as part of the project launch. This may include a second trip to close out the project with the client.

The Leadership Seminar introduces students to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in the various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for students' leadership development as reflected both in this course and in the corequisite Theology or Philosophy Series III course.

Prerequisite: Satisfactory Performance in MATH 312 (Probability & Statistics), BCOR 220 (Business statistics) or equivalent. Junior Standing in CEB programs. Permission of Instructor and agreement to course-deposit policy are required.

Corequisite or Prerequisite: LTHE 101 or LTHE/LPHI III series course

Corequisite or Prerequisite: MATH 213 or MATH 312 or BCOR 220

4 credits, Fall

CIS 355: Web Programming and Implementation

Focuses on the development of web applications with user interface conventions that facilitate viewing, searching, and changing of information stored in a relational database. The student will also learn to set up and configure the development environment for applications requiring a web client, web server, application server and relational database.

Prerequisite: CIS 182/183 or ECE 111 and CIS 255

3 credits, Fall

CIS 375: Server Management

This course focuses on the configuration of networks for internet services, and how to deploy and maintain internet servers on multiple platforms. The course includes extensive laboratory work to support the installation and configuration of hardware and software to support networking, servers, and security for internet services, particularly on Windows and UNIX platforms. The course also includes discussion of the ramifications of internet service technologies. The course also includes building Network Balanced and High Availability Clusters that are the building blocks of forming a cloud.

Prerequisite: CIS 290

Corequisite or Prerequisite: CIS 219

3 credits, Spring Even Years

CIS 377: Mobile Application Development II

A project-based course for developing mobile applications for integrated devices such as iOS, Android and other mobile computing platforms. Includes introduction to the coding and development platforms for one of the major mobile platforms (e.g., iOS or Android), unit testing, source code control, and deployment includes the development of useable applications.

Prerequisite: CIS 277 and CIS 287

3 credits, Spring, Odd Years

CIS 381: Directed Research

Directed research and development in software and its applications.

Prerequisite: Permission of the instructor

1 credit

CIS 382: Directed Research

Directed research and development in software and its applications.

Prerequisite: Permission of the instructor

2 credits

CIS 383: Directed Research

Directed research and development in software and its applications.

Prerequisite: Permission of the instructor

3 credits

CIS 385: Network Design & Management

An advanced network design course covering contemporary network computing, including data, voice, multimedia, WAN and intranets. Detailed discussions along with hands-on laboratory experience with various hardware and software components that comprise these networks. Network analysis to monitor traffic flow and to optimize overall network design is included.

Prerequisite: CIS 290 or permission of instructor

Corequisite: CIS 386

2 credits, Fall Odd Years

CIS 386: Network Design & Management Lab

Interactive laboratory to be taken concurrently with CIS 385.

Corequisite: CIS 385

1 credit, Fall Odd Years

CIS 387: System and Network Security

The course reviews standard computer security for desktop and server-based systems.

Coverage includes network security issues and techniques. Ethical hacking and defenses against unethical hacking and other computer and network intrusions are discussed.

Prerequisite: CIS 290 and written permission of the instructor.

3 credits, Fall

CIS 390: Distributed Programming

An introduction to the fundamental techniques and tools used developing programs that rely on inter-process communication. Topics include TCP/IP, client-server paradigm, daemon programs, client socket calls, server socket calls, concurrent vs. iterative servers, connectionless and connection-oriented server paradigms, advanced topics.

Prerequisite: CS 330

3 credits, Spring

CIS 391-396: Special Topics in Computer and Information Science

Special courses developed from student interest in all areas of computer and information science. A brief description of current content to be announced and may be included in the schedule of classes. The course number may be taken more than once.

Prerequisite: Permission of the Chair of the department

3 credits

CIS 400: Internship

In conjunction with a local industry or business, the student participates in practical training related to his/her major. Academic requirements are specified by the department. *1-3 credits*

CIS 438: Human Interface Design & Maintenance

The course deals with human-computer interaction and covers a wide range of topics, including software tools, usability issues, direct manipulation, command and natural languages, and multiple-window strategies. The course includes identifying and assessing the issues surrounding the maintenance of code, particularly in the context of HCI. Special emphasis is also given to design and maintenance issues for web-enabled systems.

Prerequisite: CIS 355 or CIS 277

3 credits, Fall

CIS 445: Advanced Multi-Media

The course covers advanced multimedia concepts such as graphics, animation, video and sound; as well as the tools used to create multimedia applications. In addition, the course presents the design principles and management skills needed to develop dynamic, interactive multimedia products.

Prerequisite: CIS 245, CIS 246 or permission of the instructor

3 credits, Spring

CIS 457: Senior Design I

The Liberal Studies senior capstone is the culminating experience of the Core curriculum and therefore requires students to integrate knowledge and skills from their major study areas, Liberal Studies courses, and co-curricular experiences. The course emphasizes cultural competence, leadership, ethical reasoning, Catholic social teaching, and LIFECORE. CIS 457 is the first class in a 2-semester capstone design sequence with emphasis on working effectively in a team environment. Students review systems design techniques, form teams, and begin the development of an end product. Course topics include systems analysis, language and presentation skills, team building, project management, ethical issues in the digital world.

Prerequisite: Senior status in a CIS Program, (CIS 287 or CIS 335), CIS 302 and [LTHE 101, LTHE 227 or LPHI 237]

3 credits, Fall

CIS 458: Senior Design II Lab

The completion of the capstone design sequence. Students develop and deliver a completed end product. Emphasis is on working effectively in cross-disciplinary teams. Course topics include organizational behavior, quality assurance, documentation, design process and process metrics, risk management, written and oral presentation skills, ethical issues in the digital world.

Prerequisite: CIS 457

3 credits, Spring

SEECs 101, 102, 201, 202, 301, 302, 401, 402: Professional and Personal Enrichment Seminar

The series of seminars for SEECs students is built around a curriculum that addresses both the professional and personal growth of the scholars. Each semester of the seminar includes a design component, a professional development component, and a personal development component. Considerable interaction among SEECs students and the faculty members fosters a sense of professional community among the students. Developmental workshops are

offered to build academic, career, and social skills. Organizational and leadership skills are developed through team activities, colloquium speakers, and field trips. The course features a project where SEECs students from different academic levels and majors work together along with a community non-profit organization to identify, design, and implement a solution to a technological problem to aid the organization. *0 credit*

SEECs 101: Professional and Personal Enrichment Seminar

See course description above

In the first semester the SEECs seminar focuses on preparation for lifelong learning experiences. Prerequisite: SEECs recipient with Freshman standing at Gannon University *0 credit, Fall*

SEECs 102: Professional and Personal Enrichment Seminar

See course description above

In the second semester the SEECs seminar focuses continues to focus on preparation for lifelong learning experiences. Prerequisite: SEECs recipient with Freshman standing at Gannon University *0 credit, Spring*

SEECs 201: Professional and Personal Enrichment Seminar

See course description above

This semester the SEECs seminar focuses on the exploration of the roles of STEM professionals, specifically engineers and computer scientists, in society. Prerequisite: SEECs recipient with Sophomore standing at Gannon University *0 credit, Fall*

SEECs 202: Professional and Personal Enrichment Seminar

See course description above

This semester the SEECs seminar continues to focus on the exploration of the roles of STEM professionals, specifically engineers and computer scientists, in society. Prerequisite: SEECs recipient with Sophomore standing at Gannon University *0 credit, Spring*

SEECs 301: Professional and Personal Enrichment Seminar

See course description above

This semester the SEECs seminar focuses on the interaction with professionals and society, and preparation for professional practice or advanced education. Prerequisite: SEECs recipient with Junior standing at Gannon University *0 credit, Fall*

SEECs 302: Professional and Personal Enrichment Seminar

See course description above

This semester the SEECs seminar continues to focus on the interaction with professionals and society, and preparation for professional practice or advanced education. Prerequisite: SEECs recipient with Junior standing at Gannon University *0 credit, Spring*

SEECs 401: Professional and Personal Enrichment Seminar

See course description above

In the first semester the SEECs seminar focuses on preparation for potential educational and career paths taken after graduation from Gannon University and on personal growth. Prerequisite: SEECs recipient with Senior standing at Gannon University *0 credit, Fall*

SEECs 402: Professional and Personal Enrichment Seminar

See course description above

In this semester the SEECs seminar continues to focus on preparation for potential educational and career paths taken after graduation from Gannon University, and on personal growth. Prerequisite: SEECs recipient with Senior standing at Gannon University *0 credit, Spring*

COMPUTER SCIENCE (CS)

The Computer Science (CS) major is designed to develop the analytical ability and expertise in computer usage, both in software creation and usage, which are necessary in the fields of science, technology, and industry. In addition to the computer courses, the program provides a concentration of mathematics and physics courses which are necessary for the development of scientific applications. The curriculum is oriented towards preparing students for graduate studies or career opportunities in software development where mathematical and technical skills are necessary to analyze and solve computing problems.

The Computer Science curriculum is delivered in five different ways –

1. CS: four-year degree program, described here.
2. CS-CoOp: five-year cooperative mode, described in the **CIS Department** section above.
3. CS-SE: dual degree program where students complete both the Computer Science and the Software Engineering degree requirements simultaneously described in the **Computer Science-Software Engineering Dual Degree** section.
4. SEID-CS: multi-degree, where students additionally completed the requirements for a Bachelors of Engineering (B.Eng) degree in Software Technology at Esslingen University of Applied Science described in the **International Software Engineering Degrees** section.
5. CS-MS-CIS: Accelerated 5-year program culminating in a four year degree followed by one year to complete one of the MS-CIS program options, described below.

Opportunities

The field of computer science is one of the fastest-growing employment markets in today's society. Consequently, employment and research opportunities continue to be available to program participants before graduation. Applications of the training provided in the program include a wide range of specialization, including research, statistics, and scientific applications on mobile, workstation and microprocessor computer systems.

Aims and Objectives

The CS major prepares its graduates to achieve significant career and professional accomplishments in four ways: as employable and accountable professionals, competent problem solvers, and selfless contributors.

Employable Professional: CS graduates are well prepared for employment or graduate work in their field, and to continue working in that field or related fields. This includes adaptability to different disciplines, environments, and tasks. They are fully prepared for employment in chosen post -graduate pursuits.

Accountable Professional: CS graduates are accountable for their professional roles, and pursue their profession in an ethical manner. This includes giving and receiving professional critique and review, communication and the responsibility for, and/or leadership in:

- Research/development projects or teams,
- Aspects of major system components, or
- Business development work.

Competent CS Problem Solver: CS problem solving focuses on computing technology – leveraging theoretical and mathematical foundations in exploring and implementing algorithms, languages as well as the techniques and methods to innovate and develop computing systems and technologies. CS graduates apply current computing knowledge, technology, skills, techniques and methods to:

- Identify, analyze and develop effective solutions for problems,
- Improve product, process and/or organizational elements, and
- Apply creativity in design thinking and innovate where appropriate.

Selfless Contributors: CS graduates value collaborative teamwork and contribute to team accomplishment that goes beyond personal development. They voluntarily give their time, talent, and/or resources to their community, profession, church and/or society.

Program Outcomes

Gannon's Computer Science degree program is accredited by the Computing Accreditation Commission of ABET, <http://www.abet.org>. Gannon's Computer Science program has enjoyed a long history of successful students who have learned to design and build software and to apply computer science methods in both development and research domains.

Gannon's Computer Science program has a strong focus on problem-solving beginning with the very first course in computing (**CIS 180 Problem Solving & Computer Programming**) and carried through into the senior design sequence (**CIS 457/458 Senior Design**). Throughout the learning process, students learn how to effectively define and represent both problems and the solutions needed to solve those problems. Throughout the course of study, students learn and practice making ethical decisions.

All students will learn how to utilize information and computer technology, while developing and maintaining a comprehension of the changing technology used in computer-based systems, as well as its global and local impacts. Through this learning process, we expect students to own a desire for continuous improvement and demonstrate effective verbal, written, and listening communication.

Specifically, Computer Science students completing our program learn to:

- Design, implement and evaluate a computing-based solution to meet a given set of computing requirements.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.

Integration

One of the hallmarks of Gannon's CS degree is its integration with traditional liberal-studies education. Gannon's CS majors not only learn computing well, but also learn how to synthesize, think critically, and communicate well. In our program, bridging traditional courses like writing, philosophy, theology and ethics begins in the CIS 103 CIS First-Year Seminar, and continues throughout the program, culminating in the CIS 457/458 Senior Design sequence.

The Program:

The CS degree requires 129 credits to graduate. These are divided into two primary sources, a Computer and Information Science (CIS) core, and a Computer-Science core. These, integrated with the Core of Discovery provide the breadth and depth to the program. The program also provides a one-semester study abroad option.

CIS Core Courses

| | | | |
|-------------|--|---------|---------------------------|
| CIS 103 | First-Year Seminar | CIS 290 | Introduction to Networks |
| CIS 180/181 | Problem Solving & Computer Programming and Lab | CIS 302 | CIS Professional Seminar |
| CIS 182/183 | Object-Oriented Programming and Lab | CIS 303 | CIS Leadership Seminar |
| CIS 277 | Mobile Appl. Development I | CIS 387 | System & Network Security |
| CIS 219 | Programming in UNIX | CIS 457 | Senior Design I |
| CIS 255 | Database Management and Administration | CIS 458 | Senior Design II Lab |

Computer Science Courses

| | | | |
|----------|------------------------------|----------|--|
| CSC 220 | Data Structures & Algorithms | CIS 326 | Formal Methods in Software Development |
| CIS 223 | Algorithm Development Lab | CSC 330 | Operating Systems |
| CIS 239 | The User Experience | CSC 360 | Comparative Languages |
| CIS 277 | Mobile Appl. Development I | CIS 390 | Distributed Programming |
| CIS 287 | Object-Oriented Design Lab | ECE 337 | Computer Architecture |
| SOFT 210 | Software Engineering | MATH 307 | Numerical Methods |
| | | MATH 310 | Number Theory & Cryptography |

All CIS course descriptions are provided in the section **Computer and Information Science**

All CYSEC course descriptions are provided in the section **Cybersecurity**

All ECE course descriptions are provided in the section **Electrical and Computer Engineering**

All IS course descriptions are provided in the section **Information Systems**

All SOFT course descriptions are provided in the section **Software Engineering**

Computer Science Curriculum (129 credits)

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|-----------|--|
| 2 | First-Year Seminar/CIS 103 |
| 2 | Prob. Solv. & Comp. Programming/CIS 180 |
| 1 | Prob. Solv. & Comp. Program. Lab/CIS 181 |
| 3 | Calculus 1/MATH 140 |
| 3 | Intro. Networks/CIS 290 |
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| <u>17</u> | |

Spring

| | |
|-----------|--|
| 2 | Object-Oriented Programming/CIS 182 |
| 1 | Object-Oriented Programming Lab/CIS 183 |
| 3 | Calculus 2/MATH 141 |
| 3 | Critical Analysis & Comp./LENG 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Fund. of Physics 1: Mechanics/PHYS 210 |
| 1 | Fund. of Physics 1: Mechanics Lab/PHYS 211 |
| <u>16</u> | |

SOPHOMORE

Fall

| | |
|-----------|--|
| 3 | Data Structures & Algorithms/CSC 220 |
| 3 | The User Experience/CIS 239 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Discrete Mathematics 1/MATH 222 |
| 3 | Mobile Application Development I/CIS 277 |
| 1 | Object-Oriented Design Lab/CIS 287 |
| 1 | Technical Communication/SPCH 110 |
| <u>17</u> | |

Spring

| | |
|-----------|---|
| 3 | Database Management & Admin/CIS 255 |
| 1 | Algorithm Development Lab/CIS 223 |
| 3 | Discrete Mathematics 2/MATH 223 |
| 3 | Numerical Analysis/MATH 314 |
| 3 | Software Engineering/SOFT 210 |
| 1 | Physics 3: E & M Lab/PHYS 215 (or PHYS 212) |
| 3 | Physics 3: E & M/PHYS 214 (or PHYS 212) |
| <u>17</u> | |

JUNIOR

Fall

| | |
|-----------|---|
| 3 | Web Programming & Impl./CIS 355 |
| 3 | Formal Methods in Software/CIS 326 |
| 3 | Linux Programming/CIS 219 |
| 3 | Applied Statistics MATH 213 <i>or</i> MATH 312 |
| 3 | Project Economics/ECON 285 |
| 1 | CIS Leadership Seminar/CIS 303 |
| <u>16</u> | |

Spring

| | |
|-----------|---|
| 1 | CIS Professional Seminar/CIS 302 |
| 3 | CIS Technical Elective/CIS |
| 3 | Number Theory & Cryptography/ MATH 310 |
| 3 | CIS Technical Elective/CIS |
| 3 | LPHI 237 <i>or</i> any LTHE 300 course |
| 3 | Computer Architecture/ECE 337 |
| <u>16</u> | |

SENIOR

Fall

| | |
|-----------|-------------------------------------|
| 3 | Senior Design I/CIS 457 |
| 3 | Comparative Languages/CIS 360 |
| 3 | System and Network Security/CIS 387 |
| 3 | Philosophy II Series/LPHI |
| 3 | History without Borders/LHST 111 |
| 3 | Operating Systems/CSC 330 |
| <u>18</u> | |

Spring

| | |
|-----------|---------------------------------|
| 3 | Senior Design II Lab/CIS 458 |
| 3 | Distributed Programming/CIS 390 |
| 3 | Literature Series/LENG |
| 3 | Fine Arts Series/LFIN |
| 3 | CIS Technical Elective/CIS |
| <u>15</u> | |

Technical Electives

Students choose two technical electives with approval of their academic advisor. Most CIS, CYSEC, CYENG, IS, SE, ENGR 3xx or 4xx courses are eligible as technical electives. Courses typical for CS Technical Electives include:

| | | | |
|-------------|---|-----------|--------------------------------------|
| CIS 207 | Introduction to Business Programming: COBOL | IS 340 | Managing IS in the Cloud |
| CYBER 210 | Introduction to Cyber Systems | CIS 353 | Global Project Management |
| CIS 240 | Web Management and Design | CIS | |
| CIS 245/246 | Multimedia Prod. and Lab | 385/386 | Network Design & Management and Lab |
| CIS 270 | Info. Tech. and Operations | CIS 375 | Server Management |
| SOFT 410 | Software Maint. & Deployment | CIS 391-6 | Special Topics in CIS |
| SOFT 320 | Software Architecture | CIS 400 | Internship |
| IS 335 | Systems Analysis and Design | SOFT 310 | Software Testing & Quality Assurance |
| IS 337 | Intro to Enterprise Architecture | CIS 438 | Human Interface Design & Maintenance |
| | | CIS 445 | Advanced Multimedia |

Computer Science Study Abroad Curriculum (129 credits)*(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

- 2 First-Year Seminar/CIS 103
- 2 Problem Solving and
Comp. Prog./CIS 180
- 1 Problem Solving and
Comp. Prog. Lab/CIS 181
- 3 Calculus 1/MATH 140
- 3 Intro. Networks/CIS 290
- 3 Foundation of Theology/LTHE 101
- 3 College Composition/LENG 111

17*Spring*

- 2 Object-Oriented Programming/CIS 182
- 1 Object-Oriented Programming Lab/
CIS 183
- 3 Calculus 2/MATH 141
- 3 Critical Analysis & Comp./LENG 112
- 3 Introduction to Philosophy/LPHI 131
- 3 Fund. Physics 1: Mechanics/PHYS 210
- 1 Fund. Physics 1 Lab/PHYS 211

16**SOPHOMORE***Fall*

- 3 Linux Programming/CIS 219
- 3 User Experience/CIS 239
- 1 Technical Communication/SPCH 110
- 3 Discrete Mathematics 1/MATH 222
- 3 Mobile Application Development I/
CIS 277
- 3 Data Structures & Algorithms/CSC 220
- 1 Object-Oriented Design Lab/CIS 287

17*Spring*

- 3 Database Management & Admin/
CIS 255
- 1 Algorithm Development Lab/CIS 223
- 3 Discrete Mathematics 2/MATH 223
- 3 Computer Architecture/ECE 337
- 1 CIS Leadership Seminar/CIS 303
- 3 Numerical Analysis/MATH 314

17**JUNIOR***Fall*

- 3 Formal Methods in Software/CIS 326
- 3 Web Programming & Impl./CIS 355
- 3 Statistics/MATH 312 *or* MATH 213
- 3 Operating Systems/CIS 330
- 3 The Bible: An Intro/LTHE 201
- 3 Fine Arts Series/LFIN

18*Spring (Semester abroad @ EUAS)*

- 3 CIS Technical Elective/CIS xxx
- 3 CIS Technical Elective/CIS xxx
- 3 Software Engineering/SOFT 210
- 3 Distributed Programming/CIS 390
- 1 CIS Professional Seminar/CIS 302¹

13**SENIOR***Fall*

- 3 Senior Design I/CIS 457
- 3 History Without Borders/LHST 111
- 3 LPHI 237 *or* any LTHE 300 course
- 3 Philosophy II Series/LPHI
- 3 System and Network Security/CIS 387
- 3 Comparative Languages/CSC 360

18*Spring*

- 3 Senior Design II Lab/CIS 458
- 3 Project Economics/ECON 285
- 3 Literature Series/LENG
- 1 Physics 3: E & M Lab/PHYS 215
(*or* PHYS 212)
- 3 Physics 3: E & M/PHYS 214
(*or* PHYS 212)
- 3 Number Theory & Cryptography/
MATH 310

16¹ CIS 302 will be completed online

Accelerated 5-Year CS-MS-CIS Program

The CS program provides an excellent pathway to the M.S. program in Computer and Information Science. Students apply to the accelerated MS program during sophomore or junior year, prior to registration as a junior or senior for GR courses. The Accelerated Program Application will be approved by the department and the dean and sent to the registrar's office to make a note on the student's profile. In the Senior Year, students apply to the graduate program through Graduate Admissions to officially become a graduate student. Students have to select one of the available MS Program options: Data Science (DS), Information Technology (IT) and Software Engineering (SE).

To remain in the accelerated program, students are required to maintain a 3.00 GPA in their undergraduate courses. When accepted, students rearrange their graduation plan to match one of the patterns provided below. Six credits of identified UG work can be counted toward the MS-CIS degree; other MS-Equivalent courses can be counted for placement, but not credit toward MS-CIS degree requirements. The total credit count to complete the BS-SE and the MS-CIS is $129 + 24 = 153$ credits.

BS Computer Science + MS Data Science or Information Technology**Accelerated 5-year program (129+24 credits)**

(Numerals in front of courses indicate credits)

FRESHMAN*Fall*

- 2 First-Year Seminar/CIS 103
- 2 Problem Solving and
Comp. Prog./CIS 180
- 1 Problem Solving and
Comp. Prog. Lab/CIS 181
- 3 Calculus 1/MATH 140
- 3 Intro. Networks/CIS 290
- 3 Foundation of Theology/LTHE 101
- 3 College Composition/LENG 111

 17
Spring

- 2 Object-Oriented Programming/CIS 182
- 1 Object-Oriented Programming Lab/
CIS 183
- 3 Calculus 2/MATH 141
- 3 Critical Analysis & Comp./LENG 112
- 3 Introduction to Philosophy/LPHI 131
- 3 Fund. Physics 1: Mechanics/PHYS 210
- 1 Fund. Physics 1 Lab/PHYS 211

 16
SOPHOMORE*Fall*

- 3 The Bible: An Intro/LTHE 201
- 3 User Experience/CIS 239
- 1 Technical Communication/SPCH 110
- 3 Discrete Mathematics 1/MATH 222
- 3 Mobile Application Development I/
CIS 277
- 3 Data Structures & Algorithms/CSC 220
- 1 Object-Oriented Design Lab/CIS 287

 17
Spring

- 3 Database Management & Admin/
CIS 255
- 1 Algorithm Development Lab/CIS 223
- 3 Discrete Mathematics 2/MATH 223
- 3 Numerical Analysis/MATH 314
- 3 Software Engineering/SOFT 210
- 1 Physics 3: E & M Lab/PHYS 215
(or PHYS 212)
- 3 Physics 3: E & M/PHYS 214
(or PHYS 212)

 17

JUNIOR

Fall

| | |
|---|--|
| 3 | Formal Methods in Software/CIS 326 |
| 3 | Web Programming & Impl./CIS 355 |
| 3 | Applied Statistics/MATH 312 or MATH 213 |
| 3 | Project Economics/ECON 285 |
| 1 | CIS Leadership Seminar/CIS 303 |
| 3 | Linux Programming/CIS 219 |

16*Spring*

| | |
|---|--|
| 3 | Number Theory & Cryptography/ MATH 310 |
| 3 | Requirements & Project Management/ CIS 350 ¹ |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Computer Architecture/ECE 337 |
| 3 | History without Borders/LHST 111 |
| 1 | CIS Professional Seminar/CIS 302 |

16

SENIOR

Fall

| | |
|---|--|
| 3 | Senior Design I/CIS 457 |
| 3 | Comparative Languages/CSC 360 |
| 3 | Operating Systems/CSC 330 |
| 3 | Philosophy II Series/LPHI |
| 3 | System and Network Security/CIS 387 |
| 3 | Data Centric Systems/GCIS 516 ² |

18*Spring*

| | |
|---|--|
| 3 | Senior Design II Lab/CIS 458 |
| 3 | Distributed Programming/CIS 390 |
| 3 | Literature Series/LENG |
| 3 | Fine Arts Series/LFIN |
| 3 | Statistical Computing/GCIS 5231 |
| 3 | Cloud Architecture/GCIS 583 ² |

18

GRADUATE

Fall

| | |
|---|---------------------------------------|
| 3 | GCIS 66x or GCIS65x (track dependent) |
| 3 | GCIS 66x or GCIS65x (track dependent) |
| 3 | Scholarship Seminar/GCIS 605 |

9*Spring*

| | |
|---|---------------------------------------|
| 3 | GCIS 66x or GCIS65x (track dependent) |
| 3 | GCIS Elective |
| 3 | Directed Project/GCIS 698 |

9¹ GCIS Credits count for both UG and GR degree requirements.² GCIS Credits taken in addition to/beyond UG degree requirements.

BS Computer Science + MS Software Engineering
Accelerated 5-year program (129+24 credits)

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|---|--|
| 2 | First-Year Seminar/CIS 103 |
| 2 | Problem Solving and Comp. Prog./CIS 180 |
| 1 | Problem Solving and Comp. Prog. Lab/CIS 181 |
| 3 | Calculus 1/MATH 140 |
| 3 | Intro. Networks/CIS 290 |
| 3 | Foundation of Theology/LTHE 101 |
| 3 | College Composition/LENG 111 |

17*Spring*

| | |
|---|---|
| 2 | Object-Oriented Programming/CIS 182 |
| 1 | Object-Oriented Programming Lab/ CIS 183 |
| 3 | Calculus 2/MATH 141 |
| 3 | Critical Analysis & Comp./LENG 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Fund. Physics 1: Mechanics/PHYS 210 |
| 1 | Fund. Physics 1 Lab/PHYS 211 |

16

SOPHOMORE

Fall

- 3 The Bible: An Intro/LTHE 201
- 3 User Experience/CIS 239
- 1 Technical Communication/SPCH 110
- 3 Discrete Mathematics 1/MATH 222
- 3 Mobile Application Development I/
CIS 277
- 3 Data Structures & Algorithms/CSC 220
- 1 Object-Oriented Design Lab/CIS 287

17*Spring*

- 3 Database Management & Admin/
CIS 255
- 1 Algorithm Development Lab/CIS 223
- 3 Discrete Mathematics 2/MATH 223
- 3 Numerical Analysis/MATH 314
- 3 Software Engineering/SOFT 210
- 1 Physics 3: E & M Lab/PHYS 215
(or PHYS 212)
- 3 Physics 3: E & M/PHYS 214
(or PHYS 212)

17

JUNIOR

Fall

- 3 Formal Methods in Software/CIS 326
- 3 Web Programming & Impl./CIS 355
- 3 Applied Statistics/MATH 312
or MATH 213
- 3 Project Economics/ECON 285
- 1 CIS Leadership Seminar/CIS 303
- 3 Linux Programming/CIS 219

16*Spring*

- 3 Number Theory & Cryptography/
MATH 310
- 3 Requirements & Project Management/
CIS 350¹
- 3 LPHI 237 or any LTHE 300 course
- 3 Computer Architecture/ECE 337
- 3 History without Borders/LHST 111
- 1 CIS Professional Seminar/CIS 302

16

SENIOR

Fall

- 3 Senior Design I/CIS 457
- 3 Comparative Languages/CSC 360
- 3 Operating Systems/CSC 330
- 3 Philosophy II Series/LPHI
- 3 System and Network Security/CIS 387
- 3 Data Centric Systems/GCIS 516²

18*Spring*

- 3 Senior Design II Lab/CIS 458
- 3 Distributed Programming/CIS 390
- 3 Literature Series/LENG
- 3 Fine Arts Series/LFIN
- 3 Software Architecture/SOFT 310¹
- 3 Advanced Programming/
GCIS 521 or 522²

18

GRADUATE

Fall

- 3 Software Maint. & Deploy/GCIS 634
- 3 Interactive Software Dev./GCIS 639
- 3 Scholarship Seminar/GCIS 605

9*Spring*

- 3 GCIS Elective
- 3 GCIS Elective
- 3 Directed Project/GCIS 698

9¹ GCIS Credits count for both UG and GR degree requirements.² GCIS Credits taken in addition to/beyond UG degree requirements.

Computer Science Minor Requirements (18 credits)

(Numerals in front of courses indicate credits)

| | |
|----------|--|
| 3 | Problem Solving and Computer Programming & Lab/CIS 180 & CIS 181 |
| 3 | Object-Oriented Programming & Lab/CIS 182 & CIS 183 |
| 3 | Data Structures and Algorithms/CSC 220 |
| 3 | The User Experience/CIS 239 |
| 3 | Mobile Application Development I/CIS 277 |
| 3 | Introduction to Networks/CIS 290 |
| <hr/> 18 | |

COURSE DESCRIPTIONS

CSC 220: Data Structures and Algorithms

An in-depth programming-based study of data structures and of algorithms for their manipulation. Arrays, tables, stacks, queues, trees, linked lists, sorting, searching and hashing are topics considered.

Prerequisite: CIS 182 and CIS 183

3 credits, Fall

CSC 223: Algorithm Development Lab

This course provides a closer analysis of algorithms introduced in MATH 223 and gives the student an opportunity to implement the algorithms in computer code. Fundamental techniques, searching, sorting, tree, graph and backtracking algorithms are covered.

Corequisite or Prerequisite: MATH 223

Prerequisite: CSC 220

1 credit, Spring

CSC 320: Analysis & Design of Algorithms

Focusing on the study of the design, analysis, and complexity of algorithms, fundamental techniques, searching, sorting and order statistics, and basic graph algorithms are reviewed. The course introduces the ideas of time and space complexity. Emphasis is on providing the student with a firm background to be used for further study of algorithms using more advanced techniques.

Prerequisite: CSC 220 and MATH 222

3 credits, Fall

CSC 325: Formal Languages & Automata

The course presents the abstract models of computers (finite automata, pushdown automata, and Turing machines) and the language classes they recognize or generate (regular, context-free, and recursively enumerable). Topics include Turing machines, recursive functions, Church's thesis, undecidability, and the halting problem. Applications of these models to compiler design, algorithms, and complexity theory are also presented.

Prerequisite: CSC 220 and MATH 222

3 credits, Fall

CSC 330: Operating Systems

An introduction to the study of operating systems. Topics covered include: process manipulation and synchronization, processor management, storage management, security, I/O and file systems, and basic distributed system concepts.

Prerequisite: CSC 220 and CIS 219

3 credits, Fall

CSC 360: Comparative Languages

An introduction to modern computing concepts and computational models as embodied in a number of different classes of languages. The course includes an introduction to (1) function-based languages such as ML, LISP, Scheme; (2) logic-based languages such as Prolog, Parlog, Strand, OPS; and (3) object-oriented languages such as JAVA, Smalltalk, Eiffel.

Prerequisite: CIS 277

3 credits, Fall

CSC 370: Compilers and Language Design

Introduction to the basic concepts of compiler design and implementation including: lexical, syntactic, semantic analysis, and target code generation. Topics are presented from an implementation point of view.

Prerequisite: CIS 219

3 credits

**COMPUTER SCIENCE-SOFTWARE ENGINEERING
DUAL DEGREE (CS-SE)**

Computer Science and Software Engineering are closely related disciplines. Software engineering focuses on engineering software into valuable products. Computer science focuses on the practice and theory supporting innovation in the computing field. The dual CS-SE major is designed to bring the two disciplines together to develop a student's analytical ability and expertise in both software creation and usage.

This particular offering is aimed at attracting academically-gifted students, and presents all of the requirements for both of the CS and SE degrees in such a way that a student can complete the requirements in four years. As an honors program, it is ideal for students who enjoy the challenge of hard work and intellectually-engaged courses and have the desire to use computing to make a difference in the world. Due to the intense requirements, study abroad options would require an additional semester to complete.

The program is designed to allow a talented student to dive deeply into the foundational and practical aspects of computing, this program has additional admissions requirements, and requires that all students maintain C or better in all major courses and also must maintain a 3.0 QPA.

Aims and Objectives

The CS-SE dual degree has the same aims as both the Software Engineering and Computer Science degree programs. It prepares its graduates to achieve significant career and professional accomplishments in four ways: as employable and accountable professionals, competent problem solvers, and selfless contributors. For more detailed descriptions, please see the aims and objective for these degree programs in the **Computer Science** and **Software Engineering** sections.

Program Outcomes

Gannon's Computer Science-Software Engineering Dual Degree program has the same outcomes as both the accredited Software Engineering and Computer Science degree programs. Please see the outcomes for these programs in the **Computer Science** and **Software Engineering** sections.

*All CIS course descriptions are provided in the section **Computer and Information Science***

*All CSC course descriptions are provided in the section **Computer Science***

*All CYSEC course descriptions are provided in the section **Cybersecurity***

*All ECE course descriptions are provided in the section **Electrical and Computer Engineering***

*All IS course descriptions are provided in the section **Information Systems***

*All SOFT course descriptions are provided in the section **Software Engineering***

Computer Science-Software Engineering Curriculum (141 credits)*(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

- 2 First-Year Seminar/CIS 103
- 2 Problem Solving and
Comp Prog./CIS 180
- 1 Problem Solving and
Comp Prog. Lab/CIS 181
- 3 Calculus 1/MATH 140
- 3 Intro. Networks/CIS 290
- 3 College Composition/LENG 111
- 3 Foundation of Theology/LTHE 101

17*Spring*

- 2 Object-Oriented Programming/CIS 182
- 1 Object-Oriented Programming Lab/
CIS 183
- 3 Calculus 2/MATH 141
- 3 Critical Analysis & Comp./LENG 112
- 3 Introduction to Philosophy/LPHI 131
- 3 Fund. of Physics 1: Mechanics/PHYS 210
- 1 Fund. of Physics 1: Mechanics Lab/
PHYS 211

16**SOPHOMORE***Fall*

- 3 Data Structures & Algorithms/CSC 220
- 3 User Experience/CIS 239
- 3 The Bible: An Intro/LTHE 201
- 3 Discrete Mathematics 1/MATH 222
- 3 Mobile Application Development I/
CIS 277
- 1 Object-Oriented Design Lab/CIS 287
- 1 CIS Leadership Seminar/CIS 303
- 1 Technical Communication/SPCH 110

18*Spring*

- 3 Database Management & Admin/
CIS 255
- 1 Algorithm Development Lab/CIS 223
- 3 Discrete Mathematics 2/MATH 223
- 3 Applied Statistics/MATH 213 *or*
MATH 312
- 3 Mobile Application Development II/
CIS 377
- 3 Software Engineering/SOFT 210
- 3 Numerical Analysis/MATH 314

19**JUNIOR***Fall*

- 3 Web Programming & Impl./CIS 355
- 3 Requirements & Project
Management/CIS 350
- 3 Linux Programming/CIS 219
- 3 Software Testing & Quality
Assurance/SOFT 320
- 3 Project Economics/ECON 285
- 3 LPHI 237 *or* any LTHE 300 course

18*Spring*

- 1 CIS Professional Seminar/CIS 302
- 3 History Without Borders/LHST 111
- 3 Philosophy II Series/LPHI
- 3 Software Architecture/SOFT 310
- 3 Computer Architecture/ECE 337
- 1 Physics 3: E & M Lab/PHYS 215
(*or* PHYS 212)
- 3 Physics 3: E & M/PHYS 214
(*or* PHYS 212)

17**SENIOR***Fall*

- 3 Senior Design I/CIS 457
- 3 Operating Systems/CSC 330
- 3 Software Maintenance & Deploy./
SOFT 410
- 3 Comparative Languages/CIS 360
- 3 Formal Methods in Software/CIS 326
- 3 System and Network Security/CIS 387

18*Spring*

- 3 Senior Design II Lab/CIS 458
- 3 Distributed Programming/CIS 390
- 3 Fine Arts Series/LFIN
- 3 Literature Series/LENG
- 3 CIS Technical Elective/CIS
- 3 Number Theory & Cryptography/
MATH 310

18

CYBER ENGINEERING

FACULTY: *Professors:* Fong Mak, Ramakrishnan Sundaram, Wookwon Lee.

Associate Professor: Yong-Kyu Jung. *Teaching Assistant Professor:* Donald MacKellar

Cyber Engineering focuses on the development of secured cyber systems – integrated mechanics, electronics, computer hardware and software in a networked, web-enabled environment. Course and project work focuses on hardware & software design, hardware root-of-trust, trusted operating systems, secure communication, and secure networked services. Cyber Engineering focuses on the integration of the hardware and software interfaces to provide the platform of a secured system, and helps students learn the tools and techniques to develop secure embedded systems for our knowledge economy. Cyber Engineering has applications in communication, consumer, energy, infrastructure, health care, manufacturing, military, robotics, and transportation. Hence, students can find jobs in this vast array of industries particularly as the Internet of Things (IoT) is integrated into our daily life. The core knowledge and skills to do IoT right are computer engineering, embedded software, and cybersecurity techniques that are centerpieces the Cyber Engineering curriculum.

Our Cyber Engineering program found its root in Computer Engineering and Embedded Software curriculums offered in the past that are married with the cybersecurity techniques and practices. Cyber Engineering program aims to educate students to achieve the following:

- An ability to apply security principles and practices to the design, implementation, and operations of the physical, software, and human components of cyber system
- An ability to apply protective technologies and forensic techniques
- An ability to analyze and evaluate components and systems for security and to maintaining operations in the presence of risks and threats
- An ability to consider legal, regulatory, privacy, ethics, and human behavior topics

Program Educational Objectives

Our program integrates the Liberal Studies Core and emphasizes holistic student development per the mission of Gannon University. The program educational objectives, which leads to a Bachelor of Science degree in Cyber Engineering, are to produce graduates who:

1. Demonstrate professional ethics and personal values in daily and professional life that exercise informed literary and aesthetic judgments by leveraging diverse cultures and societies
2. Demonstrate teamwork and leadership qualities and/or attainment of leadership roles in a global work environment
3. Demonstrate a passion for life-long learning through engaging in the rapidly changing and emerging areas of technology, and/or continued professional development
4. Demonstrate technical proficiency in applying knowledge of cyber engineering pertinent to hardware, software, and human components in their professional career.

To achieve these objectives, the Cyber Engineering Program maintains a modern curriculum, state-of-the-art laboratories and teaching techniques, a well-qualified faculty, and a strong advising system. The program is designed to adhere to the EAC commissions of ABET. Students will acquire the following skill sets or student outcomes upon their graduation.

Student Learning Outcomes

The Cyber Engineering program has been specifically developed to achieve the following ABET student learning outcomes:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

You will experience.

- Students will be explored to the GENI system, an open infrastructure for at-scale networking and distributed systems for research and education that spans the US. GENI, Global Environment for Network Innovations, provides a virtual laboratory for research and education. With GENI, students will have a platform to learn advanced skills and knowledge in cybersecurity. In addition, students will also engage in learning with a commercial cloud system such as Google cloud or Amazon cloud.
- Students will gain hands-on experience with networking infrastructure, coupled with secured root-of-trust network, development platform for real-time kernels and operating systems.

Opportunity

The report by Cybersecurity Ventures* predicted that it will cost the world \$6 trillion annually in cybercrime damage by 2021 and hence, the pressing situation has created an unprecedented shortage of cybersecurity workers. In addition, Cybersecurity Ventures predicts there will be 3.5 million unfilled cybersecurity positions globally by 2021. Our program is designed to fulfill the needs of future work demand in the cyber areas.

* Cybersecurity Ventures, "2017 Cybercrime Report," sponsored by Herjavec Group, <https://cybersecurityventures.com/2015-wp/wp-content/uploads/2017/10/2017-Cybercrime-Report.pdf>

The Program

The Cyber Engineering (CYENG) program requires 129 credits to graduate. The program has 31 credits for Math/Science, 42 credits for LS cores, and 55 credits for engineering courses and electives. The program also provides a one-semester study abroad option.

All CIS course descriptions are provided in the section **Computer and Information Science**.

All CYSEC course descriptions are provided in the section **Cybersecurity**.

All ECE course descriptions are provided in the section **Electrical and Computer Engineering**.

Cyber Engineering Curriculum (129 credits)*(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

- 3 College Composition/LENG 111
- 3 Foundations of Theology/LTHE 101
- 3 Calculus I/MATH 140
- 2 First-Year Seminar/ENG 100
- 3 History without Borders/LHST 111
- 3 Intro to Networks/CIS 290

17*Spring*

- 3 Critical Analysis Comp/LENG 112
- 3 Calculus II/MATH 141
- 3 Digital Logic Design/ECE 140
- 1 Digital Logic Design Lab/ECE 141
- 3 Circuit 1/ECE 228
- 1 Circuit 1 Lab/ECE 229
- 3 Intro to C/C++ (ECE 111)
- 1 Network Security Lab/CYSEC 101

18**SOPHOMORE***Fall*

- 3 Discrete Math/Math 222
- 3 Microcontroller Applications with IoT//ECE 245
- 3 Data Structure & Algrthm/ECE 217
- 3 Intro to Philosophy/LPHI 131
- 3 IT security/CYSEC 210

15*Spring*

- 3 Applied Statistics/MATH 213
- 3 u-controller essentials for Cyber Appl/CYENG 225
- 3 Number Theory/Cryptography/MATH 310
- 3 Linux Programming/CIS 219
- 3 The Bible: An Intro/LTHE 201
- 1 Leadership Seminar/CIS 303

16**JUNIOR***Fall*

- 3 Trusted OS/CYENG 312
- 3 Physics I/PHYS 210
- 1 Physics I Lab/PHYS 211
- 3 Intro to Cyber-physical Syst/CYENG 237
- 1 Project Experience/ECE 381
- 3 Cyber Crime and Society/CRJS 241
- 3 Test, Measurement, and Control/ECE 243

17*Spring*

- 3 Tech Selective
- 3 Math/Science Elective
- 1 Professional Seminar/ECE 380
- 3 LPHI 237 *or* any LTHE 300 level course
- 3 Secured Embedded System/CYENG 350
- 3 Philosophy II/LPHI

16**SENIOR***Fall*

- 3 Tech Elective
- 3 Speech
- 3 Physics III/Phys 214
- 3 Senior Design I/ECE 357
- 3 Tech Elective

15*Spring*

- 3 LS Senior Capstone/LBST 383
- 3 Fine Art Series/LFIN
- 3 Math/Science Elective
- 3 Senior Design II/ECE 358
- 3 Philosophy II Series/LPHI

15

Cyber Engineering Study-Abroad Curriculum (129 credits)*(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

- 3 College Composition/LENG 111
- 3 Foundations of Theology/LTHE 101
- 3 Calculus I/MATH 140
- 2 First-Year Seminar/ENG 100
- 3 History without Borders/LHST 111
- 3 Intro to Networks/CIS 290

17*Spring*

- 3 Critical Analysis Comp/LENG 112
- 3 Calculus II/MATH 141
- 3 Digital Logic Design/ECE 140
- 1 Digital Logic Design Lab/ECE 141
- 3 Circuit 1/ECE 228
- 1 Circuit 1 Lab/ECE 229
- 1 Network Security Lab/CYSEC 101
- 3 Intro to C/C++ (ECE 111)

18**SOPHOMORE***Fall*

- 3 Discrete Math/Math 222
- 3 Microcontroller Appl. With IoT/
ECE 245
- 3 Data Structure & Algrthm/ECE 217
- 3 Intro to Philosophy/LPHI 131
- 3 IT security/CYSEC 210

15*Spring*

- 3 Applied Statistics/MATH 213
- 3 U-controller Essentials for Cyber Appl/
CYENG 225
- 3 Number Theory/Cyptography/
MATH 310
- 3 Linux Programming/CIS 219
- 3 The Bible: An Intro/LTHE 201
- 1 Leadership Seminar/CIS 303

16**JUNIOR***Fall*

- 3 Trusted OS/CYENG 312
- 3 Physics I/PHYS 210
- 1 Physics I Lab/PHYS 211
- 3 Intro to Cyber-physical Syst/
CYENG 237
- 1 Project Experience/ECE 381
- 3 Cyber Crime and Society/CRJS 241
- 3 Test, Measurement, and Control/
ECE 243

17*Spring*

- 3 Fine Art series/LFIN
- 3 Math/Science Elective
- 1 Professional Seminar/ECE 380
- 3 LPHI or LTHE III course
- 3 Philosophy II series/LPHI
- 3 Literature Series/LENG

16**SENIOR***Fall*

- 3 Speech
- 3 Physics III/Phys 214
- 3 Tech Elective
- 3 Senior Design I/ECE 357
- 3 Math/Science Elective

15*Spring*

- 3 Tech Selective
- 3 LS Senior Capstone/LBST 383
- 3 Secured Embedded Syst/CYENG 350
- 3 Math/Science Elective
- 3 Senior Design II/ECE 358

15

Technical *selective* courses are core specialized courses intended to allow students to focus the breadth or depth of their degree program. Student must choose two of the following to fulfill the curriculum requirements:

- CYENG 352 IoT Security and Implementations
- CYENG 358 Python/Micropython for Embedded Systems
- ECE 355 Wireless Networks and Protocols for IoT

Technical *electives* are additional specialized courses intended to allow students to focus the breadth or depth of their degree program. Students should plan for these courses well in advance (at least a year) to ensure that the course(s) they are interested in will be offered in the sequence in which they can enroll. Students should plan their course sequence in order to have the appropriate prerequisites. *In all cases, students should select these courses in consultation with their academic advisor.*

Eligible technical electives are

- ECE3xx, ECE4xx, CIS3xx, CIS4xx, CYSEC2xx, or CYSEC3xx, CYENG3xx with advisor approval.
- CRJS2xx (approved list)

CYENG COURSE DESCRIPTIONS

CYENG 225: Microcontroller Essentials for Cyber Applications

This course is to provide a deeper understanding of secured IoT end-point architecture of microcontrollers (uC) by exploring various microprocessor (uP) and uC hardware cyber architectures, their relationship to software architectures, various IoT cyber forensics techniques and challenges, and understanding the performance metrics of uP and uC IoT devices. The various techniques used for debugging these devices during development support this exploration. This becomes the knowledge base for students to evaluate which uC to use for IoT applications.

Prerequisite: ECE 245

3 credits

CYENG 237: Introduction to Cyber-Physical Systems

Cyber-physical systems (CPS) comprise of cyber systems and physical systems that are interfaced via wire/wireless communication media. Prime CPS examples are robots, autonomous vehicles, and drones. CPS have been rapidly evolved according to the dynamic changes for interacting between people, physical systems, and information. CPS continue to be capable of swiftly synthesizing available technologies so that people can smartly transform their daily activities to be better quality and quantity with security. This course introduces the dynamic changes to create CPS from cyber and physical systems developed via high-level modeling and virtual/real prototyping. The Matlab/Simulink modeling provides a means to swiftly compose and analyze physical process. Finite state machines and logic simulations introduce design and analysis of physical models. Real prototyping of an autonomous driving robot (ADR) offers advanced implementation and verification of a preliminary CPS. A hybrid virtual and real prototyping of a safety-enabled ADR as a CPS is introduced to observe the safety of ADR operations. Different-levels of system modeling, analysis, simulation, and prototyping platforms and tools will be used throughout the course.

Prerequisites: ECE245

3 credits

CYENG 312: Trusted OS

This course covers basic understanding and configuration of the Security-Enhanced Linux (SELinux) operating system. SELinux is a modified Linux to enhance the isolation between processes. Topics include Boot-time configurations, application vulnerability minimization, and minimizing memory attacks. The course will focus on the SELinux architecture, Linux security modules and how the system works. The student will experience the secure system as an administrator and user.

Prerequisites: CIS 219

3 credits

CYENG 350: Secure Embedded Systems

This course provides a hands-on approach of understanding cyber-attacks using only the processing power and memory of resource-constrained embedded devices, architecting and implementing a root of trust (RoT) embedded system from power-up, firmware launching, boot-loading, and applications following the various industry-trusted system paradigms. We will explore and compare various industry leveraged secure boot using processor-based RoT and trusted certificates. Investigating best practices for mechanical and electrical security design techniques will be introduced.

Prerequisites: ECE 228 and ECE 245

3 credits

CYENG 351: Embedded Secure Networking

This course is a hands-on approach to implement various embedded systems communication techniques. The student will have a hands-on approach of understanding basic communication used by embedded systems supported by limited real-time operating systems. Discussions and applications on limitations, constraints, and how to secure applied network strategies.

Prerequisite: CYENG 312

3 credits

CYENG 352: IoT Security and Implementation

This course provides an integrated experience of implementing IoT devices in a network with its corresponding web application. Topics focus on design, construction, and implementation of embedded controlled devices along with knowhow in secure network configuration for the IoT devices. Single-board-computer/embedded hardware platform, relevant router technology will be used to study network configuration, potential vulnerabilities/security issues associated with device authentication and connection, for example.

Prerequisite: ECE 245 and CIS 290

3 credits

CYENG 358: Python/MicroPython for Embedded Software

This course transitions a student with programming experience to a basic understanding and construct of the Python scripting language syntax on a microcontroller (uC) specific platform using MicroPython(uPy). This course will look at some of the positive aspects of this scripting language and the limitations of uPy on a uC. Lectures will investigate performance metrics, real-time concepts, and specific crypto-accelerator interfacing for IoT devices using uPy.

Prerequisite: ECE245 and junior standing

3 credits

CYENG 490-499: Advanced Topics in Cyber Engineering

Advanced courses developed from student interest in all areas of cyber engineering. Brief description of current content to be announced in schedule of classes.

Prerequisite: Permission of the chair.

1-3 credits

SEECs (101, 102, 201, 202, 301, 302, 401, 402): Professional and Personal Enrichment Seminar

Course description is listed in Computer & Information Science section of the catalog.

0 credit, Fall and Spring

CYBERSECURITY

RICHARD MATOVU, DON MACKELLAR, *Program Coordinators*

FACULTY: *Professors:* Fong Mak, Yunkai Liu. *Associate Professors:* Bharat Rawalkshatriya.
Assistant Professors: Richard Matovu.

Cybersecurity is a computing discipline involving technology, people, information and processes to enable assured operations in the face of adversaries. It involves the creation, operation, analysis, and testing of secure computer systems. It is an interdisciplinary course of study, including aspects of law, policy, human factors, ethics, and risk management.

Cybersecurity is an important concern for government agencies, defense contractors, e-commerce companies, biotech research firms, and, in fact, any business entities that are concerned with the protection of their information capital. Students are prepared to have knowledge and skills in computer network security principles, human behavior and laws, cyber forensics, and the strategies and planning for securing information capital from cyber-attacks.

To understand better how this Cybersecurity program different from the Cyber Engineering program offered at Gannon, these two programs both include content knowledge that address trusted supply chains, hardware & software design, hardware root-of-trust, trusted operating systems, secure data storage, secure communications, network security services, etc. valued by industry. Cyber Engineering is hardware-oriented in the security levels, whereas Cybersecurity is software-oriented. Cyber Engineering and Cybersecurity programs are two separate programs, but our learning environment provides many synergy project experiences between the two programs.

Program Educational Objectives

Our program integrates the Liberal Studies Core and emphasizes holistic student development according to Gannon University's mission. The program educational objectives, which leads to a Bachelor of Science degree in Cybersecurity, are to produce graduates who:

1. Demonstrate professional ethics and personal values in daily and professional life that exercise informed literary and aesthetic judgments by leveraging diverse cultures and societies
2. Demonstrate teamwork and leadership qualities and/or attainment of leadership roles in a global work environment
3. Demonstrate a passion for life-long learning through engaging in the rapidly changing and emerging areas of technology and/or continued professional development
4. Demonstrate technical competency in applying knowledge of cybersecurity principles and practices for their successful career in a rapidly changing professional environment.

To achieve these objectives, the Cybersecurity Program maintains a modern curriculum, state-of-the-art laboratories and teaching techniques, a well-qualified faculty, and a strong advising system. The program is designed to adhere to the CAC commissions of ABET. Students will acquire the following skill sets or student outcomes upon their graduation.

Student Learning Outcomes

The Cybersecurity program has been specifically developed to achieve the following ABET student learning outcomes:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline
3. Communicate effectively in a variety of professional contexts
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
6. An ability to apply security principles and practices to the environment, hardware, software, and human aspects of a system
7. An ability to analyze and evaluate systems for maintaining operations in the presence of risks and threats

You will experience.

- Students will be explored to the GENI system, an open infrastructure for at-scale networking and distributed systems for research and education that spans the US. GENI, Global Environment for Network Innovations, provides a virtual laboratory for research and education. With GENI, students will have a platform to learn advanced skills and knowledge in Cybersecurity. In addition, students will also engage into learning with a commercial cloud system such as Google cloud or Amazon cloud.
- Students will gain hands-on learning in core competencies needed to enter this growing workforce, including white hat hacking, strategic planning, incident response, design and deployment of cloud services, and management of security services.

Opportunity

The report by Cybersecurity Ventures* predicted that it will cost the world \$6 trillion annually in cybercrime damage by 2021 and hence, the pressing situation has created an unprecedented shortage of cybersecurity workers. In addition, Cybersecurity Ventures predicts there will be 3.5 million unfilled cybersecurity positions globally by 2021. Our program is designed to fulfill the needs of future work demand in the cyber areas.

- * Cybersecurity Ventures, "2017 Cybercrime Report," sponsored by Herjavec Group, <https://cybersecurityventures.com/2015-wp/wp-content/uploads/2017/10/2017-Cybercrime-Report.pdf>

The Program

The Cybersecurity (CYSEC) program requires 128 credits to graduate. The program has 16 credits for Math/Science, 42 credits for LS cores, and 70 credits for engineering courses and electives. The program also provides a one-semester study abroad option and a minor.

All CIS course descriptions are provided in the section **Computer and Information Science**.

All ECE course descriptions are provided in the section **Electrical and Computer Engineering**.

Cybersecurity Curriculum (128 credits)

(Numerals in front of courses indicate credits)

FRESHMAN*Fall*

| | |
|-----------|----------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Calculus I/MATH 140 |
| 2 | First-Year Seminar/ENG100 |
| 3 | Intro to Networks/CIS 290 |
| 3 | Web Management & Design/CIS 240 |
| <u>17</u> | |

Spring

| | |
|-----------|---------------------------------|
| 3 | Critical Analysis Comp/LENG 112 |
| 3 | Intro to Philosophy/LPHI 131 |
| 3 | Database Mgmt & Adm/CIS 255 |
| 3 | College Physics I/PHYS 105 |
| 1 | Network Security Lab/CYSEC 101 |
| 3 | Intro to C/C++ (ECE 111) |
| <u>16</u> | |

SOPHOMORE

Fall

- 3 Discrete Math/Math 222
- 3 History without Borders/LHST 111
- 3 Data Structure & Algorithm/ECE 217
- 3 Web Pgm & Implementation/CIS 355
- 3 IT security/CYSEC 210

15*Spring*

- 3 Linux Programming/CIS 219
- 1 Leadership Seminar/CIS 303
- 3 Number Theory/
Cryptography/MATH 310
- 3 Mobile security and
Implementation/CYSEC 212
- 3 ECE 228 Circuits I/
ECE 140 Digital Logic I/
PHYS 108 Physics 2
- 1 Associated Lab
- 3 Server Management/CIS 375

17

JUNIOR

Fall

- 3 Ethical Hacking/CYSEC 301
- 3 Information Assurance/CYSEC 306
- 3 The Bible: An Intro/LTHE 201
- 3 Cyber Crime and Society/CRJS 241
- 3 Applied Statistics/MATH 213
- 1 Project Experience/ECE 381

16*Spring*

- 3 Fine Art Series/LFIN
- 1 Professional Seminar/ECE 380
- 3 Data Security/CYSEC 303
- 3 Cyber Information Security/CYSEC 302
- 3 Server security/CYSEC 307
- 3 Free Elective

16

SENIOR

Fall

- 1 Technical Communication/SPCH 110
- 3 Literature Series/LENG
- 3 Cyber Defense: Cloud Security/
CYSEC 308
- 3 LPHI 237 *or* any LTHE 300 level course
- 3 Senior Design I/ECE 357
- 3 Digital Evidence/CRJS 345

16*Spring*

- 3 LS Senior Capstone/LBST 383
- 3 Philosophy II Series/LPHI
- 3 Technical Elective/CIS 387
- 3 Technical Elective
- 3 Senior Design II/ECE 358

15**Cybersecurity Study-Aboard Curriculum (128 credits)***(Numerals in front of courses indicate credits)*

FRESHMAN

Fall

- 3 College Composition/LENG 111
- 3 Foundations of Theology/LTHE 101
- 3 Calculus I/MATH 140
- 2 First-Year Seminar/ENG 100
- 3 Intro to Networks/CIS 290
- 3 Web Management & Design/CIS 240

17*Spring*

- 3 Critical Analysis Comp/LENG 112
- 3 Intro to Philosophy/LPHI 131
- 3 Database Mgmt & Adm/CIS 255
- 3 College Physics I/PHYS 105
- 1 Network Security Lab/CYSEC 101
- 3 Intro to C/C++ (ECE 111)

16

SOPHOMORE

Fall

- 3 Discrete Math/Math 222
- 3 History without Borders/LHST 111
- 3 Data Structure & Algorithm/ECE 217
- 3 Web Pgm & Implementation/CIS 355
- 3 IT security/CYSEC 210

15*Spring*

- 3 Linux Programming/CIS 219
- 1 Leadership Seminar/CIS 303
- 3 Number Theory /
Cryptography/MATH 310
- 3 Mobile security and
Implementation/CYSEC 212
- 3 ECE 228 Circuits I/
ECE 140 Digital Logic I/
PHYS 108 Physics 2
- 1 Associated Lab
- 3 Server Management/CIS 375

17

JUNIOR

Fall

- 3 Ethical Hacking/CYSEC 301
- 3 Information Assurance/CYSEC 306
- 1 Project Experience/ECE 381
- 3 The Bible: An Intro/LTHE 201
- 3 Cyber Crime and Society/CRJS 241
- 3 Applied Statistics/MATH 213

16*Spring (Study-Abroad Term)*

- 3 Fine Art/LFIN
- 3 Philosophy/LPHI
- 1 Professional Seminar/ECE 380
- 3 Literature/LENG
- 3 LPHI or LTHE course
- 3 Free Elective

16

SENIOR

Fall

- 1 Technical Communication/SPCH110
- 3 Technical Elective
- 3 Cyber Defense: Cloud Security/
CYSEC 308
- 3 Tech Elective
- 3 Senior Design I/ECE 357
- 3 Digital Evidence/CRJS 345

18*Spring*

- 3 LS Senior Capstone/LBST 383
- 3 Data Security/CYSEC 303
- 3 Cyber Information Security/CYSEC 302
- 3 Server Security/CYSEC 307
- 3 Senior Design II/ECE 358

15**CYBERSECURITY MINOR REQUIREMENTS (19 credits)***(Numerals in front of courses indicate credits)*

- 1 Network Security Lab/CYSEC 101
- 3 Intro to Networks/CIS 290
- 3 Database Mgmt & Adm/CIS 255
- 3 Data Security/CYSEC 303
- 3 Information Assurance/CYSEC 306
- 3 IT Security/CYSEC 210
- 3 Cyber Crime and Society/CRJS 241

19

Technical *electives* are additional specialized courses intended to allow students to focus the breadth or depth of their degree program. Students should plan for these courses well in advance (at least a year) to ensure that the course(s) they are interested in will be offered in the sequence in which they can enroll. Students should plan their course sequence in order to have the appropriate prerequisites. *In all cases, students should select these courses in consultation with their academic advisor.*

Eligible technical electives are

- ECE3xx, ECE4xx, CIS3xx, CIS4xx, CYENG2xx, or CYENG3xx, CYSEC3xx with advisor approval.
- CRJS2xx (approved list)

CYSEC COURSE DESCRIPTIONS

CYSEC 101: Network Security Lab

This course focuses on hands-on experience for students to expand and deepen their knowledge gained in networking and be familiar with essential tools used in cybersecurity. The lab experience provides students with a basic understanding of how networks are built and operate and to give students some experience with basic network analysis tools.

Pre-requisites: CIS 290

1 credit

CYSEC 210: IT Security

Students learn the core concepts needed to secure an organization's network as an IT security specialist. This course covers all the foundations of IT security from practical skills for securing hardware and network, understanding risk, to the basics of cryptography, cybercrime investigation and response.

Prerequisites: CIS 290

3 credits

CYSEC 212: Mobile Security and Implementation

The course is to introduce the fundamental knowledge needed to understand and practice secure operations and development on Android mobile devices. Students focus on understanding the security weakness of Android devices from both operations and architectural perspectives. The basic development environments for mobile apps will be introduced and students will practice on developing basic mobile apps. The secure control during Android app development will be specially addressed.

Pre-requisites: CYSEC 101, (ECE 111 or CIS 182/3), and CIS 255

3 credits

CYSEC 301: Ethical Hacking

The course is to develop the structured knowledge needed to retrieve privacy or secure information through cyber networks. Students focus on web-based technologies to search, gather and analyze personal or organizational information. This course provides students basic knowledge in cyber-attacks. In addition, this course will introduce all aspects of cybersecurity including data security, component security, human security, organizational security, and social security.

Pre-requisite: CYSEC 210, CIS 355 and CYSEC 212

3 credits

CYSEC 302: Cyber Information Security

The course is to develop the structured knowledge needed to discover vulnerabilities of personal or organizational cyber systems. Students focus on penetration-testing tools to test the security of either personal devices or network servers. This course provides students advanced knowledge in cyber-attacks. In addition, this course will introduce all aspects of cyber-security including component security, connection security, system security, human security and organizational security.

Prerequisite: CYSEC 301

3 credits

CYSEC 303: Data Security

The course is to develop the structured knowledge needed to protect digital data through cyber networks. Students focus on methodologies and technologies to backup, encrypt, or restore data. This course provides students basic knowledge of cybersecurity in data area. In addition, this course will introduce all aspects of cybersecurity including human security, organizational security and social security.

Prerequisite: CIS 255

3 credits

CYSEC 306: Information Assurance

The course develops the structured knowledge needed to practice on assuring information and managing risks related to the use, processing, storage, transmission of information or data. Students focus on the broad fields of enterprise security and privacy such as concentrating on the nature of enterprise security requirements by identifying threats to enterprise information technology (IT) systems, access control and open systems, and system and product evaluation criteria. Risk management and policy considerations are examined with respect to the technical nature of enterprise security as represented by government guidance and regulations to support information confidentiality, integrity and availability. The course develops the student's ability to assess enterprise security risk and to formulate technical recommendations in the areas of hardware and software. Aspects of security-related topics to be discussed include network security, cryptography, IT technology issues, and database security. This course provides students basic knowledge of cybersecurity in data area. In addition, this course will provide an introduction of all aspects of cyber-security including human security, organizational security and social security.

Pre-requisite: CIS 255

3 credits

CYSEC 307: Cyber Defense: Server Security

The course is to develop the structured knowledge needed to protect personal or server information through cyber networks. Students focus on system configurations of personal devices or local network servers. This course provides students with core knowledge in cyber defense. In addition, this course will cover all aspects of cybersecurity including data security, software security, component security, human security, and organizational security.

Prerequisite: CYSEC 301 and CIS375

3 credits

CYSEC 308: Cyber Defense: Cloud Security

The course is to develop the advanced knowledge needed to protect applications based on public cloud systems. The course is a project-based course. Students focus on project-based work on a cloud-based platform to monitor, analyze and predict any malicious cyber attacks. This course provides students advanced knowledge in cyber defense. In addition, this course will cover all aspects of cybersecurity including data security, software security, component security, human security, and organizational security.

Prerequisite: CYSEC 302 and CYSEC 307

3 credits

CYSEC 490-499: Advanced Topics in Cybersecurity

Advanced courses developed from student interest in all areas of cybersecurity. Brief description of current content to be announced in schedule of classes.

Prerequisite: Permission of the program director/Chair.

1-3 credits

SEECs (101, 102, 201, 202, 301, 302, 401, 402): Professional and Personal Enrichment Seminar

Course description is listed in Computer & Information Science section of the catalog.

0 credit, Fall and Spring

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING (ECE)

LIN ZHAO, Ph.D., *Chairperson*

FACULTY: *Professor Emeritus:* Mehmet Cultu, *Professors:* Fong Mak, Ramakrishnan Sundaram, Wookwon Lee, Lin Zhao. *Associate Professor:* Yong-Kyu Jung. *Assistant Professor:* Ahmed Abuhussein. *Teaching Assistant Professor:* Donald MacKellar

The faculty of the Electrical and Computer Engineering (ECE) department strive to encourage and guide students to build technical competency, effective communication, leadership skills, and entrepreneurial enthusiasm; to help our students find and secure their future careers; and most importantly to empower them with the passion of life-long learning and a spirit of excellency. We expect our students to excel as engineers and leaders in their professional field.

The Electrical and Computer Engineering department offers the following programs:

- **Bachelor of Science in Electrical Engineering** – described below
- **Accelerated 5-year B.S. in Electrical Engineering and Master of Science in Electrical Engineering** – described below
- **Bachelor of Science in Cyber Engineering** – described under Cyber Engineering

In conjunction with the Computer and Information Science Department, ECE supports the following program:

- **Bachelor of Science in Cybersecurity** – described under Cybersecurity

ELECTRICAL ENGINEERING

Electrical Engineering is essential to modern society, driving innovation in fields of robotics, autonomous systems, health care, consumer electronics, and artificial intelligence. Electrical Engineering has applications in almost all industries, such as communication, consumer, energy, infrastructure, health care, manufacturing, military, robotics, and transportation. Hence, students can find jobs in this vast array of industries.

Our ABET accredited curricula emphasize hands-on and project-based learning experience. Our students enjoy extracurricular research experience through numerous research projects, including but not limited to

- intelligent ground vehicle and micro-mouse
- near-space ballooning payloads (through PA Space Grant Consortium-NASA)
- hardware-in-the-loop flight simulator
- Internet-of-things (IoT)
- smart sensors and smart antenna
- intelligent healthcare devices
- image and object recognition
- smart grid
- and secured embedded systems, etc..

Program Educational Objectives

Our program integrates the Liberal Studies Core and emphasizes holistic student development in accordance with the mission of Gannon University. The program educational objectives, which leads to a Bachelor of Science degree in Electrical Engineering, are to produce graduates who:

1. Demonstrate *professional ethics* and *personal values* in daily and professional life that exercise informed literary and aesthetic judgments by leveraging diverse cultures and societies
2. Demonstrate *teamwork and leadership qualities* and/or *attainment of leadership roles* in a global work environment

3. Demonstrate *technical competency* in applying comprehensive engineering knowledge for their successful career in rapidly changing professional environment
4. Demonstrate *passion for life-long learning* through engaging in the rapidly changing and emerging areas of technology, and/or continued professional development

To achieve these objectives, the ECE Programs maintain a modern curriculum, well-qualified faculty, a strong advising system, and the state-of-the-art laboratories. The following laboratories are fully equipped and available for teaching and student projects.

- The Communications lab houses Gannon's near-space ballooning team. It's a modern facility for research in design, simulation, and implementation of communication systems and networks.
- The System Integration lab, equipped with industry-standard tools such as Cadence Pspice, NI-LabView, Matlab/Simulink, and PCB making station, offers hands-on experiments and projects in test and measurement, circuits, and electronics system design and integration.
- The Embedded Software lab, equipped with DSP, FPGA, Xilinx ISE, VHDL, MAPLAP, provides integrative projects from fundamental digital logic design to emerging embedded computing system design.
- The Electric Drives and Renewable Energy lab consists of platforms for integration of wind and solar power into electrical systems, advanced HiTL digital control of electric drives, power electronics technology, and real-time simulator.
- The Senior Design lab, facilitated with 3D printers, a state-of-the-art PCB maker, and a mini-electronic vehicle platform, is for students to test and implement their project designs.

The close partnership with local engineering industry allows for inputs from experts for our current and new course offerings. It also provides students with opportunities for internship, co-ops, and full-time employment upon graduation. Our graduates are prepared to play an important role in emerging new fields, such as artificial intelligence, machine learning, and internet of things; to hold challenging positions in medical and healthcare industry, aerospace, nuclear, automotive, railway, petroleum, as well as computers, electronics, communications, renewable energy, robotics, and other electrical industries.

Student Learning Outcomes

The Bachelors of Science degree in Electrical Engineering is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. This program of study has been specifically developed to achieve the following ABET student learning outcomes:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Electrical Engineering students are required to complete a total of 130-131 credits depending on their technical option for the BS degree. This includes 40 credits of Liberal Studies Core composed of humanities and social science, 32-37 additional credits of basic science and math, and 54-58 credits of engineering courses. The breakdown of courses in the categories is given in the course descriptions below.

There are two technical options in Electrical Engineering. These are Electrical and Electronics Option and Bioelectrical Engineering Option. The freshmen year is the same for both options. Students should select one of the two options by the beginning of their sophomore year. The student can switch options, but this may require additional coursework.

A five-year Electrical Engineering cooperative program is available. Student must meet the same requirements for the four-year program, plus spend a minimum of three co-op semesters in industry.

Electrical and Electronics Option of ECE Curriculum (130 credits)

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|---|------------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Calculus I/MATH 140 |
| 3 | History Without Borders/LHST 111 |
| 1 | Eng Tools Applications/ECE 105 |
| 1 | Eng Tools Applications Lab/ECE 106 |
| 2 | First-Year Seminar/ENG 100 |

16

Second Semester

| | |
|----------|--|
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Intro to C and C++ Programming/ ECE 111 |
| 3 | Calculus II/MATH 141 |
| 3 | Digital Logic Design/ECE 140 |
| 1 | Digital Logic Design Lab/ECE 141 |
| 3 | Circuits I/ECE 228 |
| <u>1</u> | Circuits I Lab/ECE 229 |

17

SOPHOMORE

First Semester

| | |
|----------|--|
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Calculus III/MATH 242 |
| 3 | Test, Measurement & Control/ECE 243 |
| 3 | Circuits II/ECE 240 |
| 1 | Circuits II Lab/ECE 241 |
| 3 | Microcontroller Apps. With IoT/ECE 245 |
| <u>1</u> | Technical Communication/SPCH 110 |

17

Second Semester

| | |
|----------|-------------------------------|
| 3 | Signals and Systems/ECE 330 |
| 3 | Electronics/ECE 238 |
| 1 | Electronics Lab/ECE 239 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Physics 1: Mechanics/PHYS 210 |
| 3 | Calculus IV/MATH 243 |
| <u>1</u> | Physics 1 Lab/PHYS 211 |

17

JUNIOR

First Semester

| | |
|----------|--------------------------------|
| 3 | Physics 2/PHYS 212 |
| 3 | Electromagnetic Fields/ECE 335 |
| 3 | Automatic Control/ECE 326 |
| 1 | Automatic Control Lab/ECE 329 |
| 1 | Project Experience/ECE 381 |
| 3 | Power Electronics/ECE 465 |
| 3 | Theology/Phil. III Series |
| <u>1</u> | Leadership Seminar |

18

Second Semester

| | |
|---|---------------------------------|
| 3 | Philosophy II Series/LPHI |
| 3 | Electric Drives/ECE 327 |
| 1 | Professional Seminar/ECE 380 |
| 3 | Differential Equations/MATH 304 |
| 1 | Eng. Lab Experience/ECE 331 |
| 1 | Electric Drives Lab/ECE 328 |
| 3 | Intro to Thermal Science/ME 212 |

15

SENIOR

First Semester

| | |
|-----------|-------------------------|
| 3 | Senior Design I/ECE 357 |
| 3 | Eng. Analysis/ECE 351 |
| 3 | Technical Elective 1 |
| 3 | Literature Series/LENG |
| 3 | Social Science |
| <u>15</u> | |

Second Semester

| | |
|-----------|----------------------------|
| 3 | Senior Design II/ECE 358 |
| 3 | Math/Science Elective |
| 3 | LS Senior Seminar/LBST 383 |
| 3 | Fine Arts Series/LFIN |
| 3 | Technical Elective 2+ |
| <u>15</u> | |

+ *Can be repeated by a Math/Science elective course*

Electrical Engineering Study-Abroad Curriculum (130 credits)

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|------------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Calculus I/MATH 140 |
| 3 | History Without Borders/LHST 111 |
| 1 | Eng Tools Applications/ECE 105 |
| 1 | Eng Tools Applications Lab/ECE 106 |
| 2 | First-Year Seminar/ENG 100 |
| <u>16</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Intro to C and C++ Programming/ ECE 111 |
| 3 | Calculus II/MATH 141 |
| 3 | Digital Logic Design/ECE 140 |
| 1 | Digital Logic Design Lab/ECE 141 |
| 3 | Circuits I/ECE 228 |
| 1 | Circuits I Lab/ECE 229 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|-----------|--|
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Calculus III/MATH 242 |
| 3 | Test, Measurement & Control/ECE 243 |
| 3 | Circuits II/ECE 240 |
| 1 | Circuits II Lab/ECE 241 |
| 1 | Technical Communication/SPCH 110 |
| 3 | Microcontroller Apps. With IoT/ ECE 245 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-------------------------------|
| 3 | Signals and Systems/ECE 330 |
| 3 | Electronics/ECE 238 |
| 1 | Electronics Lab/ECE 239 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Physics 1: Mechanics/PHYS 210 |
| 3 | Calculus IV/MATH 243 |
| 1 | Physics 1 Lab/PHYS 211 |
| <u>17</u> | |

JUNIOR

First Semester

| | |
|-----------|---------------------------------|
| 3 | Differential Equations/MATH 304 |
| 3 | Electromagnetic Fields/ECE 335 |
| 3 | Philosophy II Series/LPHI |
| 1 | Project Experience/ECE 381 |
| 3 | Power Electronics/ECE 465 |
| 3 | Physics 2/PHYS 212 |
| 1 | Leadership Seminar |
| <u>17</u> | |

Second Semester (semester abroad)

| | |
|-----------|--|
| 3 | Automatic Control/ECE 326 (EUAS4012) |
| 3 | Social Science (EUAS**) |
| 1 | Professional Seminar/ECE 380 |
| 3 | Technical Elective 1 |
| 3 | Technical Elective 2+ |
| 1 | Automatic Control Lab/ ECE 329 (EUAS4020) |
| <u>14</u> | |

SENIOR

First Semester

| | |
|-----------|-----------------------------|
| 3 | Senior Design I/ECE 357 |
| 3 | Math/Science Elective |
| 3 | LS Senior Seminar/LBST 383 |
| 3 | Fine Arts Series/LFIN |
| 3 | Literature Series/LENG |
| 3 | LPHI 237 or LTHE 300 course |
| <u>18</u> | |

Second Semester

| | |
|-----------|---------------------------------|
| 3 | Senior Design II/ECE 358 |
| 3 | Intro to Thermal Science/ME 212 |
| 1 | Electric Drives Lab/ECE 328 |
| 3 | Electric Drives/ECE 327* |
| 3 | Engineering Analysis/ECE 351 |
| <u>13</u> | |

+ Can be replaced by a Math/Science elective course

* could be taken as a non-scheduled course if not offered as a regular course.

It can be taken either in Summer following Junior year or in Fall semester of Senior year

** Hochschule Esslingen University of Applied Sciences

Bioelectrical Engineering Option of ECE Curriculum (131 credits)

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|------------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Calculus I/MATH 140 |
| 3 | History without borders/LHST 111 |
| 1 | Eng Tools Applications/ECE 105 |
| 1 | Eng Tools Applications Lab/ECE 106 |
| 2 | First-Year Seminar/ENG 100 |
| <u>16</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Intro to C Programming/ECE 111 |
| 3 | Calculus II/MATH 141 |
| 3 | Digital Logic Design/ECE 140 |
| 1 | Digital Logic Design Lab/ECE 141 |
| 3 | Circuits I/ECE 228 |
| 1 | Circuits I Lab/ECE 229 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|-----------|--|
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Calculus III/MATH 242 |
| 3 | Test, Measurement & Control/ECE 243 |
| 3 | Circuits II/ECE 240 |
| 1 | Circuits II Lab/ECE 241 |
| 3 | Microcontroller Apps. with IoT/ ECE 245 |
| <u>16</u> | |

Second Semester

| | |
|-----------|---|
| 3 | Signals and Systems/ECE 330 |
| 3 | Electronics/ECE 238 |
| 1 | Electronics Lab/ECE 239 |
| 4 | Physics 1/PHYS 210 & PHYS 211 |
| 4 | Human Anat. & Phys. & Lab I/ BIOL 115 & BIOL 116 |
| 3 | The Bible: An Intro/LTHE 201 |
| <u>18</u> | |

JUNIOR

First Semester

| | |
|-----------|-----------------------------------|
| 3 | Differential Equations/MATH 304 |
| 1 | Automatic Control lab/ECE 329 |
| 3 | Electromagnetic Fields/ECE 335 |
| 3 | Automatic Control/ECE 326 |
| 3 | LPHI 231 or LTHE 300 course level |
| 1 | Leadership Seminar |
| 1 | Project Experience/ECE 381 |
| <u>15</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Philosophy II Series/LPHI |
| 4 | Human Anat. & Phys. II & Lab/ BIOL 117, 118 |
| 1 | Professional Seminar/ECE 380 |
| 3 | Technical Elective 1 |
| 3 | Engineering Analysis/ECE 351 |
| 3 | Physics 2/PHYS 212 |
| 1 | Technical Communication/SPCH 110 |
| <u>18</u> | |

SENIOR

First Semester

| | |
|---|----------------------------|
| 3 | Senior Design I/ECE 357 |
| 3 | Chemistry/CHEM 111 |
| 1 | Chemistry Lab/CHEM 112 |
| 3 | Social Science |
| 3 | Technical/Science Elective |
| 3 | Literature Series/LENG |

16*Second Semester*

| | |
|---|---------------------------------|
| 3 | Senior Design II/ECE 358 |
| 3 | Intro to Thermal Science/ME 212 |
| 3 | Fine Arts Series/LFIN |
| 3 | LBST 383 senior capstone |
| 3 | Technical Elective 2 |

15

Technical electives are specialized courses intended to allow students to focus on the breadth or depth of their degree program. Students should plan for these courses well in advance (at least a year) to ensure that the course(s) they are interested in will be offered in the sequence in which they can enroll. Students should plan their course sequence in order to have the appropriate prerequisites. *In all cases, students should select these courses in consultation with their academic advisor.*

The following table shows technical electives for Electrical Engineering and Cyber Engineering (Note that ‘•’ indicates a pre-approved course for the corresponding option in each column).

| Elective Courses | Electrical & Electronics | Bioelectrical Engineering | Cyber Engineering |
|---|-------------------------------------|----------------------------------|--------------------------|
| ECE 335: Electromagnetic Fields | | | • |
| ECE 337: Computer Architecture | • | • | • |
| ECE 340: Micro-Controller Applications | • | • | • |
| ECE 345/6: Advanced Digital Design & Lab | • | • | • |
| ECE 347: Embedded Systems Design | • | • | |
| ECE 348: Digital Design with HDL & Lab | • | • | • |
| ECE 363: Power System Engineering I | • | • | |
| ECE 366: Power System Engineering II | • | • | |
| ECE 390-399: Special Topics in Electrical Engineering | • | • | • |
| ECE 421: VLSI Design | • | • | • |
| ECE 437: Advanced Computer Architecture | • | • | • |
| ECE 449: VHDL Design | • | • | • |
| ECE 451: Optical Devices and Systems | • | • | |
| ECE 456: R F Circuit Integration | • | • | |
| ECE 466: Modeling & Analysis of Electric Drives | • | • | |
| ECE 471: Control of Electrical Machines | • | • | |
| ECE 472: Digital Signal Processing | • | • | • |
| ECE 474: Artificial Neural Networks | • | • | • |
| ECE 483: Communication Theory | • | • | • |
| ECE 485: Advanced Programming in C/C++ | • | • | • |
| ECE 486: Object-oriented Modeling | • | • | • |
| ECE 488: Modern Control Theory | • | • | |
| ECE 489: Digital Control | • | • | |
| Other ECE3xx or ECE4xx course, with advisor approval | • | • | • |
| CIS 3xx or CIS4xx Course, with advisor approval | • | • | • |
| CIS 286 Adv. Object-Oriented Techniques | | | • |
| CIS 315 Software Engineering | | | • |
| BME 460 Biosignal Processing | | • | |
| BME 479 Biomedical Robotics and Biomimetics | | • | |
| BME 480 Haptics | | • | |

Accelerated 5-Year B.S./M.S. in Electrical Engineering

Only students who have demonstrated unusual maturity and engineering aptitude will be accepted into the Accelerated 5-Year B.S./M.S. Program. Students in their Junior second semester (or one semester before senior standing) with a minimum 2.8 cumulative GPA can apply for this program. The students accepted into this program should plan to complete specific first year graduate courses during the senior year and the summer after the senior year. No more than 9 graduate credits are allowed prior to the completion of the B.S. degree.

Typical 4th and 5th year course matrix of the 5-year combined B.S./M.S. degree program in Electrical Engineering (160~161 credits)

(Numerals in front of courses indicate credits)

FOURTH YEAR (SENIOR)

First Semester

| | |
|-----------|---------------------------------|
| 3 | Senior Design I/ECE 357 |
| 3 | Eng. Analysis/ECE 351 |
| 3 | Technical Elective 1 |
| 3 | Literature Series/LENG |
| 3 | Social Science |
| 3 | Advanced Eng. Analysis/GECE 704 |
| <u>17</u> | |

Second Semester

| | |
|-----------|----------------------------|
| 3 | Senior Design II/ECE 358 |
| 3 | Math/Science Elective |
| 3 | LS Senior Seminar/LBST 383 |
| 3 | Fine Arts Series/LFIN |
| 3 | Technical Elective 2+ |
| 3 | Embedded C/GECE 502 |
| <u>18</u> | |

SUMMER

| | |
|----------|--|
| 3 | GECE required <i>or</i> core <i>or</i> electives++ |
| <u>3</u> | |

FIFTH YEAR

First Semester

| | |
|----------|--|
| 3 | GECE required <i>or</i> core <i>or</i> electives++ |
| 3 | GECE required <i>or</i> core <i>or</i> electives++ |
| 3 | GECE required <i>or</i> core <i>or</i> electives++ |
| <u>9</u> | |

Second Semester

| | |
|-----------|--|
| 3 | GECE required <i>or</i> core <i>or</i> electives++ |
| 3 | GECE required <i>or</i> core <i>or</i> electives++ |
| 3 | GECE required <i>or</i> core <i>or</i> electives++ |
| 3 | GECE required <i>or</i> core <i>or</i> electives++ |
| <u>12</u> | |

++ Choose from the Required, Core, or Elective GECE graduate level courses in the Graduate

Catalog. Recommended courses are:

GECE 574 Artificial Neural Networks

GECE 530 Sensors and Actuators

GECE 547 Embedded System Design

GECE 572 Digital Signal Processing

GECE 586 Computer Communication Networks

GECE 556 RF Circuit Design and Integration

GECE 501 Engineering Project & Management

GECE 586 Computer Communication Networks

GECE 598 Digital Design w HDL & Lab

GECE 511 Embedded Kernel

GECE 539 Real-time System Implementation GECE 549 VHDL

GECE 551 Rapid Prototyping with FPGA

GECE 587 Wireless Data Communications

GECE 567 Integration of Renewable Energy into Electric Power System

The degree requirements for the Accelerated 5-year B.S./M.S. Program includes 160~161 credits (130~131 credits for undergraduate plus 30 credits of graduate-level coursework). Refer to the Graduate Catalog for additional information about other requirements of the graduate program and graduate course descriptions.

Electrical Engineering 5-year Co-Op Curriculum (130 – 131 credits)

Plan A

| | | | |
|--------|------------|------------|-----------------|
| Year 1 | Fall 1 | Spring 1 | Summer Vacation |
| Year 2 | Fall 2 | Spring 2 | 4 month WP* |
| Year 3 | Fall 3 | 4 month WP | Summer** |
| Year 4 | 4 month WP | Spring 3 | 4 month WP |
| Year 5 | Fall 4 | Spring 4 | |

Plan B

| | | | |
|--------|------------|------------|-----------------|
| Year 1 | Fall 1 | Spring 1 | Summer Vacation |
| Year 2 | Fall 2 | 4 month WP | Summer** |
| Year 3 | 4 month WP | Spring 2 | 4 month WP |
| Year 4 | Fall 3 | Spring 3 | 4 month WP |
| Year 5 | Fall 4 | Spring 4 | |

Plan C

| | | | |
|--------|------------|------------|-----------------|
| Year 1 | Fall 1 | Spring 1 | Summer Vacation |
| Year 2 | Fall 2 | Spring 2 | 4 month WP |
| Year 3 | Fall 3 | Spring 3 | 4 month WP |
| Year 4 | Fall 4 | 4 month WP | Summer** |
| Year 5 | 4 month WP | Spring 4 | |

* *Work Period*

** *Liberal Studies Core Courses*

NOTES:

- (1) Fall and Spring follow the regular engineering schedule.
- (2) For maximum financial aid, 12 credits of Liberal Studies Core Courses should be taken during the 4 month summer session listed.
- (3) Students should register for zero credit Co-Op Placement (ENG 399) for each work period.

Electrical Engineering Minor

The Electrical Engineering minor is designed to let the non-electrical engineering students take advantage of their time spent at Gannon University to enhance their employability and broaden their career options. The minor also offers professionals from science disciplines a new perspective on electromechanical and mechatronics systems. The program will supplement students with sufficient technical knowledge that enables them to work confidently on emerging technologies that might require electromechanical or mechatronic background such as HVAC systems, electric vehicles, insulin pumps, medical sensors, physical therapy equipment, robotics, and hydrokinetic turbines.

The Electrical Engineering minor requires a minimum of 17 credits to complete. Depending on students' interests and the field of their future careers, they can choose from three tracks.

Track A: Control of electric drives (18 credits)*(Numerals in front of courses indicate credits)*

- 4 ECE 228 & 229 Circuits 1 and Lab (can substitute with ECE 231 & ECE 232)
- 4 ECE 238 & 239 Electronics and Lab
- 4 ECE 240 & ECE 241 Circuits 2 and Lab
- 3 ECE 327* intro to Electric Drives (with prerequisite satisfied)
- 3 ECE 465 Power Electronics

* For students who completed PHYS214, ECE335 can be waived as the prerequisite of ECE327.

Track B: Computer engineering (17 credits)

- 4 ECE 140 & 141 Digital Logic Design and Lab
- 3 ECE 111 Introduction to C and C++ programming
- 4 ECE 228 & 229 Circuits 1 and Lab (can substitute with ECE 231 & ECE 232)
- 3 ECE 245 Intro to Microcontroller
- 3 Choose one from ECE 3xx or 4xx course (in embedded software field)

Track C: General (17–19 credits)

- 4 ECE 140 & 141 Digital Logic Design and Lab
- 3 ECE 111 Introduction to C and C++ programming
- 4 ECE 228 & 229 Circuits 1 and Lab (can substitute with ECE 231 & ECE 232)
- 3-4 Choose one from ECE 238 & 239 Electronics and Lab, or ECE 330 Signals and Systems, or ECE 245 Intro to Microcontroller, or ECE 240 & ECE 241 Circuits 2 and lab
- 3-4 Choose one from ECE 327 intro to Electric Drives, or ECE 326 & ECE 329 Automatic Control and Lab, or ECE 465 Power Electronics, or ECE 3xx, or 4xx course (with prerequisite satisfied)

ECE COURSE DESCRIPTIONS

ENG 100: First-Year Seminar in Engineering

The First-Year Seminar in Engineering is designed to orient the new student to Gannon University, to introduce engineering as a professional field, to connect with the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life, and to encourage development of academic, personal and spiritual aspects of the student's life. The First-Year Seminar in Engineering will stimulate and enhance the student's interest in and their understanding of engineering. *2 credits*

ENG 101: Introduction to Engineering

Introduction to Engineering is intended to stimulate and enhance student's interest and their understanding of engineering. Various disciplines will be reviewed. The design process, problem solving and systems approach to engineering design will be presented. Consideration on criteria of economics, environmental concerns, ethics, health and safety will be discussed. The experimental component of the course is intended to review the foundation of scientific experimentation and reporting and introduce various measurement devices and methods used in engineering. The importance of experience, observation and analogies in problem solving will be emphasized. Various skills needed for problem solving in engineering will be discussed and practiced throughout the course. These skills include team skills, perspective of quantity and size, communications skills and basic computer skills. *3 credits*

ENG 364: Engineering Economics

Basic elements and methods of economy as applied to engineering, elements of economy, cash flow diagrams, economy factors and their use, depreciation and depletion, present worth and cost, benefit/cost ratio, service life, replacement and retirement analysis. Prerequisite: Instructor's permission and junior standing *3 credits*

ENG 399: Co-op Placement

For the students in the five year Co-op option. Students register for each full period in industry. Students are evaluated by an engineer in industry and are under the mentorship of the department faculty.

Prerequisite: Permission of the department

0 credit

ECE 105: Engineering Tools Applications

This course introduces students to use MATLAB as an engineering tool to solve engineering problems. The emphasis is on a top-down design methodology and uses it consistently throughout problem solving. Topics include essential computer programming skills with good programming practices that provide a strong foundation to other advanced languages. Different applications such as circuit analysis and mathematical algorithms are examples covered in the course.

Corequisite: ECE 106

1 credit

ECE 106: Engineering Tools Applications Lab

Laboratory experience to complement ECE 105. Three hours per week. Concurrent with ECE 105.

Corequisite: ECE 105

1 credit

ECE 111: Introduction to C and C++ Programming

This course is designed for students to build an introductory foundation in problem solving with common procedural and object oriented HLL programming languages. Exploring the common C and C++ programming syntax and programming techniques. Contents of the course include: program structures, data types, identifiers, flow control, functions, C++ I/O, arrays and pointers.

3 credits

ECE 140: Digital Logic Design

This course introduces fundamental design concepts and processes for digital logic. Boolean algebra and logic gate operations are discussed, followed by combinational network design and sequential network concepts and design. The use of computer-aided design tools to support circuit design is an integral part of the course.

Corequisite: ECE 141

3 credits

ECE 141: Digital Logic Design Laboratory

This laboratory course is to be taken concurrently with ECE 140. The laboratory provides hands-on experience with logic design that includes the applications of Boolean Algebra, Karnaugh Maps, decoders, multiplexers, and flip-flops. Topics also include combinational network design and sequential network design. The use of contemporary software tools to support the digital design process is an integral part of the laboratory.

Corequisite: ECE 140

1 credit

ECE 216: Problem Solving with Object-Oriented Design

This course is designed for students to develop ability in problem solving with object-oriented concepts and programming skills. Introductory C++ syntax and program structure will be discussed. Object-oriented coding style and concepts such as classes and abstraction, inheritance, and virtual functions will be covered.

Prerequisite: ECE 111

3 credits

ECE 217: Data Structure and Algorithm

This course involves an in-depth programming-based study of data structures, algorithms, and cooperating programming techniques used in real-time and embedded systems. Topics include static and dynamic structures, hashing, searching, signals, distributive and concurrent inter-process communication. Discussions will also cover compiler-linker, multi-core, and other trade-off that impact real-time systems performance.

Prerequisite: ECE 111

3 credits

ECE 228: Circuits I

This course introduces the basic passive components (R, L, and C) and their terminal voltage and current characteristics. Basic circuit concepts, such as Kirchhoff's laws, linearity / superposition / Thevenin & Norton equivalents, and the max power theorems are established. The analysis of DC and transient circuits including dependent and independent sources is considered along with the use of computer-aided design tools for solution and verification of problems. AC circuits are also studied.

Prerequisite: MATH 140 or permission of Chair.

3 credits

ECE 229: Circuits I Laboratory

This laboratory course is to be taken concurrently with ECE 228 (Circuits I). The laboratory provides hands-on experience with DC and AC circuits that includes the applications of Kirchhoff's laws, superposition, Thevenin and Norton equivalent circuits. Topics also include operational amplifier circuits and phasor diagrams. The use of contemporary computer-aided design in support of circuit analysis and design is an integral part of the laboratory.

Corequisite: ECE 228

1 credit

ECE 231: Introduction to Electrical Engineering

This is a basic course that provides general introduction to circuit theory, electronic circuits and electric machines. This course cannot be taken for credit by Electrical and Computer Engineering students.

Prerequisite: PHYS 214

3 credits

ECE 232: Introduction to Electrical Engineering Laboratory

This laboratory course is to be taken concurrently with ECE231. The laboratory provides hands-on experience with DC and AC circuits that includes the applications of Kirchhoff's laws, superposition and Thevenin equivalent circuits. Topics also include operational amplifier circuits, phasor diagrams and electric machines.

Corequisite: ECE 231

1 credit

ECE 238: Electronics

This course focuses on the system integration skills with design and analysis of electronic circuits at the component, sub-system, and system level. Electronic circuits and design processes are covered through the integration of sub-systems that comprise electronic circuits such as power supplies, voltage regulators, and drive circuits. At the component level, diodes, transistors, and operational amplifiers are also studied. The use of contemporary software and hardware tools for design and analysis of electronic circuits is an integral part of the course.

Prerequisite: ECE 228 & ECE 229

Corequisite: ECE 239

3 credits

ECE 239: Electronics Lab

This lab is to accompany Electronics and taken concurrently with it. Lab topics complement closely classroom discussion of various designs.

Corequisite: ECE 238

1 credit

ECE 240: Circuits II

This course introduces AC circuits and three-phase circuit analysis. Power concepts are introduced as pertaining to single and three-phase circuit applications. Frequency response characteristics of RLC circuits are studied, including the Fourier Series representation of a periodic signal. Frequency domain tools such as Laplace Transforms and Fourier Transforms are presented and employed in circuit analysis. Modern computer-aided design tools are used for solving homework assignments.

Prerequisite: ECE 228 and 229

3 credits

ECE 241: Circuits II Lab

This laboratory course is to be taken concurrently with Circuits II ECE 240. The laboratory provides hands-on experience with AC circuits that includes the transient analysis and frequency response applications of first- and second-order circuits. Topics also include Butterworth filter design for frequency response applications. The use of a contemporary

computer-aided design tool in support of circuit design is an integral part of the laboratory.

Corequisite: ECE 240

1 credit

ECE 243: Test, Measurement and Control

This course introduces the students to engineering test procedures, measurement analysis, and embedded control methods based on the industry-approved National Instruments (NI) software and hardware products. The students will design and build virtual instruments (VIs) using the graphical programming language LabVIEW to acquire data, analyze the data, and control dynamic processes in real-time. The students will apply basic control concepts to develop embedded controller applications using LabVIEW. They will develop measurement techniques and understand the limitations of measurement and instrumentation.

3 credits

ECE 245: Microcontroller Applications with IoT

This course aims to introduce the application of microcontrollers at the system and subsystem level to assemble and test IoT devices. The IoT devices will incorporate hardware such as sensors and actuators, and software to program the microcontrollers. Students will learn how to successfully achieve node to client communication, node to node communication, and peer to cloud communication through laboratory experiments and projects which are based on microcontrollers.

Prerequisites: ECE 111 or Equivalent programming language

3 credits

ECE 246: Microprocessors

This course is designed to give students a basic background in hardware and software aspects of microprocessors. Contents of the course include: a microprocessor architecture, addressing modes, instruction set, assembly language, timers, I/O interrupt handling, mixed C/Assembly programming, finite state machine design, basic peripheral interfaces, UART, ADC and DAC. Microcontroller configuration. Schematic entry and basic PCB design.

Prerequisites: ECE 111, ECE 140, and ECE 141

Corequisite: ECE 247

2 credits

ECE 247: Microprocessors Lab

This lab is designed to complement the microprocessors lecture course. Topics include software tool usage, microprocessor architecture, assembly language programming and basic peripheral interfaces.

Corequisite: ECE 246

1 credit

ECE 311: Embedded Kernel & RTOS

This course covers basic understanding of embedded kernel and real-time operating system paradigms. Topics include process management, process synchronization, and memory management. Embedded kernel topics will be implemented on an embedded-system platform. RTOS topics will be implemented on commercial real-time operating systems.

Prerequisite: ECE 217

3 credit

ECE 321: Electronics I

This course focuses on the design and analysis of electronic circuits, devices, and processes at the system and sub-system level. Electronic circuits and processes are explained through the integration of sub-systems comprising electronic devices such as oscillators, voltage regulators, and switching circuits. From a cause-effect standpoint, the electronic devices such as diodes, transistors (BJT and FET), and operational amplifiers are studied. The use of contemporary software tools for electronic circuit/process design and analysis is an integral part of the course. For students admitted prior to fall 2016.

Prerequisite: ECE 228

Corequisite: ECE 322

3 credits

ECE 322: Electronics I Lab

This lab is to accompany Electronics I and taken concurrently with it. Lab topics complement closely classroom discussion of various designs. For students admitted prior to fall 2016.

Corequisite: ECE 321

1 credit

ECE 324: Electric Machines

This course introduces the fundamental principles of transformers, energy conversion and the operational principles of electric machines. Induction machines, Synchronous machines, and DC machines are discussed including their steady-state characteristics and operations.

Prerequisites: ECE 335

3 credits

ECE 325: Electric Machines Laboratory

Three hours per week to follow Electric Machines.

Prerequisite: ECE 324

1 credit

ECE 326: Automatic Control

An introduction to dynamic systems with emphasis on feedback control. Representation of control components in various engineering systems. Steady state and transient specification and stability characteristics to design interdisciplinary engineering systems.

Prerequisite: ECE 330

Corequisite: ECE 329

3 credits

ECE 327: Electric Drives

This course uses an integrative to allow examination of all subsystems that make up an electric drive system. The approach requires minimum prerequisites in circuit and system and electromagnetic field theory to understand the essentials of the topics covered. The topics covered include electric machines, power-electronics-based converters, understanding mechanical system requirements, feedback controller design, and interaction of drives with the utility grid.

Prerequisite: ECE 240, ECE 335

3 credits

ECE 328: Electric Drives Laboratory

This lab is to follow Electric Drives to give hand-on experience of the subjects covered. It is three-hour per week laboratory.

Prerequisite: ECE 327

1 credit

ECE 329: Automatic Control Laboratory

Three hours per week to accompany the course material of Automatic Control.

Co/Prerequisite: ECE 326

1 credit

ECE 330: Signals and Systems

Signals and linear systems in continuous time and discrete time are studied. Both Time Domain solution methods and Frequency Domain solutions (Laplace Transform and Z Transform) are covered. Fourier Series, Fourier Transform and sampling theory are also studied.

Prerequisites: ECE 228 and MATH 141

3 credits

ECE 331: Engineering Lab Experience

Laboratory exercises associated with topics covered in electrical engineering theory courses (such as signals & systems and electromagnetic fields) to strengthen student skills in how to (a) design the experiment (b) conduct the experiment, measure and interpret the data obtained from the experiment and (c) use contemporary software tools to complement engineering design and analysis. They will document the experimental/engineering design procedure, the outcomes of the experiment, and the analysis of the outcomes in a laboratory report which meets department guidelines.

Prerequisites: Junior standing

1 credit

ECE 333: Electronics II

This course focuses on the study, operation, and analysis of electronic circuits, devices, and processes at the component-level. Topics include the "1-V" characteristics, the DC load line and operating point, the AC load line, large signal and small signal analysis of electronic circuits comprising diodes, transistors (BJT, FET), and operational amplifiers. The use of contemporary software tools to analyze the behavior of electronic components is an integral part of the course. For students admitted prior to Fall 2016.

Prerequisite: ECE 321

Corequisite: ECE 334

2 credits

ECE 334: Electronics II Laboratory

This lab is to accompany Electronics II and taken concurrently with it. Lab topics complement closely classroom discussion of various designs. For students admitted prior to Fall 2016.

Corequisite: ECE 333

1 credit

ECE 335: Electromagnetic Fields

This course emphasizes the fundamental principles of electric and magnetic fields with application to transmission lines, wave propagation. Brief introduction to vector analysis is given followed by a thorough introduction to Maxwell's equations. Waves in space and their interaction with media are discussed with analogies to wave behavior on transmission lines.

Prerequisites: MATH 242 and ECE 240

3 credits

ECE 337: Computer Architecture

This course is for understanding the interactions between computer hardware and software, Von-Neumann and Harvard architectures, hardware, software and system performance measurement, and instruction-set architecture (ISA). In particular, this course offers students the opportunity to understand and enrich their capability to interface between software (e.g., computer instructions and assembly language programming) and hardware (e.g., computer arithmetic, processor control and data manipulation, memory hierarchy and performance, and I/O subsystems) components. Advanced topics such as Multicore, Simultaneous Multithreading, and other contemporary architecture and parallelisms are also covered.

Prerequisite: either of CIS 182 or ECE 111, and either of ECE 140 or MATH 222

3 credits

ECE 340: Micro-Controller Applications

This course introduces the MIPS superscalar architecture (SSA) and implementation. This includes understanding the arithmetic (both scalar and floating point) performance, the data path and control pipelines associated with the instruction fetch, decode, and register dataflow. This course will also explore the strategies for analyzing and optimize cache performance and will explore the performance tradeoffs of different input/output technologies. Finally, we will look at different processor technologies including RISC, CISC, SSA, SMP, MMP, and SMT and the impact it will have on future compute platforms.

Prerequisite: ECE 140 & ECE 141 (or equivalent), and ECE 245

3 credits

ECE 345: Advanced Digital Design

Advanced topics in top-down digital design and bottom-up verification are introduced. Combinatorial and sequential logic design, circuit aspects of logic devices, families, and interfaces are reviewed. Topics include the use of CAD tools for schematic- and hardware description language-based design entry for simulation, synthesis, post-synthesis analysis and implementation on a programmable target device. An integrated design and development environment will be used throughout the course.

Prerequisite: ECE 140

Corequisite: ECE 346

2 credits

ECE 346: Advanced Digital Design Laboratory

Advanced topics in top-down digital design and bottom-up verification are introduced. Combinatorial and sequential logic design, circuit aspects of logic devices, families, and interfaces are reviewed. CAD tools using schematic and hardware description language-based design entry for simulation, synthesis, post-synthesis analysis and implementation on a programmable target device are exposed. Mentor Graphics and Xilinx ISE integrated design and development environment will be used throughout the course.

Corequisite: ECE 345

1 credit

ECE 347: Embedded Systems Design

This is a project-oriented course. It is designed to deliver the concepts of microprocessor-based design flow and hardware/software design integration. Discussions include CPU architectures, instruction sets, interrupts, peripheral configurations, software development, real-time operating system, as well as hardware-in-the-loop debugging and testing.

Prerequisites: ECE 140 and ECE 245

3 credits

ECE 348: Digital Design with HDL & Lab

This is a hands-on course for virtual prototyping of digital system design and verification with hardware description language (HDL). Various scales and types of digital systems, including combinatorial and sequential logic circuits, FSM designs, and memory and bus systems, are reviewed. Hands-on HDL programming skills in advanced-level are exercised by performing representation, simulation, verification and synthesis of the digital systems with extensive lab practices and assignments. Xilinx ISE integrated design and development environment will be used throughout the course lab exercises.

Prerequisite: ECE 140 & ECE 141

3 credits

ECE 349: Rapid Prototyping with FPGA

Field Programmable Gate Arrays (FPGAs) has become an essential part of the digital system design flow for many applications. They provide inexpensive solutions for hardware prototypes and fastest time-to-market. The novelty and programmability also allow design explorations towards optimal architecture. This course will cover the FPGA features and architectures, rapid prototyping aspect of FPGA use, FPGA configuration techniques, hardware simulation and debugging, as well as the modern digital synthesis and hardware analysis skills and tools. Other commercial programmable logic devices (PLD) will also be discussed.

Prerequisites: ECE 348

3 credits

ECE 351: Engineering Analysis

Theory and application of linear algebra, numerical analysis, complex variables, probability and statistics for engineering problems. Application of Matlab.

Prerequisite: MATH 304

3 credits

ECE 355: Wireless Networks for IoT

This course introduces Internet of Things (IoT) network architecture, networks, and protocols. Topics include IoT architecture and functional stack, IoT network layers and protocols, IoT connection technologies/standards, Internet Protocol (IP) as IoT network layers, and application protocols for IoT.

Prerequisite: Junior standing

3 credits

ECE 357: Senior Design

Discussion of design fundamentals. Application of design principles to a design problem. Determination of a complete problem definition/specification. Development of a conceptual design and a preliminary design with alternatives. Establish a schedule and tentative test plan. Discuss ethics and ethical standards and consider impact on engineering decisions (examples considered). Develop skills in effective communication. Present design at a formal design review to colleagues at terms end.

Prerequisite: Senior standing and permission of the chair.

3 credits

ECE 358: Senior Design Laboratory and Seminar

Prototype development based upon design specification of ECE 357. Test plan developed and implemented on the prototype. Alternative considerations, risk management and possible design changes following initial prototype results. Develop skills in effective communication. The outcome will include a complete design document and a final presentation. Student teams will present their final prototypes to a review committee including peers, faculty and/or invited industrial guests.

Prerequisite: ECE 357

3 credits

ECE 363: Power System Engineering I

Models for elements of power system are studied. Per unit values and per unit system are discussed. Power flow studies are investigated. Gauss Seidel, Newton Raphson, and Decoupled load flow are studied. Balanced faults are discussed.

Prerequisite: ECE 324 or ECE 327

3 credits

ECE 366: Power System Engineering II

Symmetrical components are studied. Power System under fault conditions is analyzed using symmetrical components. Economic operations of power systems are studied. Problem of power systems stability is discussed. Analysis of two machine system is performed using equal area criterion. Multi-machine stability is discussed.

Prerequisite: ECE 363

3 credits

ECE 380: Professional Seminar

This course covers issues facing electrical, computer and software engineering professionals. It also reinforces students' capabilities in public speaking, small group collaboration, interpersonal communication, active listening, as well as competent reading skills. Topics include trends in the field, job prospects, political issues, team and workplace behavior, project leadership, as well as exercises in oral presentations, formal written reports, and effective two-way communication. This course is designed to deliver a capstone senior design project idea by the end of the semester.

Corequisite: Junior Standing

1 credit

ECE 381: Project Experience

This course emulates internship learning environment and experience for students. Students work on a supervised project and in a team setting to learn workplace fundamentals, teamwork, and project management skills. Topics include teamwork assessment, management vs. leadership, critical thinking for design of experiments and project management techniques.

Prerequisite: Junior Standing or permission of chair

1 credit

ECE 390-399: Special Topics in Electrical and Computer Engineering

Special courses developed from student interest in all areas of electrical engineering. Brief description of current content to be announced in schedule of classes.

Prerequisite: Permission of the chair.

1-3 credits

ECE 421: VLSI Design

Focuses on the theory, design, implementation, and testing of Very Large Scale Integrated (VLSI) Circuits and associated technologies. Primarily focuses on CMOS technologies and their implementation. Includes a review of CMOS circuits & theory, overview of MOS fabrication technology, circuit characterizations and performance estimation, electrical & physical design of logic gates, clocking strategies, I/O structures, system design and test methods, design synthesis, and advanced topics.

Prerequisites: ECE 321 or ECE 238

3 credits

ECE 437: Advanced Computer Architecture

Focuses on the design and implementation of the instruction-set architecture. Performance measures, ALU design, data and control path design, evolving into custom high-performance processor design using VHDL, pipelining, memory hierarchy design, cache memory and advanced topics.

Prerequisites: ECE 337

3 credits

ECE 438: Real-Time Application

Real-time system is one that reacts to the dynamic external environment under certain timing constraints. Real-time systems are becoming increasingly prevailing since more and more applications require real-time computing. This course focuses on design and analysis of software for real-time systems. It is to provide students with a basic understanding of real-time applications. The topics covered in this course include: introduction to real-time systems, scheduling algorithms and timing analysis, real-time operating systems, system impacts to real-time performance and software architectures, as well as simulation and verification of real-time applications. Hands-on experiences will be gained by using contemporary software tools.

Prerequisite: ECE 311

3 credits

ECE 440: Hardware/Software Co-design

This course will present state-of-the-art concepts and techniques for hardware/software code design of embedded systems. Topics include system level design methodologies of hardware/software co-design, system modeling and specification, architectures for embedded systems, hardware/software trade-off, performance evaluation, hardware/software co-synthesis and co-validation. The course follows the top-down design paradigm using predefined and user custom IP cores. Contemporary CAD software tools and hardware platforms including Xilinx Embedded Development Kit (EDK), Xilinx Integrated Software Environment (ISE), ModelSim, GUN compiler and debugger (GDB), as well as Spartan 3 Starter Board will be used throughout the course.

Prerequisite: ECE 345, ECE 347

3 credits

ECE 449: VHDL Design

This is an introductory course for the VHDL hardware description language targeting programmable logic and ASIC design. The usage of the language in representation, simulation, verification and synthesis areas is studied with extensive lab assignments. Essential syntax and semantics of the VHDL language including design entity, architectural bodies, concurrent and sequential statements, processes, data types, packages, configurations register transfer level design are among the covered topics.

Prerequisite: ECE 345

3 credits

ECE 451: Optical Devices and Systems

This course presents an introduction to electro optics. Topics include topics of wave propagation, interaction with both isotropic and anisotropic materials, modulation techniques, lenses and lens systems, optical sources and optical detectors. Optical systems, subsystems and applications are considered.

Prerequisites: ECE 238 and ECE 335

3 credits

ECE 456: RF Circuit Integration

Unifies concepts from circuits, electronics, communications and electromagnetic field theory. Applies concepts to subsystem radio frequency design: filtered amplifiers, oscillators, mixers, filters, power amps, transmission lines, and digital processing. Design of systems using discrete elements along with integrated elements is considered. RF on a chip technology is also considered in the lab for high technology communication system application.

Prerequisites: ECE 238, ECE 335

3 credits

ECE 465: Power Electronics

This course introduces the basic concepts of various topologies (AC-DC, DC-DC, DC-AC, ACAC, etc.) of power converters. The fundamental principles of switching components are discussed prior to the introduction of the design and application of converters. Emphasis is on the design issues associated with converters and the computer techniques used for the performance evaluation and analysis. Experiments are part of the course.

Prerequisites: ECE 238

3 credits

ECE 466: Modeling and Analysis of Electric Drives

This course introduces the issues on modeling and analysis of electrical drives. Basic concepts of electromechanical energy conversion will be presented prior to the detailed modeling of the dynamical aspects of both the DC and AC machines. Dynamic behavior of the machines and their computer simulation will be examined. Numerical schemes for simulation, singular perturbation technique, linearization technique, etc. are parts of the analysis tools. In addition, modeling of switching power conversion will be studied as it pertains to drive application. If time permits, some other practical aspects of drives will be examined, too.

Prerequisite: ECE 327

3 credits

ECE 471: Control of Electrical Machines

This course introduces the concept on the control of electric machines (DC and AC). Emphasis is placed on fundamentals, and conventional methods of speed control of electric machines.

Control strategies using power semiconductors for DC motor drives, induction motor drives, synchronous motor drives, and brushless dc and ac motors are discussed.

Prerequisite: ECE 327

3 credits

ECE 472: Digital Signal Processing

This course emphasizes the fundamental principles of signals and systems, sampling theorem, discrete-time Fourier transform, power spectrum, z-transform, discrete Fourier transform (DFT) and the fast Fourier transform (FFT) algorithm, digital filter design and implementation. Matlab/Simulink will be used to evaluate implementations of digital signal processing algorithms.

Prerequisite: ECE 330

3 credits

ECE 474: Artificial Neural Networks

This course will present artificial neural network (ANN) architectures and computational algorithms suited for practical engineering applications. Topics will include an overview of artificial neural networks and neural computing, elementary ANN building blocks and models. Concepts of learning and training rules, the back-propagation algorithm as well as examples and discussion of several classes of ANN such as feed-forward networks, multilayer networks, recurrent networks, and self-organizing networks will be presented. Implementations will be evaluated in Matlab/Simulink.

Prerequisite: ECE 351

3 credits

ECE 475: Advanced Instrumentation and Measurement

This course emphasizes the use of National Instruments (NI) tools to perform data acquisition, measurement techniques and instrument control. Data acquisition will include analog and digital I/O, signal conditioning and sensors. Measurement techniques will include time-frequency analysis, data filtering, and distortion measurements. Instrument control will include serial port, GPIB communications and instrument drivers.

3 credits

ECE 483: Intro to Communication Systems

This course emphasizes Fourier Series/Transform and FFT, frequency shifting concepts ideally and in reality. Analog modulation techniques and technology including digital enhancement techniques (amplitude, sideband and frequency modulation), sampling theory and digital modulation (PAM, PWM, PPM, PCM) are considered. Noise aspects considered in determining best SNR technique. Both time and frequency multiplexing and practical examples are included.

Prerequisite: ECE 330

3 credits

ECE 484: Wireless System Applications

This course will cover topics in wireless and mobile communications and their application to the design of systems and networks. These topics will include cellular concepts, beam formation, path loss, fading, and multi-path in radio propagation, digital modulation formats, equalization, diversity, coding, and multiple access techniques. Wireless local area networks (WLAN), global system for mobile (GSM), and wideband CDMA (W-CDMA) will be discussed.

Prerequisites: ECE 330 and ECE 335

3 credits

ECE 485: Advanced Programming In C/C++

Problem analysis. Translation path from pseudo-code to implementation. Comparison of C and C++ implementations. Critical evaluation of time, memory, and program structure.

Programming style.

Prerequisite: ECE 111

3 credits

ECE 486: Object-Oriented Modeling

An advanced treatment of methods for producing an object-oriented design, including structural, behavioral, and architectural design. Focus is on Object-Oriented analysis and design methods and design processes they support. Includes treatment of the Unified Modeling Language (UML) techniques and their application to systems/software development.

Prerequisite: ECE 216

3 credits

ECE 488: Modern Control Theory

Linear spaces and operators, mathematical descriptions of systems. Linear dynamical systems and impulse response, matrices. Controllability and observability of linear dynamical systems. Irreducible realizations of rational transfer function matrices. Canonical forms, state feedback and state estimators. Stability of linear systems. Composite systems; linear optimal control and linear distributed systems.

Prerequisite: ECE 326

3 credits

ECE 489: Digital Control

This course deals with the control of dynamic systems by employing classical and modern control tools incorporating a digital computer in the control loop. It builds upon the foundational concepts of continuous-time control, and provides the background needed for practicing engineers to enhance their knowledge in the area of digital control system. Topics of discussion are state-space and transfer function representations, Z-transform, digital control system design, filter design, state-space approach to control system design, linearization, stability, system identification, and adaptive control.

Prerequisite: ECE 326

3 credits

ECE 490-499: Advanced Topics in Electrical and Computer Engineering

Advanced courses developed from student interest in all areas of electrical engineering. Brief description of current content to be announced in schedule of classes.

Prerequisite: Permission of the chair.

1-3 credits

SEECs (101, 102, 201, 202, 301, 302, 401, 402): Professional and Personal Enrichment Seminar

Course description is listed in Computer & Information Science section of the catalog.

0 credit, Fall and Spring

**DEPARTMENT OF ENVIRONMENTAL SCIENCE
& ENGINEERING (ESE)**

HWIDONG KIM, Ph.D., P.E., *Chair*

FACULTY: *Professor: Michelle Homan, Ph.D., Assistant Professor: Hwidong Kim. Assistant Professor: Varun Kasaraneni, Professor Emeritus: Harry R. Diz, Ph.D., P.E.*

The department offers majors in **Environmental Science** and **Environmental Engineering**, and minors in **Environmental Science** and **Geographic Information Systems (GIS)**. There are also two **4 + 1 programs**: 1.) B.S. in **Environmental Science**/M.S. in Environmental Science & Management and 2.) B.S. in Environmental Engineering/M.S. in Environmental Science & Management.

ENVIRONMENTAL SCIENCE

The **Bachelor of Science in Environmental Science (ES)** degree is a rigorous interdisciplinary curriculum designed for students with strong analytical abilities that includes courses in environmental science as well as biology, chemistry, physics, earth science, and mathematics. Environmental science majors study the adverse effects of human activity on the environment and develop solutions to reduce its impact. Graduates of Gannon's Environmental Science program are prepared for careers in the areas of environmental education and outreach, natural resource management, environmental compliance, and environmental health and safety.

The program connects the theory and concepts learned in the classroom with hands-on and real-world experiences in the form of fieldwork, internships, research activities, service-learning projects and travel opportunities. Students complete a year-long research project during the senior year, organized within the two-semester sequence "Senior Thesis I and II". This course sequence guides the student in becoming familiar with the scientific method and reading scientific literature. Each student works with a faculty mentor on an individual basis during the senior year to design and conduct a scientific study, culminating in the writing of a Senior Thesis based on the student's research.

This program leads to a Bachelor of Science degree in Environmental Science. There are two technical options within the major requiring a minimum of 128 credits: Environmental Resource Management and Environmental Health & Safety. Students should declare the option they wish to pursue by the end of the sophomore year.

Student Learning Outcomes

The B.S. in Environmental Science is designed to provide an interdisciplinary education with a focus on practical and field applications. After completing the ES program students will:

1. Demonstrate knowledge of and application of math and the natural sciences in order to understand human impacts on the natural and built environment.
2. Gain the practical skills necessary in the environmental field including laboratory and field instrumentation, computer software, and sampling and analytical techniques.
3. Demonstrate the ability to identify and evaluate environmental problems and to develop solutions to remediate and sustain environmental systems.
4. Be able to implement scientific research strategies, including collection, management, evaluation, and interpretation of environmental data.
5. Demonstrate effective oral and written communication skills specific to the audience and circumstance.

A minor in Environmental Science and Geographic Information Systems (GIS) is also available.

Environmental Health and Safety Option of ES Curriculum (minimum of 128 credits)*(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

| | |
|----|---|
| 3 | Prin Environmental Science/ENV 120 |
| 4 | General Chemistry I w/lab/ CHEM 111, 112 |
| 3 | MATH elective |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar ENG 100 or other |
| 15 | |

Second Semester

| | |
|----|--|
| 3 | Energy and Climate Change/ENV 121 |
| 4 | General Chemistry II w/lab/ CHEM 114, 115 |
| 3 | MATH elective |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Philosophy/LPHI 131 |
| 16 | |

SOPHOMORE*Third Semester*

| | |
|----|--|
| 4 | Molecular/Cell Biology w/Lab/ BIOL 122, 123 |
| 4 | General Physics 1 w/lab/PHYS 105, 106 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Philosophy II/LPHI |
| 3 | Foundations History/LHST 111 |
| 17 | |

Fourth Semester

| | |
|----|--|
| 4 | Animal Form & Func w/lab/BIOL 124, 125 |
| 4 | College Physics 2 w/lab/PHYS 108, 109 |
| 4 | Physical Geology w/lab/ENV 101, 102 |
| 3 | The Bible: An Intro/LTHE 201 |
| 1 | Leadership Seminar |
| 16 | |

JUNIOR*Fifth Semester*

| | |
|----|---|
| 3 | Environmental Toxicology/ENV 400 |
| 1 | Environmental Health Lab/ENV 401 |
| 4 | Environmental Hydrology w/lab/ ENV 312, 313 |
| 4 | Ecosystem Biology & Evolution w/lab/ BIOL 126, 127 |
| 3 | Public Speaking/SPCH 111 |
| 15 | |

Sixth Semester

| | |
|----|-----------------------------------|
| 3 | Industrial Health 1/ENV 440 |
| 4 | Water Quality w/lab/ENV 336, 337 |
| 3 | Fine Art Series/LFIN |
| 3 | Industrial Safety/ENV 449 |
| 3 | Philosophy or Theology III Series |
| 16 | |

SENIOR*Seventh Semester*

| | |
|----|--|
| 2 | Senior Thesis I/ENV 496 |
| 2 | Wetlands Science & Engineering/ ENV 422 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Literature Series/LENG |
| 3 | Approved Elective |
| 3 | Senior Seminar/LBST 383 |
| 16 | |

Eighth Semester

| | |
|----|--|
| 3 | Senior Thesis II/ENV 497 |
| 3 | Solid & Hazardous Waste Mgmt/ ENV 477 |
| 3 | Social Science Elective |
| 3 | Human Health Risk Assessment/ ENV 445 |
| 3 | Approved Elective |
| 2 | Site Assessment/ENV 420 |
| 17 | |

Environmental Resource Management Option of ES Curriculum (minimum of 128 credits)*(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

| | |
|----|---|
| 3 | Princ Environmental Science/ENV 120 |
| 4 | General Chemistry I w/lab/ CHEM 111, 112 |
| 3 | MATH elective |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar ENG 100 <i>or</i> other |
| 15 | |

Second Semester

| | |
|----|--|
| 3 | Energy and Climate Change/ENV 121 |
| 4 | General Chemistry II w/lab/ CHEM 114, 115 |
| 3 | MATH elective |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Philosophy/LPHI 131 |
| 16 | |

SOPHOMORE*Third Semester*

| | |
|----|--|
| 4 | Molecular/Cell Biology w/Lab/ BIOL 122, 123 |
| 4 | General Physics 1 w/lab/PHYS 105, 106 |
| 3 | Foundation of Theology/LTHE 101 |
| 3 | Philosophy II/LPHI |
| 3 | Foundations History/LHST 111 |
| 17 | |

Fourth Semester

| | |
|----|---------------------------------------|
| 4 | Animal Form & Func w/lab/BIOL124, 125 |
| 4 | College Physics 2 w/lab/PHYS 108, 109 |
| 4 | Physical Geology w lab/ENV 101, 102 |
| 3 | The Bible: An Intro/LTHE 201 |
| 1 | Leadership Seminar |
| 16 | |

JUNIOR*Fifth Semester*

| | |
|----|--|
| 3 | Environmental Toxicology/ENV 400 |
| 1 | Environmental Health Lab/ENV 401 |
| 3 | Soil Science/ENV 307 |
| 4 | Ecosystem Biology & Evolution w/lab/BIOL 126, 127 |
| 2 | Wetlands Science & Engineering/ ENV 422 |
| 3 | Public Speaking/SPCH 111 |
| 16 | |

Sixth Semester

| | |
|----|--|
| 4 | Principles of Ecology w Lab/ BIOL 298/299 |
| 4 | Water Quality w/lab/ENV 336, 337 |
| 3 | Fine Art Series/LFIN |
| 3 | Approved Elective |
| 3 | Philosophy <i>or</i> Theology III Series |
| 17 | |

SENIOR*Seventh Semester*

| | |
|----|---------------------------------|
| 2 | Senior Thesis I/ENV 496 |
| 4 | Limnology and Lab/BIOL 385, 386 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Literature Series/LENG |
| 3 | Senior Seminar/LBST 383 |
| 15 | |

Eighth Semester

| | |
|----|--|
| 3 | Senior Thesis II/ENV 497 |
| 3 | Geographic Information Systems/ENV 220 |
| 3 | Social Sciences Elective |
| 4 | Approved Elective with lab |
| 3 | Approved Elective |
| 16 | |

Course Requirements for the B. S. in Environmental Science degree (minimum 128 credits)

| | | | |
|---|-----------|---|--------------------------|
| LIBERAL STUDIES CORE | 42 | <i>Choose One of the Following Tracks</i> | |
| LENG 111 College Composition | 3 | | |
| LENG 112 Critical Analysis & Comp. | 3 | TRACK 1: ENVIRONMENTAL | |
| LENG Literature | 3 | HEALTH & SAFETY | 26 |
| LTHE Foundation Theology Course | 3 | ENV 312/313 Environmental | |
| LPHI Foundation Philosophy Course | 3 | Hydrology and Lab | 4 |
| LPHI Philosophy II | 3 | ENV 420 Environmental Site Assessment | 2 |
| LTHE 201 The Bible: An Intro | 3 | ENV 422 Wetlands Science & Eng | 2 |
| LPHI/LTHE Philosophy or Theology III | 3 | ENV 440 Industrial Health 1 | 3 |
| LFIN Fine Arts | 3 | ENV 445 Human Health Risk Assessment | 3 |
| LHST Foundation History course | 3 | ENV 477 Solid/Hazardous | |
| SPCH 111 Public Speaking | 3 | Waste Management | 3 |
| Social Science | 3 | ENV 449 Industrial Safety | 3 |
| Freshman Seminar | 2 | | |
| Leadership Seminar | 1 | Electives | 6 |
| LBST 383 Senior Seminar | 3 | ENV 220 GIS | 3 |
| | | ENV 430 Environmental Sustainability | 3 |
| NATURAL SCIENCES | 28 | ENV 441 Industrial Health II | 3 |
| BIOL 122 Molecular & Cell Biology | 3 | ENV 446 Industrial Hygiene Sampling | 1 |
| BIOL 123 Molecular & Cell Bio. Lab | 1 | ENV 498 Environmental Internship | 1-3 |
| BIOL 124 Animal Form and Function | 3 | IE 410 Ergonomics | 3 |
| BIOL 125 Animal Form and Function Lab | 1 | | |
| BIOL 126 Ecosystem Bio & Evolution | 3 | TRACK 2: ENVIRONMENTAL | |
| BIOL 127 Ecosystem Bio & Evol Lab | 1 | RESOURCE MANAGEMENT | 26 |
| CHEM 111 General Chemistry I | 3 | ENV 307 Soil Science | 3 |
| CHEM 112 General Chemistry I Lab | 1 | ENV 220 Geographic Information System | 3 |
| CHEM 114 General Chemistry II | 3 | ENV 422 Wetlands Science & Engineering | 2 |
| CHEM 115 General Chemistry II Lab | 1 | BIOL 298/299 Principles of Ecology | |
| PHYS 105 College Physics I | 3 | and Lab | 4 |
| PHYS 106 College Physics I Lab | 1 | BIOL 385/386 Limnology and Lab | 4 |
| PHYS 108 College Physics II | 3 | | |
| PHYS 109 College Physics II Lab | 1 | Electives | 10 |
| MATHEMATICS | 9 | ENV 312/313 Environmental Hydrology | 4 |
| MATH 213 Applied Statistics (required) | 3 | ENV 477 Solid/Hazardous | |
| <i>Plus any two of the following courses:</i> | | Waste Management | 3 |
| MATH 111 College Algebra | 3 | ENV 498 Environmental Internship | 1-3 |
| MATH 112 Trigonometry | 3 | BIOL 223/224 Invertebrate Zoology | |
| MATH 135 Pre-Calculus | 3 | and Lab | 4 |
| MATH 140 Calculus I | 3 | BIOL 306 Oceanography | 3 |
| MATH 141 Calculus II | 3 | BIOL 323/324 Wildlife Management | |
| | | and Lab | 4 |
| ENVIRONMENTAL SCIENCE CORE | 23 | BIOL 390/391 Plant Ecology and Lab | 4 |
| ENV 101/102 Physical Geology and Lab | 4 | BIOL 395/396 Fisheries Biology and Lab | 4 |
| ENV 120 Prin of Env Science | 3 | | |
| ENV 121 Energy & Climate Change | 3 | | |
| ENV 336 Water Quality | 3 | | |
| ENV 337 Water Quality Lab | 1 | | |
| ENV 400 Env Health & Toxicology | 3 | | |
| ENV 401 Env Health Lab | 1 | | |
| ENV 496 Senior Thesis I | 2 | | |
| ENV 497 Senior Thesis II | 3 | | |
| | | | 128 credits total |

Accelerated 5-Year B.S./M.S. in Environmental Science/ Environmental Science & Management

The 5-year B.S./M.S. program combines two degrees: a B.S. in Environmental Science with an M.S. in Environmental Science & Management. Eligibility for the program is competitive and admission is based on overall academic performance and scientific/math aptitude.

Early planning is essential and students must apply for the combined B.S./M.S. program during the junior year. In addition to the B.S. requirements, students complete a total of 9 graduate credits during the senior year (see below). In order to receive credit at the graduate level for courses taken during the fourth year, students must have applied and been accepted into the B.S./M.S. program.

Recommended Graduate Courses during the Senior Year:

GENV 500 Environmental Research Methods (3)

GENV 540 Industrial Health I (3)

GENV 544 Env Law & Regulations (3)

Total combined credit hours for the 4 + 1 B.S./M.S. Program includes 158 credits (122 undergraduate credits plus 30 graduate credits, six credits are shared credit hours). Consult the Graduate Catalog for additional information about other requirements for the M.S. program. Environmental Science majors are eligible to complete either the Environmental Health & Safety or the Environmental Management track within the M.S. program.

ENVIRONMENTAL ENGINEERING

The **Bachelor of Science in Environmental Engineering** program at Gannon University is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. It is a demanding curriculum that combines mathematics, the basic sciences, and engineering principles. The Environmental Engineering program at Gannon offers small classes and a low student-to-faculty ratio. Each environmental engineering student will work with a faculty mentor on a senior design project to bring together the theoretical and practical aspects of engineering design to solve an environmental problem.

Students must demonstrate an introductory level knowledge of environmental issues associated with air, land, and water systems and associated environmental health impacts; an understanding of concepts of professional engineering design and practice; the roles and responsibilities of public institutions and private organizations pertaining to environmental engineering, and a proficiency in advanced principles and practice relevant to water quality and environmental health.

Graduates of our program are employed with government agencies, environmental consulting firms, and private industry.

Program Educational Objectives and Student Learning Outcomes

In accordance with the requirements of the Engineering Accreditation Commission of ABET, by three to five years after graduation, graduates of the environmental engineering program will:

1. have careers in industry, consulting or government where they successfully apply their knowledge and skills to Environmental Engineering Practice,
2. continue their professional development through graduate work, workshops and seminars, and/or pursuit of a professional license,
3. demonstrate leadership and communication skills through project management, report preparation, and professional presentations, and
4. conduct themselves in accordance with professional ethical standards.

To accomplish the Program Educational Objectives and to satisfy the ABET specific requirements for the environmental engineering degree, the program has set forth the following Student Learning Outcomes, along with an assessment process to provide feedback for continuous improvement in the program. Graduates of the Environmental Engineering program must attain:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics,
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental, and economic factors,
3. an ability to communicate effectively with a range of audiences,
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives,
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions, and
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

**Course Requirements for the B. S. in Environmental Engineering degree
(minimum 132 credits)**

| | | | |
|--|-----------|---|-----------|
| LIBERAL STUDIES CORE | 40 | GENERAL ENGINEERING | 10 |
| LENG 111 College Composition | 3 | ENG 100 First-Year Seminar | 2 |
| LENG 112 Crit Analysis & Comp. | 3 | ME 201 Statics | 3 |
| LENG Literature | 3 | ME 205 Digital Computer Usage | 1 |
| LTHE Foundation Theology | 3 | ME 206 Digital Computer Usage Lab | 1 |
| LPHI Foundation Philosophy | 3 | ME 312 Engineering Thermodynamics | 3 |
| LPHI Philosophy II | 3 | | |
| LTHE 201 The Bible: An Intro | 3 | ENVIRONMENTAL | |
| LPHI/LTHE Philosophy/ Theology III Series | 3 | ENGINEERING SCIENCES & DESIGN | 48 |
| LFIN Fine Arts | 3 | ENV 120 or 121 Prin Env Sci OR Energy & Climate Change | 3 |
| LHST Foundation History | 3 | ENV 212 CAD for Environ Engineers | 2 |
| SPCH 111 Public Speaking | 3 | ENV 312 Environmental Hydrology | 3 |
| ECON 285 Project Economics | 3 | ENV 313 Environmental Hydrology Lab | 1 |
| Leadership Seminar | 1 | ENV 336 Water Quality | 3 |
| LBST 383 Senior Seminar | 3 | ENV 337 Water Quality Lab | 1 |
| | | ENV 400 Environmental Toxicology | 3 |
| MATH & BASIC SCIENCES | 34 | ENV 401 Environmental Health Lab | 1 |
| MATH 140 Calculus I | 3 | ENV 403 Environmental Engineering | 3 |
| MATH 141 Calculus II | 3 | ENV 440 Industrial Health I | 3 |
| MATH 242 Calculus III | 3 | ENV 444 Environmental Law & Regulations | 3 |
| MATH 304 Differential Equations | 3 | ENV 451 Water/Wastewater Engineering | 3 |
| MATH 312 Probability & Statistics OR | 3 | ENV 453 Water/Wastewater Lab | 1 |
| MATH 213 Applied Statistics | 3 | ENV 455 Air Pollution Control | 3 |
| PHYS 210 Fund Physics 1 | 3 | ENV 465 Soil & Groundwater Pollution | 3 |
| PHYS 212 Fund Physics 2 | 3 | ENV 486 Fluid Mechanics and Water Systems Design | 3 |
| ENV 474 Environmental Microbiology | 2 | ENV 487 Fluid Mechanics and Water Systems Design Lab | 1 |
| CHEM 111 General Chemistry I | 3 | ENV 494 Senior Design I | 2 |
| CHEM 112 Gen Chemistry I Lab | 1 | ENV 495 Senior Design II | 3 |
| CHEM 114 General Chemistry II | 3 | | |
| CHEM 115 Gen Chemistry II Lab | 1 | Environmental Engineering Electives: | 3 |
| ENV 101 Physical Geology OR ENV 210 Env Geology | 3 | ENV 102 Physical Geology Lab | 1 |
| | | ENV 220 Geographic Info Systems | 3 |
| | | ENV 307 Soil Science | 3 |
| | | ENV 420 Environmental Site Assessment | 2 |
| | | ENV 422 Wetlands Science & Engineering | 2 |
| | | ENV 430 Environmental Sustainability | 3 |
| | | ENV 435 Water Quality Modeling | 4 |
| | | ENV 441 Industrial Health II | 3 |
| | | ENV 446 Ind Hygiene Sampling Techn | 2 |
| | | ENV 477 Solid/Hazardous Waste Treatment | 3 |

Typical 4-year program in Environmental Engineering (minimum 132 credits)*(Numerals in front of course represent credits)***FRESHMAN***First Semester*

| | |
|-----------|------------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | Calculus I/MATH 140 |
| 3 | Gen Chemistry I/CHEM 111 |
| 1 | Gen Chemistry I Lab/CHEM 112 |
| 2 | First-Year Seminar/ENG 100 |
| 3 | Prin Environmental Science/ENV 120 |
| 2 | Dig Computer & Lab/ME 205, 206 |
| <u>17</u> | |

Second Semester

| | |
|-----------|------------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Calculus II/MATH 141 |
| 3 | Fund Physics 1/PHYS 210 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Foundations of Philosophy/LPHI 131 |
| <u>16</u> | |

SOPHOMORE*Third Semester*

| | |
|-----------|----------------------------|
| 3 | Fund Physics 2/PHYS 212 |
| 3 | Statics/ME 201 |
| 3 | Calculus III/MATH 242 |
| 3 | Philosophy II series/LPHI |
| 3 | Project Economics/ECON 285 |
| 3 | Public Speaking/SPCH 111 |
| <u>18</u> | |

Fourth Semester

| | |
|-----------|---|
| 3 | Differential Equations I/MATH 304 |
| 2 | CAD for Env Engineers/ENV 212 |
| 3 | Probability & Stats/MATH 312 <i>or</i> Applied Statistics/MATH 213 |
| 3 | Fine Arts Elective |
| 3 | Foundations of Theology/LTHE 101 |
| 1 | Leadership Seminar |
| 3 | Foundation History/LHST |
| <u>18</u> | |

JUNIOR*Fifth Semester*

| | |
|-----------|---|
| 4 | Environmental Toxicology & Lab/ ENV 400, 401 |
| 3 | Physical Geology/ENV 101 <i>or</i> ENV 210 |
| 3 | Environmental Engineering/ENV 403 |
| 3 | The Bible: An Intro/LTHE 201 |
| 2 | Environmental Microbiology/ENV 474 |
| <u>15</u> | |

Sixth Semester

| | |
|-----------|---------------------------|
| 3 | Water Quality/ENV 336 |
| 1 | Water Quality Lab/ENV 337 |
| 3 | Env Hydrology/ENV 312 |
| 1 | Env Hydrology Lab/ENV 313 |
| 3 | Thermodynamics/ME 312 |
| 3 | Env Law & Reg/ENV 444 |
| 3 | Literature Series |
| <u>17</u> | |

SENIOR*Seventh Semester*

| | |
|-----------|--|
| 2 | Senior Design I/ENV 494 |
| 3 | Water & Wastewater Engineering/ ENV 451 |
| 1 | Water & Wastewater Lab/ENV 453 |
| 3 | Fluid Mechanics & Water Systems/ ENV 486 |
| 1 | Fluid Mechanics & Water Systems Lab/ENV 487 |
| 3 | Senior Seminar/LBST 383 |
| 3 | Philosophy <i>or</i> Theology III Series |
| <u>16</u> | |

Eighth Semester

| | |
|-----------|--------------------------------------|
| 3 | Senior Design II/ENV 495 |
| 3 | Industrial Health I/ENV 440 |
| 3 | Soil & Groundwater Pollution/ENV 465 |
| 3 | Air Pollution Control/ENV 455 |
| 3 | Technical Elective/ENV |
| <u>15</u> | |

Accelerated 5-Year B.S./M.S. in Environmental Engineering/ Environmental Science & Management

The 5-year B.S./M.S. program combines two degrees: a B.S. in Environmental Engineering with an M.S. in Environmental Science & Management. Eligibility for the program is competitive and admission is based on overall academic performance and scientific/math aptitude. It may be necessary for students to take up to 18 credits each semester as an undergraduate. Early planning is essential and students must apply for the combined B.S./M.S. program during the junior year. In addition to the B.S. requirements, students complete a total of 9 graduate credits during the senior year (see below). In order to receive credit at the graduate level for courses taken during the fourth year, students must have applied and been accepted into the B.S./M.S. program.

Recommended Graduate Courses during the Senior Year:

GENV 500 Environmental Research Methods (3)

GENV 540 Industrial Health I (3)

GENV 544 Env Law & Regulations (3)

Total combined credit hours for the 4 + 1 B.S./M.S. Program includes 162 credits (126 undergraduate credits plus 30 graduate credits, six credits are shared credit hours). Consult the Graduate Catalog for additional information about other requirements for the M.S. program. Environmental Engineering majors are eligible to complete the Environmental Management track within the M.S. program.

ENVIRONMENTAL SCIENCE MINOR

The Environmental Science minor is intended for students in science and engineering disciplines that wish to pursue a career with an environmental emphasis. The program is administered by the Department of Environmental Science and Engineering and coursework is intended to provide students with a broad framework that focuses on the relationship between human activities and environmental impacts. Students have five credits of elective courses (ENV courses) to choose from that align with their career interests.

All students completing the appropriate prerequisite chemistry courses (CHEM 111, 112, 114 and 115) are eligible for the minor program. Minor declaration forms are available from the environmental science and engineering department and should be submitted to the registrar's office prior to graduation. Please note that environmental engineering and freshwater and marine biology majors are only eligible for the minor if they take 15 additional credits of ENV courses that are not a required course for their major.

Environmental Science Minor (minimum 18 credits)

Required Courses (13 credits)

ENV 120 Principles of Environmental Science I (3)

ENV 121 Principles of Energy and Climate Change (3)

ENV 336 Water Quality (3)

ENV 337 Water Quality Lab (1)

ENV 400 Environmental Toxicology (3)

Electives (minimum 5 credits)

5 credits or more from any ENV courses

GEOGRAPHIC INFORMATION SYSTEMS MINOR

The Geographic Information Systems (GIS) Minor allows students to develop an in-depth understanding and practice of digital map-making and spatial data analysis. Geospatial skills increasingly are sought by employers in the areas of public policy and urban planning, environmental management, public health, industrial logistics and law enforcement. The minor is open to all majors. Students should consult with their major faculty advisor to ensure the minor is appropriate for their career goals. It is recommended that students begin planning for the minor early in their academic career (freshman or sophomore year) in order to complete the course sequence.

The 18-credit GIS minor requires completion of one 3-credit introductory course, the 3-credit GIS Foundation Course (ENV 220/MKTG 399) and 12 credits of application/elective courses.

Geographic Information Systems Minor (minimum 18 credits)

Introductory Course (3 credits)

Take one of the following courses

ENV 101: Physical Geology (3 credits), or

GEOG 201: World Geography (3 credits)

Foundation Course (3 credits)

ENV 220/MKTG 399: Introduction to Geographic Information Systems (GIS)

Application/Elective courses (12 credits)

CRJS 261: Introduction to Crime Mapping (3 credits)

CRJS 492: Criminal Justice GIS Application and Internship (1-3 credits)

CRJS 499: Crime Mapping and Analysis (3 credits)

ENV 489: Advanced Environmental GIS (3 credits)

ENV 497: Senior Thesis Project in GIS (4 credits)

ENV 498: Environmental GIS Internship (1-3 credits)

IE 478: GIS for Facilities Planning and Logistics Modeling (3 credits)

LBST 380: Senior Seminar in GIS and Spatial Justice (3 credits)

LPHI 255: Philosophy of Place (3 credits) (for CHESS majors only)

ENV COURSE DESCRIPTIONS

ENG 100: First-Year Seminar in Engineering

Course description is listed in the Electrical and Computer Engineering section of the catalog.

2 credits, Fall

ENV 101: Physical Geology

This course will focus on the forces at work on the earth's surface, the development of landscapes, and the nature of rocks and minerals. Topics such as plate tectonics, weathering, running water, ground water, glaciers, the oceans, volcanism, and earthquakes will also be covered.

Corequisite: ENV 102.

3 credits

ENV 102: Physical Geology Lab

The lab will include studies of topographic and geologic maps. Rocks and mineral specimens will be studied with emphasis on the characteristics that reveal the origins of igneous, sedimentary, and metamorphic rocks.

Corequisite: ENV 101.

1 credit

ENV 104: Historical Geology

The history of the earth, including the development of life. The changing nature of the surface of the earth and the living forms inhabiting it are studied with emphasis on stratigraphy, plate theory, and the fossil record.

Corequisite: ENV 105.

3 credits

ENV 105: Historical Geology Lab

Geologic maps will be studied to establish a familiarity with the principles of stratigraphy. Fossils will provide means by which the methods of preservation of organisms and the evolution of life can be appreciated.

Corequisite: ENV 104.

1 credit

ENV 112: Meteorology

This course deals with the fundamentals of modern meteorology, weather instruments, and observations, weather codes, map plotting and analysis.

3 credits

ENV 120: Principles of Environmental Science

The focus of this course will include the underlying scientific principles of environmental concerns and the necessary tools for analyzing and solving such problems. The topics and concepts to be discussed include human population dynamics and effects, matter and energy, geochemical cycling, renewable and nonrenewable resources, preservation of wilderness and endangered species, land use, environmental ethics and sustainability. Due to the interdisciplinary nature of many environmental problems, the political, social, economic, and ethical aspects will also be discussed along with the biological and chemical principles.

3 credits, Fall

ENV 121: Principles of Energy and Climate Change

This is the second part of a two-semester course that will explore the underlying scientific principles of current environmental problems. An emphasis is placed on the connection between nonrenewable and renewable energy technologies and human and ecosystem health. Topics to be covered include atmospheric science, air quality and pollution, fossil fuels, alternative energy, and global climate change.

3 credits, Spring

ENV 200 and ENV 201: Environmental Seminar I and II

A reading, discussion, presentation of scientific literature relating to the environment along with occasional speakers on environmental topics from inside and outside the university.

1 credit

ENV 210: Environmental Geology

This course explores the environmental consequences of mining and energy production. The geologic background of ore formation, ore extraction, and refining will be studied. Also, the impacts on the lithosphere, the hydrosphere, and the atmosphere due to the extraction of coal, gas, and oil will be studied. The consequences for short-term and long-term changes in the global environment will be studied. Throughout the course, the scientific method of inquiry, skepticism, evidence, and conclusion will be employed.

3 credits

ENV 220: Geographic Information Systems (GIS)

Geographic Information Systems (GIS) use computers to organize and interpret spatially identified data. GIS systems present data in map form, and allow sophisticated analysis of data to aid in better understanding and interpretation. The course introduces the student to ArcGISPro, a software product of ESRI, Inc., the leading GIS software in use today.

3 credits, Spring

ENV 307: Soil Science

Designed to acquaint students with the physical, chemical and biological aspects of the world's soils, including use and classification. Particular emphasis is on soil pollution, and soil as a medium for plant growth.

Prerequisite: ENV 101 or ENV 104 or ENV 210 or permission of instructor.

3 credits

ENV 312: Environmental Hydrology

This course involves the study of the hydrologic cycle and changes caused by human activity, including study of urbanizing effect on stream hydrology and stream restoration.

Prerequisite: ENV 101 or ENV 210

3 credits

ENV 313: Environmental Hydrology Lab

This lab course complements ENV312, and includes field and lab exercises relating to stream hydrology and stream restoration. 3 hrs lab.

Pre- or Corequisite: ENV 312

1 credit

ENV 336: Water Quality

This course covers the major types of water pollution of concern to the environmental professional. Topics to be covered include water quality impacted by organic and nutrient pollution in surface and groundwater, as well as the water quality consequences of heavy metal and toxic organic pollution.

Prerequisites: CHEM 111, 112, 114, 115; Corequisite: ENV 337

3 credits

ENV 337: Water Quality Lab

This is a companion course to ENV 336 Water Quality, which is a required corequisite.

Lab activities will cover wet chemistry and instrumental techniques required for water quality monitoring. Methods employed will include standard methods as well as EPA approved methods.

Prerequisites: CHEM 112, 115; Corequisite: ENV 336

1 credit

ENV 383: Environmental Research

This is a course in supervised research specifically for undergraduates who wish to experience science as a participant. The course requires a minimum of 3 hours per week involved in lab or fieldwork. Students become active in on-going research projects which typically relate to the Great Lakes, local streams, or local industries.

Prerequisite: Permission of Instructor

1 credit

ENV 400: Environmental Toxicology

This course focuses upon the properties, effects and detection of chemical substances in the environment and how that information is used to protect public health. Topics to be covered include: dose-response relationships, toxicokinetics, biotransformation and elimination of toxicants, target organ toxicity, carcinogenesis, risk assessment and the standard-setting process.

Prerequisites: CHEM 114; Corequisite: ENV 401

3 credits, Fall

ENV 401: Environmental Health & Toxicology Laboratory

This laboratory course accompanies the ENV400 course. Students apply the knowledge learned in the lecture course by collecting and analyzing environmental samples and evaluating in terms of human health risks. This course will focus on the design and implementation of environmental sampling and will require students to design their own collection programs and obtain samples of appropriate media.

Corequisite: ENV 400

1 credit, Fall

ENV 403: Environmental Engineering

This course applies the principles of science and engineering to environmental systems pollution management. Topics covered include chemical kinetics, mass balance, mass transfer, water and wastewater treatment, air pollution control, and solid and hazardous waste management.

Prerequisite: PHYS 108 or PHYS 212

3 credits, Spring

ENV 416: Limnology of the Great Lakes with Lab

A study of the physical, chemical and biological aspects of the Great Lakes. Advanced modern limnological concepts will be incorporated into understanding the past, present and future condition of the Lakes. Field and laboratory experiences will include the analysis of Lake Erie water samples for chemical, biological and physical interpretation using standard procedures. Field experiences will include trips on the R/V Environaut, Gannon's research vessel.

Prerequisite: Senior standing or permission of the Instructor

4 credits

ENV 420: Environmental Site Assessment

The course covers the background and techniques required of an environmental professional in performing Phase I and Phase II environmental site assessments. These assessments are commonly required when there is a transfer of ownership of commercial or industrial property. Topics include site characterization, fate and transport, and application of the three attainment standards associated with Act II, Pennsylvania Land Recycling Program. Hands-on field experience included in the course activities.

Prerequisites: Senior standing

2 credits, Fall

ENV 422: Wetlands Science & Engineering

Wetlands Science and Engineering is a comprehensive course in wetland identification, function & value assessments, and management. The course will cover the fundamentals of identifying and delineating jurisdictional wetlands utilizing the current methods described in the 1987 US Army Corps of Engineers Manual. Comparative reference will be made to the 1989 EPA Joint Manual. Wetland design and construction methods will be presented as applicable to water quality enhancement, wildlife habitat improvement, stormwater management, and riparian environments. Course alternates annually with ENV 420.

Prerequisites: Senior standing

2 credits, Fall

ENV 430: Environmental Sustainability

This is an upper-level course that will cover such topics as basic concepts of sustainability, energy auditing, green and sustainable materials and life-cycle frameworks for sustainability. The course also focuses on an application of the concept of sustainability to the management of energy, water and waste. Students will demonstrate key knowledge in sustainability by conducting a life-cycle assessment (LCA) project.

Prerequisite: CHEM 103/106 or CHEM 111/114

3 credits, Spring

ENV 435: Water Quality Modeling

An overview of fundamental processes and models developed to simulate and predict changes in water quality in natural settings. This course will be restricted to freshwater surface waters, particularly streams and rivers, but there will be some discussion of lakes and reservoirs. Students will become familiar with USEPA's BASINS (a GIS software for the presentation and analysis of water quality data) and the models associated with it. Course offered alternate Spring Semesters.

Prerequisites: Senior standing and ENV 403

4 credits

ENV 440: Industrial Health I

This course will review the basic principles and knowledge required to recognize, evaluate and control hazardous agents within the workplace. Topics to be covered include: an overview of occupational health and safety regulations, workplace exposure limits and standards, air sampling principles and techniques, chemical hazard identification and control, ventilation and biohazards.

Prerequisites: ENV 400

3 credits, Spring

ENV 441: Industrial Health II

Principles and control of the industrial environment as related to protection and health of occupationally employed persons, specifically related to industrial noise, personal protective equipment, and physical design factors (ergonomics). Course offered varied semesters.

Prerequisites: Senior standing

3 credits

ENV 444: Environmental Law & Regulations

The course introduces students to the major concepts of environmental law. Because environmental law is grounded in both federal and state statutes, the course will expose students to major components of statutory law at both levels, and will also explore the federal/state relationship using Pennsylvania as a model. Although a basic understanding of the American legal system and administrative law would be of great benefit, it is not a prerequisite to the course.

3 credits, Spring

ENV 445: Human Health Risk Assessment

This course will cover the principles and application of risk assessment to determine the risk of human health effects from environmental hazards. Methods for evaluating potential environmental exposures will be examined coupled with the principles and concepts of toxicology as covered in GENV 542. Specific topics to be covered include the application of various risk assessment paradigms; the EPA risk assessment guidelines; and the use of risk assessment in environmental/occupational standard setting.

Prerequisites: ENV 400

3 credits

ENV 446: Industrial Hygiene Sampling Techniques

Pre/Corequisite: ENV 440

Develop an understanding of practices and procedures of environmental/occupational sampling and interpretation of collected data. Emphasis is applied to air sampling techniques and methods, and industrial hygiene sampling. Course offered varied semesters.

Prerequisites: Senior standing

2 credits

ENV 447: Epidemiology

This course will review the basic principles related to the design and implementation of epidemiologic studies. The topics to be covered include: application of epidemiologic studies, study designs, statistical issues, exposure and health outcome measurements, measurement error and data interpretation. Examples from and application to occupational and environmental epidemiology will be emphasized, where appropriate. Course offered varied semesters.

Prerequisites: Senior standing

3 credits

ENV 449: Industrial Safety

This course provides students with an introduction to the major facets of effective safety and health management programs and the associated regulatory environments, using both OSHA and ISO (international) guidelines. The course offers practical approaches to managing risk to people and property, with a focus on industrial workplaces. Students will develop technical skills by studying ergonomic, equipment design, machine guarding, chemical safety and fire suppression principles. Students will also be exposed to basic project management principles and will be afforded opportunities to enhance their critical thinking and communication skills via industrial safety case studies and project planning exercises.

Prerequisites: none

3 credits

ENV 451: Water & Wastewater Treatment Design Engineering

The course covers the fundamental processes and operations commonly used at typical drinking water treatment plants and municipal wastewater treatment plants. The student will learn how to specify the sequence of operations and size the important elements in treatment plant operations.

Prerequisites: Senior standing and ENV 403; Corequisite: ENV 453

3 credits, Fall

ENV 453: Water & Wastewater Lab

This laboratory course complements the lecture course GENV 551 Water & Wastewater Treatment Engineering. Laboratory exercises that simulate the processes and operations commonly used at typical drinking water plants and municipal wastewater plants will be explored.

Corequisite: ENV 451

1 credit, Fall

ENV 455: Air Pollution Control Engineering

This course focuses on the technology and methodologies used to reduce concentration levels of pollutants being released to the atmosphere. The statutes, regulations, and permitting protocol will be introduced since they constitute an important requirement for obtaining legal authority to build a facility that will emit pollutants to the atmosphere. Integrated knowledge of fluid mechanics, thermodynamics, chemistry and mathematics will be applied. Topics covered will include nature and dynamic behavior of particulate matters, collection methods and analytical techniques, air pollution control/reduction methods, treatment technologies and air pollution control devices, and control of NO_x, SO_x, and volatile organic compounds (VOCs). Course offered alternative years.

Prerequisites: Senior standing and ENV 403

3 credits

ENV 465: Soil & Groundwater Pollution

Soil serves as a multifunctional and crucial natural system for the reception, storage, and transport of water and pollutants to aquifer media. In this course, fundamental understanding of physics, geology and hydrogeology, and chemistry, along with engineering principles, will be used to understand the dynamic nature of fluid flow and contaminant fate and transport in porous media. Topics covered include the hydrologic cycle, sources and types of contaminants, remediation technologies, and well hydraulics theory and field examples.

Prerequisites: ENV 403.

3 credits

ENV 474: Environmental Microbiology

The course will cover the applied effects of microorganisms on both the environment and human health/activities. The topics to be covered during this course include: biogeochemical cycling; municipal water and wastewater treatment; bioremediation; detection and quantification techniques; and the control of human pathogens.

Prerequisite: BIOL 106 or 331; Corequisite: ENV 478

2 credits, Spring

ENV 477: Solid & Hazardous Waste Management

The objective of this course is to apply multidisciplinary approaches to managing solid and hazardous wastes. Topics include familiarization with sources, classification, storage, transportation, various physicochemical and biological remediation technologies, and pertinent federal and state regulations. Knowledge of physicochemical and/or biological characteristics of a waste will be used to design appropriate disposal options.

Prerequisite: ENV 400

3 credits

ENV 478: Environmental Microbiology Lab

This lab accompanies ENV 474 and includes field and lab work which aid in understanding environmental microbiological principles.

Corequisite: ENV 474

2 credits, Spring

ENV 486: Fluid Mechanics and Water Systems Design

This course begins with a study of the principles of fluid mechanics, including the energy of static and dynamic fluid systems. Those principles are then applied to a study of pumps and the design of water distribution systems and wastewater systems.

Prerequisites: MATH 242, ENV 312, ME 204; Corequisite: ENV 487

3 credits

ENV 487: Fluid Mechanics and Water Systems Design Lab

This lab course complements ENV 486 Fluid Mechanics and Water Systems Design. This course provides laboratory demonstration of basic fluid mechanics, the creation of engineering drawings of hydraulic piping systems, sewage collection systems, and drainage basins using computer-aided design (CAD) software. Other computer software such as EPANET 2.0, Storm Water Management Model (SWMM) 5.0, and Autodesk Civil 3D Hydraflow will be used to simulate and design piping systems.

Corequisite: ENV 486

1 credit

ENV 489: Special Topics in Environmental Science

Topics of special and/or current interest will be covered.

1-4 credits

ENV 494: Senior Design I

Environmental engineering design is the process of devising a system, component, or process to meet desired needs and that include considerations of risk, uncertainty, sustainability, lifecycle principles, and environmental impacts. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs. The student must have the ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet constraints and specifications. Constraints and specifications include societal, economic, environmental, and other factors as appropriate to the design. The student's main work product is the preparation of a professional quality design proposal and a presentation. Students will also begin their preparation for the Fundamentals of Engineering examination, learn about teamwork, and study the engineer's Professional Code of Ethics.

2 credits, Fall

ENV 495: Senior Design II

This course continues the study of the design process in environmental engineering. The design project developed in ENV 494 is implemented. The course's main objective is the conduct of a project which results in an improvement to, or the development of a system for pollution control, pollutant fate and transport modeling, or other related process or operation relevant to environmental engineering. Data generation, presentation, and analysis will be required. The project concludes with the preparation of a professional quality report and presentation.

Prerequisite: ENV 494

3 credits, Spring

ENV 496: Senior Thesis I

This course is the first part of a two-semester senior research project course that provides students with an introduction to the scientific method and the scientific literature. Students will author a research proposal that includes a background literature search, a statement of the research objectives and outline of a research plan. A requirement of the course is a presentation of the proposed work to a professional audience.

2 credit, Fall

ENV 497: Senior Thesis II

This course is the second part of a two-part sequence for all Environmental Science majors. The research proposal, prepared and finalized in the previous semester, is implemented. Based on the project, students will focus on gathering and analyzing data and summarizing the results. The class will meet as a group for presentation of material relating to analysis and presentation of data and results. In addition, each student will meet at least once a week with the Instructor on an individual basis to discuss progress on the project. The major outcome of the course is the Senior Thesis which will be presented to the class and at a professional conference. The Thesis will include a literature review, materials and methods, results and discussion sections.

Prerequisites: ENV 496

3 credits, Spring

ENV 498: Environmental Internship

Students are eligible to receive credits either in the semester in which the internship is completed or the subsequent semester. Credits assigned are based on hours worked and breadth and depth of the student's responsibilities. Completion of a brief summary report and a supervisor's evaluation are required.

0-3 Credits, all semesters

SEECs (101, 102, 201, 202, 301, 302, 401, 402): Professional and Personal Enrichment Seminar

A course description is listed in the Computer & Information Science section of the catalog.

0 credit, Fall and Spring

INDUSTRIAL AND ROBOTICS ENGINEERING (IRE)

IKECHUKWU P. OHU, Ph.D., *Program Director*

FACULTY: Associate Professor: Ikechukwu P. Ohu, Assistant Professor: Ki-Hwan Bae,

Adjunct Faculty: Ryan Bookhamer, Mahsa Shateri. Lab Manager: Kevin Mosgrave.

Lab Engineer: Nick Devine

Overview of the Industrial and Robotics Engineering Program

Industrial and robotics engineers learn to apply human and material resources to efficiently and profitably create products or provide services. Students in Gannon University's industrial and robotics engineering (IRE) program can choose one of the following five concentrations.

- Economics and financial systems
- Healthcare systems
- International industrial engineering
- Robotics and production engineering
- Supply chain and logistics systems
- Ergonomics and human factors

The IRE program allows students to collaborate with other areas on campus, such as mechanical engineering, biomedical engineering, the Dahlkemper School of Business, the Small Business Development Center, and the Erie Technology Incubator. This program will teach students to become leaders as they learn key components of the field, such as designing efficient and safe working environments.

Science, mathematics, business, and engineering methods culminate in industrial and robotics engineering, where students will learn to apply them to complex systems and processes. The IRE curriculum is designed to ensure that students acquire knowledge and skills in a wide variety of engineering and management disciplines as well as robotics. Because IRE is a wide-ranging discipline with numerous career options, students can choose where they want to work, and their skill sets will be directly applicable.

Our industrial and robotics engineering program remain ahead of the curve with participation in the constant evolution of the technology landscape. You will be part of the team contributing meaningfully to defining the future of technology and creating innovative products and process designs.

Industrial and Robotics Engineers (IREs)

- (a) Find ways to design effective work systems and eliminate wastefulness in a broad range of processes;
- (b) Devise efficient ways to improve productivity in systems involving the interplay of workers, machines, materials, information, and energy in the creation of a product or the provision of a service;
- (c) Devise ways to do things better;
- (d) Find ways that are smarter, faster, safer, and easier, so that companies become more efficient, productive, and profitable, and employees have work environments that are safer and more rewarding;
- (e) Automate manufacturing and service processes to increase production and precision, and
- (f) Build, configure and test robots for different applications;
- (g) Studies human-machine/human-robot 'working relationships' in an integrated work environment to determine and implement measures that ensure the comfort of the human while at the same time, improving productivity.

You might think from their name that industrial and robotics engineers just work for manufacturing companies, but they are employed in a wide range of industries, including the service, entertainment, shipping, and healthcare fields. For example, nobody likes to wait in a long line to get on a roller coaster ride, or to get admitted to the hospital. Industrial engineers tell companies how to shorten these processes. They try to make life and products better and do more with fewer resources.

The program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Program Educational Objectives

The Industrial and Robotics Engineering program has a clear overall goal and design consistent with the mission of Gannon University, which are reflected in the program's educational objectives (PEOs).

Graduates from the IRE program at Gannon University are expected to:

- A. Demonstrate leadership abilities through career advancement, as evidenced by promotion and/or acceptance of increasing professional responsibilities.
- B. Demonstrate interest in continuing advanced professional degrees or graduate studies in industrial engineering, professional training or engineering certification.
- C. Demonstrate expertise in solving higher-level problems relevant to their organization, with the main emphasis on safety, quality, productivity, innovation, continuous improvement, and integration into existing or creation of new systems.
- D. Effectively communicate and participate throughout the organization regarding complex problems and solutions, technological advancements, and global innovation to various audiences from all levels of the business.

Industrial and Robotics Engineers are highly sought after due to the profession's multidisciplinary relevance the ability to identify sources of waste relating to time, money, materials, man-hours, machine time, and energy as it applies to complex processes, systems and organizations, and seek to optimize the same. Hence there is a wide variety of educational experiences that our graduates are exposed to, preparing them for diverse post-graduation occupations.

Our students' extensive technical preparation and the design of our curriculum strategically position them for tomorrow's jobs. All of the aforementioned objectives need to be interpreted not as outlooks or attitude but as the active contribution of our students to society.

Student Learning Outcomes

At the end of the period of study at Gannon University, an industrial engineering student will demonstrate:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics;
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors;
3. an ability to communicate effectively with a range of audiences;
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts;
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;

6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions;
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Concentrations within Industrial and Robotics Engineering

Industrial and Robotics Engineering students can select from six areas of focus but is not required.

A. Robotics and Production Engineering

Emphasizes production in industrial or service industries. The student learns methods for developing engineering solutions for a broad range of production and production-related problems. Students select three of the following:

- IE 455 Operations Research II
- IE 440 Lean Systems II
- IE 415 Safety
- IE 465 Healthcare Systems Engineering
- IE 456 Robotics I
- IE 457 Robotics II

Students electing the production engineering concentration will receive the FANUC Robotics certification upon completion of the two courses in robotics.

B. Ergonomics & Human Factors

Focuses students on biological and human systems in the context of Industrial Engineering. This concentration is best suited for students intending to pursue graduate study in Engineering. Note that the student must select Biology over Chemistry in the Freshman year and take MATH 243 as the math/science elective in the Sophomore year in order to avoid extra courses or an additional semester to complete the Bachelor's degree.

- BIOL 104 and BIOL 105 (instead of CHEM 111 and CHEM 112)
- MATH 243 Calculus 4 as a math elective,
- BME 355: Computer Simulation of Human Movement
- BME 356: Motion Capture Lab
- BME 479: Biomed Robotics & Biomimetics

C. Healthcare Systems

Emphasizes the engineering and management of healthcare systems. Students learn to develop engineering and managerial solutions for a broad range of problems in the operation of a health care facility.

- IE 440 Lean Systems II and
- IE 465 Healthcare Systems Engineering, plus one of the following:
- HCMG 305 Introduction to the U.S. Healthcare System (3 credits)
- HCMG 340 Healthcare Economics (3 credits)
- HCMG 410 Healthcare Law, Regulation, and Policy (3 credits)
- HCMG 450 Healthcare Information Systems and Informatics (3 credits)

D. Supply Chain & Logistics Systems

Emphasizes design and management of the supply chain.

- IE 455 Operations Research II, plus two of the following:
- SCMG 310 Global Logistics (3 credits)
- SCMG 340 Sourcing and Supply Chain Management (3 credits)
- SCMG 415 Supply Chain Risk Management (3 credits)
- SCMG 425 Supply Chain Design (3 credits)

E. International Industrial Engineering

Emphasizes the growing importance of international teams to design and develop engineering solutions for production and service businesses

- Approval of all courses by Program Director
- Study Abroad required. Expenses to be paid by the student.
- Approved courses taken abroad as technical electives
- Selection of Liberal Studies courses with an international focus

F. Economics and Financial Systems

Emphasizing prices, lead-time, risk, and analysis to influence demand, coordination, and competition. This track is more qualitative regarding processes but quantitative regarding financial aspects.

- BCOR 111 Principles of Microeconomics or
- BCOR 112 Principles of Macroeconomics as a Social Science, plus three from the following list:
ECON 327 Econometric Methods
FINC 312 Financial Management I
FINC 312 Financial Management II
FINC 411 Advanced Financial Management
FINC 423 Financial Models

Students completing MGMT 330 are eligible to take the exam for Certified Associate Project Manager. All students in their final semester of the IRE program are eligible to take the Fundamentals of Engineering (FE) Exam. The FE exam is the first step toward state licensing as a Professional Engineer (PE).

Industrial Engineering Curriculum (134 credits)

(Numerals in front of courses indicate credits)

Freshman – Fall

| | |
|-----------|-----------------------------------|
| 2 | First Year Seminar/ENG 100 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Lab/ME 206 |
| 2 | Engineering Graphics/ME 207 |
| 3 | Calculus 1/MATH 140 |
| 3 | History of West & World/LHST 111 |
| 3 | College Composition/LENG 111 |
| 1 | Technical Communications/SPCH 110 |
| 1 | Computer Graphics Lab/ME 208 |
| <u>17</u> | |

Freshman – Spring

| | |
|-----------|---|
| 3 | Engineering Projects & Economics/IE 201 |
| 3 | Calculus 2/MATH 141 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Chemistry/CHEM 111 |
| 1 | Chemistry/CHEM 112 |
| 3 | Fund of Physics 1: Mechanics/PHYS 210 |
| <u>16</u> | |

Sophomore – Fall

| | |
|-----------|---|
| 3 | Statics/ME 201 |
| 3 | Calculus 3/MATH 242 |
| 3 | Probability & Statistics/MATH 312 |
| 3 | Fund of Physics 2: Fluids and Thermodynamics/PHYS 212 |
| 3 | Critical Analysis & Composition/LENG 112 |
| 3 | Intro to Operations Research/IE 350 |
| <u>18</u> | |

Sophomore – Spring

| | |
|-----------|-------------------------------------|
| 3 | Work Design/IE 310 |
| 3 | Engineering Statistics/IE 320 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Math or Science Elective |
| <u>18</u> | |

Junior – Fall

- 3 Strength of Materials/ME 214
- 3 Ergonomics/IE 410
- 3 Materials Processing/ME 329
- 3 Statistical Quality Control/IE 322
- 3 Fine Arts/LFIN
- 3 Production Plan & Control/IE 425

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Senior – Fall

- 3 Supply Chain & Logistics Engineering/IE 420
- 3 Simulation/IE 450
- 3 Technical Elective
- 1 Leadership Seminar
- 3 Project Management/MGMT 330
- 3 Product Process Design and Development/IE 435

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Junior – Spring

- 1 Manufacturing Lab/ME 330
- 1 Instruments and Measurement/ME 332
- 1 Physics Lab for Engineers/PHYS 218
- 3 Lean Systems/IE 430
- 3 Design of Experiments/IE 325
- 3 Management Theory & Practice/BCOR 250
- 3 Philosophy II/LPHI
- 1 Strength of Materials I Lab/ME 215

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Senior – Spring

- 3 IE Capstone/IE 495
- 3 Technical Electives or IE 488 Internship
- 3 Math/Science Electives
- 3 Literature Series/LENG
- 3 LPHI 237 or LTHE 300 level course
- 3 Social Science

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For Students Choosing to Study Abroad*(Numerals in front of courses indicate credits)**Junior – Spring – Semester Abroad*

- 3 Country in Context/(Social Science)
- 3 LPHI 237 or LTHE 300 level course (approved equivalent)
- 3 Project Management/(MGMT 330)
- 3 Automation/(Technical Elective)
- 3 Intercultural Management/(accepted as a Technical Elective)

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Senior – Fall

- 1 Manufacturing Laboratory/ME 330
- 3 Supply Chain & Logistics Engineering/IE 420
- 3 Simulation/IE 450
- 3 Technical Elective
- 1 Leadership Seminar
- 3 Project Management/MGMT 330
- 3 Product Process Design and Development/IE 435

 16
Senior – Spring

- 3 IE Capstone/IE 495
- 3 Literature Series/LENG
- 3 Design of Experiments/IE 325
- 3 Lean Systems/IE 430
- 3 Fine Arts/LFIN
- 1 Strength of Materials I Lab/ME 215

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**Accelerated 5-Year Program – B.S. in Industrial Engineering/
M.S. in Mechanical Engineering (170 credits)**

The School of Engineering and Computing offers a special curriculum satisfying the requirements of both the Industrial Engineering Undergraduate Program and Mechanical Engineering Graduate programs. The program may be completed in five years of full-time study.

(Numerals in front of courses indicate credits)

Freshman – Fall

| | |
|-------|-----------------------------------|
| 2 | First Year Seminar/ENG 100 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Lab/ME 206 |
| 2 | Engineering Graphics/ME 207 |
| 3 | Calculus 1/MATH 140 |
| 3 | History of West & World/LHST 111 |
| 3 | College Composition/LENG 111 |
| 1 | Technical Communications/SPCH 110 |
| 1 | Computer Graphics Lab/ME 208 |
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Freshman – Spring

| | |
|-------|---|
| 3 | Engineering Projects & Economics/ IE 201 |
| 3 | Calculus 2/MATH 141 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Chemistry/CHEM 111 |
| 1 | Chemistry/CHEM 112 |
| 3 | Fund of Physics 1: Mechanics/PHYS 210 |
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Sophomore – Fall

| | |
|-------|--|
| 3 | Statics/ME 201 |
| 3 | Calculus 3/MATH 242 |
| 3 | Probability & Statistics/MATH 312 |
| 3 | Fund of Physics 2: Fluids and Thermodynamics/PHYS 212 |
| 3 | Critical Analysis & Composition/ LENG 112 |
| 3 | The Bible: An Intro/LTHE 201 |
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Sophomore – Spring

| | |
|-------|-------------------------------------|
| 3 | Work Design/IE 310 |
| 3 | Engineering Statistics/IE 320 |
| 3 | Intro to Operations Research/IE 350 |
| 3 | Differential Equations/Math 304 |
| 3 | Engineering Thermodynamics/ME 312 |
| 3 | Dynamics/ME 204 |
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| 18 | |

Junior – Fall

| | |
|-------|------------------------------------|
| 3 | Strength of Materials/ME 214 |
| 3 | Ergonomics/IE 410 |
| 3 | Materials Processing/ME 329 |
| 3 | Statistical Quality Control/IE 322 |
| 3 | Fluid Mechanics/ME 336 |
| 3 | Production Plan & Control/IE 425 |
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| 18 | |

Junior – Spring

| | |
|-------|---|
| 1 | Manufacturing Lab/ME 330 |
| 1 | Instruments and Measurement/ME 332 |
| 1 | Physics Lab for Engineers/PHYS 218 |
| 3 | Lean Systems/IE 430 |
| 3 | Design of Experiments/IE 325 |
| 3 | Management Theory & Practice/ BCOR 250 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 1 | Strength of Materials I Lab/ME 215 |
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Summer

| | |
|-------|--------------------------|
| 3 | Fine Arts Series/LFIN |
| 3 | Philosophy 2 Series/LPHI |
| 1 | Leadership Seminar |
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Senior – Fall

| | |
|-------|---|
| 3 | Supply Chain & Logistics Engineering/IE 420 |
| 3 | Simulation/IE 450 |
| 3 | Computer-Assisted Engineering/GME 565 |
| 3 | Theo/Phil III Series/LTHE/LPHI |
| 3 | Project Management/MGMT 330 |
| 3 | Product Process Design and Development/IE 435 |
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| 18 | |

Senior – Spring

| | |
|-------|-----------------------------------|
| 3 | IE Capstone/IE 495 |
| 3 | Heat Transfer/ME 337 |
| 3 | Math/Science Elective |
| 3 | Literature Series/LENG |
| 3 | LPHI 237 or LTHE 300 level course |
| 3 | Social Science |
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Fifth Year – Fall

| | |
|-------|------------------------------|
| 3 | Graduate Technical Elective* |
| 3 | Graduate Technical Elective* |
| 3 | Graduate Technical Elective* |
| 3 | Graduate Technical Elective* |
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Fifth Year – Spring

| | |
|-------|------------------------------|
| 3 | Graduate Technical Elective* |
| 3 | Graduate Technical Elective* |
| 3 | Graduate Technical Elective* |
| 3 | Graduate Technical Elective* |
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NB: There are 134 credits for BSIE and an additional 6 credits of ME courses, which are prerequisites for the graduate-level mechanical engineering courses. At the time of submission of this proposal, these courses are approved for their respective majors. Students should consult the recent graduate and undergraduate catalogs to keep abreast of updates.

Both ME 312: Engineering Thermodynamics (3 credits) and ME 337: Heat Transfer (3 credits) fulfill the technical elective requirements for IRE, for students in this sequence.

* *Graduate Technical Electives*

The Mechanical Engineering Graduate Technical Electives (GME) offered in the spring and fall semesters (these courses currently have no prerequisites listed on the catalog) are shown below. The choice of the semester within which these courses are offered as stipulated in the current graduate catalog, or at the discretion of service departments teaching these courses:

- GME 511: Alternative Energy Systems (3 credits)
- GME 505: Finite Element Method 1 (3 credits)
- GME 527: Internal Combustion Engines (3 credits)
- GME 590-599: Special Topics in Engineering (3 credits)
- GME 525: Advanced Fluid Mechanics (3 credits)
- GME 507: Optimization in Engineering (3 credits)
- GME 510: Thermal Systems Design (3 credits)
- GME 511: Alternative Energy Systems (3 credits)
- GME 524: Turbomachinery Design (3 credits)
- GME 525: Advanced Fluid Mechanics (3 credits)
- GME 526: Advanced Thermodynamics (3 credits)
- GME 530: Advanced Strength of Materials (3 credits)
- GME 555: Computer Aided Manufacturing (3 credits)
- GME 567: Lubrication System Design (3 credits)
- GME 528: Heat Exchanger Design (3 credits)
- GME 561: Vibrations (3 credits)
- GME 563: Machine Dynamics (3 credits)
- GME 564: Thermal Environmental Engineering (3 credits)
- GME 583: Polymer Engineering (3 credits)
- GME 589: Nanotechnology for Engineers (3 credits)
- GME 605: Finite Element Method 2 (3 credits)

-
- GME 612: Distributed Parameter Systems (3 credits)
 - GME 615: Acoustics and Noise Control (3 credits)
 - GME 625: Convection Heat Transfer (3 credits)
 - GME 628: Fundamentals and Applications of Combustion (3 credits)
 - GME 629: Continuum Mechanics (3 credits)
 - GME 630: Computational Fluid Dynamics (3 credits)
 - GME 635: Structural Dynamics (3 credits)
 - GME 641: Elasticity (3 credits)
 - GME 643: Plasticity (3 credits)
 - GME 645: Plates and Shells (3 credits)
 - GME 646: Advanced Machine Design (3 credits)
 - GME 648: Modeling and Simulation of Dynamic Systems (3 credits)
 - GME 650: Robotics (3 credits)
 - GME 655: Advanced Dynamic Systems (3 credits)
 - GME 657: Active Suspension Systems (3 credits)
 - GME 661: Advanced Mechanics of Vibrations (3 credits)
 - GME 670: Mechanics of Composites (3 credits)
 - GME 680: Design of Experiments (3 credits)
 - GME 690-699: Special Topics in Engineering (3 credits)

The General Engineering Graduate Technical Electives (GENG) offered in the spring and fall semesters (these courses currently have no prerequisites listed on the catalog) are shown below. The choice of the semester within which these courses are offered is as stipulated in the current graduate catalog, or at the discretion of service department teaching these courses:

- GENG 592: Special Topics in Engineering (3 credits)
- GENG 797: Thesis (3 – 6 credits)
- GENG 796: Directed Project (3 credits)
- GENG 588: Modern Control Theory (3 credits)
- GENG 589: Digital Control (3 credits)
- GENG 685: Advanced Control Systems (3 credits)
- GENG 689: Stability Analysis of Multidimensional Dynamic Systems (3 credits)
- GENG 700-702: Graduate Professional Experience (1 credit)
- GENG 703: Engineering Analysis 2 (3 credits)

Accelerated 5-Year Program – B.S. in Industrial Engineering/ Master of Business Administration (MBA) (164 credits)

The School of Engineering and Computing offers a special curriculum satisfying the requirements of both the Industrial Engineering Undergraduate Degree Program and Master of Business Administration (On-Ground) Graduate program. The program may be completed in five years of full-time study. The students will complete the required Peregrine foundations in, or prior to their senior year. They will take 3 credits of core classes in the fall and 3 in the spring of their senior year. They will also need to take 6 credits of core classes in the summer following their senior year. The rest of the core classes are taken in the fifth year.

One course, Operations and Supply Chain Analytics/GMBA 665 is found to be comparable to Supply Chain and Logistics Engineering/IE 420. Therefore, that core MBA course is waived for IRE students allowing an additional graduate-level elective course, internship or thesis in its place. The substituted course, internship or thesis must be approved by the MBA Program Director.

(Numerals in front of courses indicate credits)

Freshman – Fall

| | |
|-------|-----------------------------------|
| 2 | First Year Seminar/ENG 100 |
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Usage Lab/ME 206 |
| 2 | Engineering Graphics/ME 207 |
| 1 | Engineering Graphics Lab/ME 208 |
| 1 | Technical Communication/SPCH 110 |
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Sophomore – Fall

| | |
|-------|------------------------------------|
| 3 | Literature Series/LENG |
| 3 | Calculus 3/MATH 242 |
| 3 | Physics 4/PHYS 212 |
| 3 | ME 201 Statics/ME 201 |
| 3 | Probability & Statistics/MATH 312 |
| 3 | Critical Analysis & Comp./LENG 112 |
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| 18 | |

Junior – Fall

| | |
|-------|--|
| 3 | Materials Processing/ME 329 |
| 3 | Strength of Materials/ME 214 |
| 3 | Ergonomics/IE 410 |
| 3 | Production Planning and Control/IE 425 |
| 3 | Statistical Quality Control/IE 322 |
| 3 | Fine Arts Series/LFIN |
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| 18 | |

Junior – Summer

| | |
|-------|--|
| 0 | Peregrine Module: Foundations of Accounting |
| 0 | Peregrine Module: Foundations of Business Integration and Strategic Management |
| 0 | Peregrine Module: Foundations of Microeconomics |
| 3 | LTHE/LPHI Theo/Phil III Series |
| <hr/> | |
| 3 | |

Freshman – Spring

| | |
|-------|---|
| 3 | Engineering Projects & Economics/IE 201 |
| 3 | Calculus 2/MATH 141 |
| 3 | Physics 3/PHYS 111 |
| 3 | Gen Chem. I/CHEM 111 |
| 1 | Gen. Chem. 1 Lab/CHEM 112 |
| 3 | Mgmt. Theory & Practice/BCOR 250 |
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| 16 | |

Sophomore – Spring

| | |
|-------|--------------------------------------|
| 3 | Intro to Operations Research/IE 350 |
| 3 | Work Design/IE 310 |
| 3 | Engineering Statistics/IE 320 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Foundations of Theology and Morality |
| 3 | Math or Science Elective |
| <hr/> | |
| 18 | |

Junior – Spring

| | |
|-------|-------------------------------------|
| 1 | Leadership Seminar |
| 1 | Manufacturing Lab/ME 330 |
| 3 | Lean Systems/IE 430 |
| 3 | Design of Experiments/IE 325 |
| 1 | Strength of Materials 1 Lab/ME 215 |
| 1 | Instruments and Measurements/ME 332 |
| 1 | Physics Lab for Engineers/PHYS 218 |
| 3 | Philosophy 2 Series/LPHI |
| 3 | The Bible – An Intro/LTHE 201 |
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| | |
|-------|---|
| 0 | Peregrine Module: Foundations of Finance |
| 0 | Peregrine Module: Foundations of Marketing |
| <hr/> | |
| 0 | |

Senior – Fall

| | |
|-------|--|
| 3 | Supply Chain & Logistics Engineering/IE 420 |
| 3 | Simulation/IE 450 |
| 3 | Technical Elective |
| 3 | Technological Environment of Business/GMBA 615 |
| 3 | Project Management/MGMT 330 |
| 3 | Product Process Design and Development/IE 435 |
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| 18 | |

Senior – Spring

| | |
|-------|---|
| 3 | Industrial Eng. Capstone/IE 495 |
| 3 | Technical Electives <i>or</i> IE 488 Internship |
| 3 | Data-Driven Strategic Planning and Decision Making/GMBA 625 |
| 3 | Math <i>or</i> Science Elective |
| 3 | Social Science Elective |
| <hr/> | |
| 15 | |

Senior – Summer

| | |
|-------|--|
| 3 | Managing Organizational Behavior and Dynamics/GMBA 675 |
| 3 | Socially Responsible Leadership/GMBA 655 |
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Fifth Year – Fall

| | |
|-------|--|
| 3 | Financial Management and Modeling/GMBA 635 |
| 3 | Organizational Communication and Data Visualization/GMBA 685 |
| 3 | Entrepreneurship in a Technological Environment/GMBA 695 |
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Fifth Year – Spring

| | |
|-------|---|
| 3 | Strategic Global Marketing and Analytics/GMBA 645 |
| 3 | Integrated Business Strategy and Analytics/GMBA 725 |
| 3 | Approved elective, internship <i>or</i> thesis/GMBA XXX |
| <hr/> | |
| 9 | |

* The GMBA technical elective courses are as follows:

| | |
|---|-------------|
| • GMBA 710: Management Information Systems | (3 credits) |
| • GMBA 735: Employee Relations and Employment/Labor Law | (3 credits) |
| • GMBA 736: Human Resource Management | (3 credits) |
| • GMBA 741: Advanced Operations Management | (3 credits) |
| • GMBA 752: Consumer Behavior | (3 credits) |
| • GMBA 753: Marketing Research | (3 credits) |
| • GMBA 754: International Marketing | (3 credits) |
| • GMBA 761: Advanced Financial Management | (3 credits) |
| • GMBA 764: Investments | (3 credits) |
| • GMBA 767: Security Analysis and Portfolio Management | (3 credits) |
| • GMBA 770: Entrepreneurial Management | (3 credits) |
| • GMBA 774: Strategic Management | (3 credits) |
| • GMBA 790: -794: Special Topics Electives | (3 credits) |

**Accelerated 5-Year Program – B.S. in Industrial Engineering/
(Online) Master of Business Administration (MBA) (164 credits)**

The School of Engineering and Computing offers a special curriculum satisfying the requirements of both the Industrial Engineering Undergraduate Degree Program and Master of Business Administration (Online) Graduate program. The program may be completed in five years of full-time study.

The students will complete the required Peregrine Foundation courses in, or prior to their senior year and take 3 credits of a core MBA course in the fall semester of their senior year. They will take another 3 credits of a core MBA course in the spring semester of their senior year and in the summer following their senior year, they will take two MBA technical-elective courses and GMBA 651: Marketing Management. The rest of their core and elective courses will be taken in the fifth year.

(Numerals in front of courses indicate credits)

Freshman – Fall

| | |
|-------|-----------------------------------|
| 2 | First Year Seminar/ENG 100 |
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Usage Lab/ME 206 |
| 2 | Engineering Graphics/ME 207 |
| 1 | Engineering Graphics Lab/ME 208 |
| 1 | Technical Communication/SPCH 110 |
| <hr/> | |
| 17 | |

Freshman – Spring

| | |
|-------|---|
| 3 | Engineering Projects & Economics/IE 201 |
| 3 | Calculus 2/MATH 141 |
| 3 | Physics 3/PHYS 111 |
| 3 | Gen Chem. I/CHEM 111 |
| 1 | Gen. Chem. 1 Lab/CHEM 112 |
| 3 | Mgmt. Theory & Practice/BCOR 250 |
| <hr/> | |
| 16 | |

Sophomore – Fall

| | |
|-------|------------------------------------|
| 3 | Literature Series/LENG |
| 3 | Calculus 3/MATH 242 |
| 3 | Physics 4/PHYS 212 |
| 3 | ME 201 Statics/ME 201 |
| 3 | Probability & Statistics/MATH 312 |
| 3 | Critical Analysis & Comp./LENG 112 |
| <hr/> | |
| 18 | |

Sophomore – Spring

| | |
|-------|--------------------------------------|
| 3 | Intro to Operations Research/IE 350 |
| 3 | Work Design/IE 310 |
| 3 | Engineering Statistics/IE 320 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Foundations of Theology and Morality |
| 3 | Math or Science Elective |
| <hr/> | |
| 18 | |

Junior – Fall

| | |
|-------|--|
| 3 | Materials Processing/ME 329 |
| 3 | Strength of Materials/ME 214 |
| 3 | Ergonomics/IE 410 |
| 3 | Production Planning and Control/IE 425 |
| 3 | Statistical Quality Control/IE 322 |
| 3 | Fine Arts Series/LFIN |
| <hr/> | |
| 18 | |

Junior – Spring

| | |
|-------|-------------------------------------|
| 1 | Leadership Seminar |
| 1 | Manufacturing Lab/ME 330 |
| 3 | Lean Systems/IE 430 |
| 3 | Design of Experiments/IE 325 |
| 1 | Strength of Materials 1 Lab/ME 215 |
| 1 | Instruments and Measurements/ME 332 |
| 1 | Physics Lab for Engineers/PHYS 218 |
| 3 | Philosophy 2 Series/LPHI |
| 3 | The Bible – An Intro/LTHE 201 |
| <hr/> | |
| 17 | |

Junior – Summer

| | |
|-------|--|
| 0 | Peregrine Module: Foundations of Accounting |
| 0 | Peregrine Module: Foundations of Business Integration and Strategic Management |
| 3 | LTHE/LPHI Theo/Phil III Series |
| <hr/> | |
| 3 | |

| | |
|-------|--|
| 0 | Peregrine Module: Foundations of Finance |
| <hr/> | |
| 0 | |

Senior – Fall

| | |
|---|---|
| 3 | Supply Chain & Logistics Engineering/IE 420 |
| 0 | Peregrine Module: Foundations of Marketing |
| 3 | Simulation/IE 450 |
| 3 | Technical Elective |
| 3 | Project Management/MGMT 330 |
| 3 | Product Process Design and Development/IE 435 |
| 0 | Peregrine Module: Foundations of Microeconomics |
| 3 | Managerial Accounting/GMBA 601 (online) |

 18

| | |
|---|--|
| 3 | Elective Course 1/GMBA XXX (Online) |
| 3 | Elective Course 2/GMBA XXX (Online) |
| 3 | Marketing Management/GMBA 651 (Online) |

 9
Fifth Year – Fall

| | |
|---|---|
| 3 | Financial Management and Modeling/GMBA 661 (Online) |
| 3 | Leadership and Business Ethics/GMBA 686 (Online) |
| 3 | Human Resource Management/GMBA 736 (Online) |

 9
Senior – Spring

| | |
|---|---|
| 3 | Industrial Eng. Capstone/IE 495 |
| 3 | Organizational Culture, Creativity and Change/GMBA 631 (online) |
| 3 | Technical Electives <i>or</i> IE 488 Internship |
| 3 | Math <i>or</i> Science Elective |
| 3 | Social Science Elective |

 15
Fifth Year – Spring

| | |
|---|--|
| 3 | Elective Course 3/GMBA XXX (Online) |
| 3 | Business Policy and Strategy/GMBA 799 (Online) |

 6

* The GMBA ONLINE technical elective courses are as follows:

- GMBA 735: Employee Relations and Employment/Labor Law (3 credits)
- GMBA 752: Consumer Behavior (3 credits)
- GMBA 764: Investments (3 credits)
- GMBA 774: Strategic Management (3 credits)

IRE COURSE DESCRIPTIONS

IE 201: Engineering Projects & Economics

Introductory course on the basics of scheduling and tracking project budgets, and economic and financial analysis to assist engineering managers in making fiscally sound decisions.

Topics include Gantt charting, Work Breakdown Structures, Budget Tracking, and financial measures such as Return on Investment, Break-even Analysis, Replacement Analysis, Depreciation and Taxes, and Multiple-criteria Decision Making. *3 credit, Spring*

IE 310: Work Design

The design and implementation of a production system is used to provide a fundamental understanding of work design and performance improvement concepts, tools, and techniques. Topics covered include applied anthropometry, charting techniques, work methods and waste

analysis, performance measurements and learning curves, workplace organization and visual controls, human factors, and physiological stress. The students are also introduced to the engineering design process and working principles of components of robotic systems.

Prerequisite: MATH 312

3 credits, Spring

IE 320: Engineering Statistics

Introduction to Applied Engineering Statistics. Basic concepts in statistics, exploratory data analysis, different sampling methods, descriptive statistics, inferential statistics for one and two population cases, goodness of fit tests, regression analysis and non-parametric statistics. Statistical software is used throughout the course.

Prerequisites: MATH 242

3 credits, Spring

IE 322: Quality Assurance and Control

This course covers the basics of modern methods of quality control and improvement that are used in the manufacturing and service industries. It includes quality philosophy and fundamentals, statistical methods of quality improvement, concept of variation and its reduction, statistical process control, acceptance sampling, designed experiments in quality improvements, and quality in the service sector. Deming's quality concepts are included.

Prerequisite: IE 320

3 credits, Fall

IE 325: Design of Experiments

Advanced topics in Applied Engineering Statistics. Introduction to linear regression analysis, simple linear models, multiple linear models, residual analysis, indicator variables, variable selection process, ANOVA, introduction to DOE, basic designs, factorial designs, blocking, Taguchi designs, and response surface methodology. Extensive use of statistical software throughout the course.

Prerequisite: IE 320

3 credits, Spring

IE 350: Operations Research I

This course is an introduction to the principles and practice of Operations Research, and its role in human decision making. In particular, the course focuses on mathematical programming techniques such as linear programming (duality and sensitivity analysis), network optimization (transportation and assignment problems), and integer programming.

Prerequisite: MATH 141

3 credits, Fall

IE 410: Ergonomics

Fundamentals of work design are built upon to ground the student in human factors and ergonomics of work design. Topics include applied job design, manual material handling, cumulative trauma disorders, hand tool design, design of controls and displays, and ergonomics and human factors of product design.

Prerequisite: IE 310

3 credits, Fall

IE 415: Safety

This course provides the student with a background in safety engineering in industrial and healthcare settings. This includes the design of engineering solutions to problems such as falling, hazardous material exposure, and guarding of machinery.

3 credits

IE 420: Supply Chain & Logistics Engineering

Students gain an understanding of the decision-making tools necessary to design value in the global supply chain from concept to customer. Quantitative methods are employed to aid the decision-making process of demand forecasting and enterprise planning for the purpose of increasing profit and value to stakeholders. Basic concepts in strategy, forecasting, demand planning, inventory control and value stream mapping will be taught and utilized to enable the decision-making process to be based on quantitative metrics.

Prerequisite: IE 350

3 credits, Fall

IE 425: Production Planning and Control

This course equips students with knowledge of fundamental issues in production and inventory planning and control while developing the students' modeling and analytical skills. This course emphasizes the application of industrial engineering theory and practice to the area of operations management and production planning/control. This course will cover analysis and understanding of forecasting, aggregate planning, operations strategy, capacity planning, supply-chain management, just-in-time systems, lean manufacturing, agile manufacturing, materials requirement planning, inventory management, and scheduling and sequencing.

Prerequisites: IE 320 and IE 350

3 credits, Fall

IE 430: Lean Systems

This course is designed to help learn and understand general broad topics involving manufacturing systems with elements of uncertainty. It is focused on methods with regard to making systems lean. Topics include the basic factory dynamics, analysis of push and pull production systems, the influence of variability, shop floor control, and assembly line design.

Prerequisites: IE 410

3 credits, Spring

IE 435: Product/Process Design and Development

This is the first of a 2-course senior capstone design sequence. In this course, students will learn how to efficiently and effectively generate and develop ideas through a process that leads to the creation of new products. From an Industrial Engineering knowledge viewpoint, students will learn about the processes and analysis they will employ – supported by efficient decision-making- during product design and development.

Prerequisites: IE 201

3 credits, Fall

IE 440: Lean Systems II

The purpose of this course is to teach the student the key methods for implementation of Lean and allow the student to practice using the methods. The focus will be on understanding and using these methods as practiced in industry and health care.

3 credits

IE 450: Simulation

In this course, the student will develop an understanding and need for simulation in practice. The course will focus on basic and advanced concepts in simulation including comparing the simulated results with analytical results, and successfully develop simulation models useful in production/manufacturing, supply chains, transportation, and other areas related to Industrial and Manufacturing Engineering. Simulation package such as SIMIO will be integrated and used throughout the course.

Prerequisite: IE 350

3 credits, Fall

IE 455: Operations Research II

Stochastic models in operations research; Review of basic probability, discrete time Markov chains; continuous time Markov chains; discrete and continuous phase type distributions; birth-and-death processes; elementary queuing models involving Poisson arrivals and exponential service times; advance queuing models; basic concepts in simulation and simulation of various processes.

3 credits

IE 465: Healthcare Systems Engineering

This course examines the technical structure of the healthcare delivery system and the role that industrial and systems engineering (ISE) plays in its design and improvement. Included will be how healthcare systems work in hospitals, medical offices, clinics and other healthcare organizations. Traditional ISE methods for improving quality, patient safety, and employee productivity and satisfaction will be presented within a systematic application of value chain engineering designed to produce lean processes.

3 credits

IE 475: Robotics I

This course covers the basic theory and methods of robot operation and programming. The laboratory portion of the course will focus on programming a robot for specific pick and place tasks.

3 credits

IE 476: Robotics II

This course covers advanced robot programming and movement. Advanced programming in the laboratory will include integration of the robot into a work cell. *3 credits*

IE 488: Industrial and Robotics Engineering Internship

The credit-bearing course provides students with practical real-world experience in an engineering, technical, service, industrial, clinical or research setting. During an internship, students apply knowledge and skills learned in the classroom to solving problems in industrial and robotics engineering, or a closely related field. Students must have an internship secured and meet with the internship coordinator for their program prior to registering for this course. A brief summary report and a completed supervisor's evaluation form is required for notation on the transcript. *1 to 6 credits*

IE 491-496: Special Topics in Industrial Engineering*1 to 3 credits***IE 495: Capstone**

This course provides the student with the challenge of integrating and synthesizing general engineering knowledge, particularly in industrial and manufacturing disciplines, into creatively solving real-world, open-ended problems in a team setting. This requires defining a project work plan, developing the problem statement, objectives and evaluation criteria; data collection; selection of appropriate analytical and production techniques; developing and integrating recommendations; justifications of the recommended course of action; and written and oral presentation of results. The project could involve production systems or product design where the planning can extend to product realization.

Prerequisite: IE 201

*3 credits, Spring***IE 499: Independent Study in Industrial Engineering**

Special courses developed based on (a) student(s)'s interest, relating to all areas and core of industrial and robotics engineering. Brief descriptions of the specific content to be covered within the course will be announced while providing the schedule of classes, prior to the semester within which the course will be taught.

Prerequisite: Permission of the Program Director. This may be taken more than once. *3 credits*

INFORMATION SYSTEMS (IS)

The Information Systems (IS) major is designed to prepare the student for careers in the information processing and technology industries. Students develop skills in the design, modeling, and development of computer-based information systems. These include two primary areas of study: computing and business. To support the development of computing skills, the students learn to utilize and to critique technology associated with the systems and apply them to business. To support the development of business skills, a portion of the curriculum emphasizes the role and concepts of the different functional areas of business. In addition, students develop communication and interpersonal skills to interact positively with their organizations. Students incorporate the facets of their professional education with the facets of the social awareness and make ethical – professional and personal – decisions. Ultimately, the students leave with the foundations to define a high quality of life by integrating their professions with lifestyle decisions.

The Information Systems curriculum is delivered in three different ways –

1. IS: four-year degree program, described here.
2. IS-MSCIS: Accelerated 5-year program culminating in a four-year degree followed by one year to complete one of the MS-CIS program options, described here.
3. IS-CoOp: five-year cooperative mode, described in the **CIS Department** section above.

Opportunities:

The field of information systems is one of the fastest-growing employment markets in today's society. Individuals are needed in professional roles including, but not limited to:

- Systems Analysts
- Database Administrator
- Business Analysts
- Data Analyst,
- Business Systems Analyst,
- Information Systems Manager,
- Support analyst,
- IT administrator, and
- Web application developer.

IS majors can address the information processing and technology needs of any business organizations, whether it be service, financial, manufacturing, or virtual.

In order to prepare for these roles, our IS program is structured to equip students with a variety of computing competences in the following areas:

- Programming Languages e.g., SQL, Python, HTML, Java, R, etc.
- Systems Modeling and Design Technologies: UML; Visual Paradigm; CASE tools, etc.
- Big Data and Analytics Platforms: SAS, Tableau, NVivo, JASP, etc.
- Integrated Development Environment: Visual Studio; Eclipse, NetBeans; WAMP/MAMP;
- Mobile Computing Platforms: Android Studio; Swift;
- Industry Required Certifications : SAS, AWS, COMPTIA+, IIBA, Oracle, TOGAF
- Information Systems Research

Aims and Objectives:

The IS major prepares its graduates to achieve significant career and professional accomplishments in four ways: as employable and accountable professionals, competent problem solvers, and selfless contributors.

Employable Professional: Our IS Curriculum aims to develop the various competencies that are required in the job markets. Each IS Course is designed to help students to acquire at least 3 skills required in the job market. This is why top organizations have employed our IS graduate, including Fortune 500 companies like Erie Insurance, Progressive Insurance, and others. IS graduates are well prepared for employment or graduate work in their field, and to continue working in that field or related fields. This includes adaptability to different disciplines, environments, and tasks. They are fully prepared for employment in chosen post-graduate pursuits.

Accountable Professional: IS graduates are accountable for their professional roles, and pursue their profession in an ethical manner. This includes giving and receiving professional critique and review, communication and the responsibility for, and/or leadership in:

- Research/development projects or teams,
- Aspects of major system components, or
- Business development work.

Competent IS Problem Solver: IS graduates solve business problems using data and computing principles. They innovate, explore, analyze, automate and manage information systems, technology projects. This includes data and business process modeling as well as requirements and project management. IS graduates apply current computing knowledge, technology, skills, techniques and methods to:

- Identify, analyze and develop effective solutions for problems,
- Improve product, process and/or organizational elements, and
- Apply creativity in design thinking and innovate where appropriate.

Selfless Contributors: IS graduates value collaborative teamwork and contribute to team accomplishment that goes beyond personal development. They voluntarily give their time, talent, and/or resources to their community, profession, church and/or society.

Program Outcomes:

Gannon's Information Systems degree program is accredited by the Computing Accreditation Commission of ABET, <http://www.abet.org>. Gannon's IS program has enjoyed a long history of successful students who have learned to specify, design, and build information systems.

The program has a strong focus on problem-solving, beginning with the very first course in computing (CIS 180 Problem Solving & Computer Programming) and carried through into the senior design sequence (CIS 457/458 Senior Design). Students learn how to effectively define and represent both problems and the solutions needed to solve those problems throughout the learning process. Throughout the course of study, students learn and practice making ethical decisions.

All students will learn how to utilize information and computer technology while developing and maintaining comprehension of the changing technology used in information systems and their application in business, as well as its global and local impacts. Through this learning process, we expect students to own a desire for continuous improvement and demonstrate effective verbal, written, and listening communication skills.

Specifically, Information Systems students completing our program learn to:

- Apply problem identification & problem-solving strategies to the development of complex information systems.
- Apply tools, technologies and techniques to design, implement and deploy Information Systems to meet enterprise requirements
- Use information systems to support enterprise processes and solutions.
- Evaluate and manage existing and new information systems in an enterprise.

Integration:

One of the hallmarks of Gannon's IS degree is its integration with traditional liberal-studies education. Gannon's IS majors learn computing well and, learn how to synthesize, think critically, and communicate well. In our program, bridging traditional courses like writing, philosophy, theology and ethics begins in the CIS 103 CIS First-Year Seminar, and continues throughout the program, culminating in the CIS 457/458 Senior Design sequence.

The Program:

The IS degree requires 129 credits to graduate. These are divided into two primary sources, a Computer and Information Science (CIS) core and an Information Systems core. These, integrated with the Core of Discovery provide the breadth and depth to the program. The program also provides a one-semester study abroad option.

*All CIS course descriptions are provided in the section **Computer and Information Science***

*All CYSEC course descriptions are provided in the section **Cybersecurity***

CIS Core Coursework

| | | | |
|-------------|---|---------|-------------------------------------|
| CIS 103 | First-Year Seminar | CIS 302 | CIS Professional Seminar |
| CIS 180/181 | Problem Solving & Comp. Progr. and Lab | CIS 303 | CIS Leadership Seminar |
| CIS 182/183 | Object-Oriented Programming and Lab | CIS 355 | Web Programming & Implementation |
| CIS 219 | Linux Programming | CIS 457 | Senior Design I |
| CIS 255 | Database Management & Admin | CIS 458 | Senior Design II Lab |
| CIS 290 | Introduction to Networks | | |

Information Systems Core Coursework

| | | | |
|---------|--|--------|-------------------------------------|
| IS 195 | Principles of Systems | IS 335 | Systems Analysis and Design |
| IS 270 | Information Technology and Operations | IS 336 | Business Analytics |
| CIS 305 | Essentials of UNIX Admin. | IS 337 | Intro to Enterprise Architecture |
| CIS 350 | Requirements & Project Management | IS 340 | Managing IS in the Cloud |
| CIS 375 | Server Management | IS 365 | Advanced Database |
| | | IS 460 | Business Process Mgmt & Modeling |

Business Domain Coursework

Students complete a significant set of business coursework, as part of the Dahlkemper School of Business.

| | | | |
|-------------------|---------------------------------------|----------|-----------------------------------|
| MATH 115 | Calculus for Business | BCOR 220 | Business Statistics (or MATH 213) |
| BCOR 105 | Foundations of Bus. Enterprise | ECON 285 | Project Economics (or BCOR 111) |
| BCOR 214 | Principles of Accounting ¹ | BCOR 240 | Marketing in the Global Env |
| Business elective | | BCOR 250 | Mgmt Theory and Practice |

Business Elective

Students must select a business elective with approval of their academic advisor. The goal of the business elective is to cap their business core and complete a business minor. Students should select from a thematic set of courses to focus their studies on a particular business area related to their interests. Students must declare their minor in Business Administration.

Common Business Elective Themes:

- Accounting ACCT 215
- Entrepreneurship: ENTR 310
- Global Business: IMGT 306
- Risk Management & Insurance: BCOR 303 or RISK 300
- Supply Chain Mgmt: SCMG 310 or SCMG 250
- Marketing: MKTG 400 or MKTG 305 or other marketing course
- Economics: ECON 443 or ECON 431 or BCOR 112 or other economics course

Business electives can be any set of related business courses, e.g, BCOR, ACCT, MGMT, SCMG, ENTR or other related courses that meet the requirements for a business minor. See an advisor for details.

Information Systems Curriculum (129 credits)

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First-Year Seminar/CIS 103
- 2 Prob. Solving and Comp. Prog./CIS 180
- 1 Prob. Solving and
Comp. Prog. Lab/CIS 181
- 3 Calculus for Business/MATH 115
- 3 Intro. Networks/CIS 290
- 3 College Composition/LENG 111
- 3 Foundation of Theology/LTHE 101
- 3
- 17

Spring

- 3 Principles of Systems/CIS 195
- 2 Object-Oriented Programming/CIS 182
- 1 Object-Oriented Programming Lab/
CIS 183
- 3 Critical Analysis & Comp./LENG 112
- 3 Intro to Data Analytics/CIS 210
- 3 IT & Operations/IS 270
- 3 Foun. Business Enterprise/BCOR 105
- 3
- 18

SOPHOMORE

Fall

- 3 Linux Programming/CIS 219
- 3 IS Security Foundations/IS 230
(or CYBER 306)
- 3 Discrete Mathematics 1/MATH 222
- 3 Project Economics/ECON 285
(or BCOR 111)
- 3 The Bible: An Intro/LTHE 201
- 3 Web Management & Design/CIS 240
- 3
- 18

Spring

- 3 Database Management & Admin/
CIS 255
- 3 IT and Operations/IS 270
- 3 Applied Statistics/MATH 213
(or BCOR 220)
- 3 Server Management/CIS 375
- 3 Introduction to Philosophy/LPHI 131
- 1 Technical Communication/SPCH 110¹
- 1
- 16

JUNIOR

Fall

- 3 Systems Analysis & Design/IS 335
- 3 Web Programming & Impl./CIS 355
- 3 Requirements & Project Mgmt/CIS 350
- 3 History Without Borders/LHST 111
- 1 CIS Leadership Seminar/CIS 303
- 3 Managing IS in the Cloud/IS 340
- 16

Spring

- 1 CIS Professional Seminar/CIS 302
- 3 Philosophy II Series/LPHI
- 1 Essentials of UNIX Administration/
CIS 305
- 3 Intro to Enterprise Architecture/IS 337
- 3 Marketing in the Global Env/BCOR 240
- 3 Business Analytics/IS 336
- 14

SENIOR

Fall

- 3 Senior Design I/CIS 457
- 3 LPHI 237 or any LTHE 300 course
- 3 Mgmt Theory and Practice/BCOR 250
- 3 Advanced DBMS/IS 365
- 3 LS Science
- 3
- 15

Spring

- 3 Senior Design II Lab/CIS 458
- 3 Business Process Modeling/IS 460
- 3 Business Elective
- 3 Fine Art Series/LFIN
- 3 Literature Series/LENG
- 3
- 15

¹ May take any LS Approved SPCH course.

Study Abroad

Information systems and information systems program abound throughout the world. Gannon IS Students are encouraged to consider spending a full semester abroad at any of our partner institutions around the world. We have partner institutions who offer IS and Business coursework in English. Please work with your advisor to find the best partner institution and courses. If you are interested in study abroad, it is best to plan this 2-3 semesters in advance.

The CIS department also offers international trip courses, such as CIS353 which meet IS program requirements. These options may be more suitable for students who would like an international learning experience, but are not prepared to spend a full semester abroad.

Information Systems Curriculum Study Abroad Curriculum (129 credits)

(Numerals in front of courses indicate credits)

FRESHMAN

| <i>Fall</i> | <i>Spring</i> |
|---|--|
| 2 First-Year Seminar/CIS 103 | 3 Principles of Systems/CIS 195 |
| 2 Prob. Solving and Comp. Prog./CIS 180 | 2 Object-Oriented Programming/CIS 182 |
| 1 Prob. Solving and Comp. Prog. Lab/ CIS 181 | 1 Object-Oriented Programming Lab/ CIS 183 |
| 3 Calculus for Business/MATH 115 | 3 Critical Analysis & Comp./LENG 112 |
| 3 Intro. Networks/CIS 290 | 3 Intro to Data Analytics/CIS 210 |
| 3 College Composition/LENG 111 | 3 IT and Operations/IS 270 |
| 3 Foundation of Theology/LTHE 101 | 3 Found. Business Enterprise/BCOR 105 ² |
| 17 | 18 |

SOPHOMORE

| <i>Fall</i> | <i>Spring</i> |
|---|--|
| 3 Linux Programming/CIS 219 | 3 Database Management & Admin/CIS 255 |
| 3 IS Security Foundations/CIS 230 (or CYBER 306) | 3 Principles of Accounting 1/BCOR 214 |
| 3 Discrete Mathematics 1/MATH 222 | 3 Applied Statistics/MATH 213 (or BCOR 220) |
| 3 Systems Analysis & Design/IS 335 | 3 Intro to Enterprise Architecture/IS 337 |
| 3 The Bible: An Intro/LTHE 201 | 3 Introduction to Philosophy/LPHI 131 |
| 3 Web Management & Design/CIS 240 | 3 Server Management/CIS 375 |
| 18 | 18 |

JUNIOR

| <i>Fall</i> | <i>Spring (At Partner Institution)</i> |
|---|---|
| 3 Mgmt Theory and Practice/BCOR 250 | 3 Marketing in the Global Env/BCOR 240 |
| 3 Project Economics/ECON 285 | 3 Web Programming & Impl./CIS 355 |
| 3 Requirements & Project Mgmt/CIS 350 | 3 Business Elective |
| 3 Advanced DBMS/IS 365 | 1 CIS Professional Seminar/CIS 302 ² |
| 1 Technical Communication/SPCH 110 ¹ | |
| 1 CIS Leadership Seminar/CIS 303 | |
| 3 Managing IS in the Cloud/IS 340 | |
| 17 | 10 |

SENIOR

Fall

- 3 Senior Design I/CIS 457
- 3 LPHI 237 or any LTHE 300 course
- 3 History Without Borders/LHST 111
- 3 Advanced DBMS/IS 365
- 3 Philosophy II Series/LPHI

15

Spring

- 3 Senior Design II Lab/CIS 458
- 3 Business Analytics/IS 336
- 3 Business Process Modeling/IS 360
- 3 Literature Series/LENG
- 1 Essentials of UNIX Administration/CIS 305
- 3 LS Science

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¹ May take any LS Approved SPCH course

² CIS 302 will be completed online

**BS Information Systems + MS Data Science or Information Technology
Accelerated 5-year program (129 + 24 credits)**

The IS program provides an excellent pathway to the M.S. program in Computer and Information Science. Students apply to the accelerated MS program during sophomore or junior year, prior to registration as a junior or senior for GR courses. The Accelerated Program Application will be approved by the department and the dean and sent to the registrar's office to make a note on the student's profile. In the Senior Year, students apply to the graduate program through Graduate Admissions to officially become a graduate student. Students have to select one of the available MS Program options: Data Science (DS) and Information Technology (IT).

To remain in the accelerated program, students are required to maintain a 3.00 GPA in their undergraduate courses. When accepted, students rearrange their graduation plan to match one of the patterns provided below. Six credits of identified UG work can be counted toward the MS-CIS degree; other MS-Equivalent courses can be counted for placement, but not credit toward MS-CIS degree requirements. The total credit count to complete the BS-IS and the MS-CIS is 129 + 24 = 153 credits.

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First-Year Seminar/CIS 103
- 2 Prob. Solving and Comp. Prog./CIS 180
- 1 Prob. Solving and Comp. Prog. Lab/
CIS 181
- 3 Calculus for Business/MATH 115
- 3 Intro. Networks/CIS 290
- 3 College Composition/LENG 111
- 3 Foundation of Theology/LTHE 101

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Spring

- 3 Principles of Systems/CIS 195
- 2 Object-Oriented Programming/CIS 182
- 1 Object-Oriented Programming Lab/
CIS 183
- 3 Critical Analysis & Comp./LENG 112
- 3 Intro to Data Analytics/CIS 210
- 3 IT & Operations/IS 270
- 3 Found. Business Enterprise/BCOR 105

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SOPHOMORE

Fall

| | |
|-----------|--|
| 3 | Linux Programming/CIS 219 |
| 3 | IS Security Foundations/IS 230 (or CYBER 306) |
| 3 | Discrete Mathematics 1/MATH 222 |
| 3 | Project Economics/ECON 285 (or BCOR 111) |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Web Management & Design/CIS 240 |
| <u>18</u> | |

Spring

| | |
|-----------|--|
| 3 | Database Management & Admin/ CIS 255 |
| 3 | Principles of Accounting 1/BCOR 214 |
| 3 | Applied Statistics/MATH 213 (or BCOR 220) |
| 3 | Server Management/CIS 375 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 1 | Technical Communication/SPCH 110 |
| <u>16</u> | |

JUNIOR

Fall

| | |
|-----------|---|
| 3 | Systems Analysis & Design/IS 335 |
| 3 | Web Programming & Impl./CIS 355 |
| 3 | Mgmt Theory and Practice/BCOR 250 |
| 3 | History Without Borders/LHST 111 |
| 1 | CIS Leadership Seminar/CIS 303 |
| 3 | Managing IS in the Cloud/IS 340 ⁵ or GCIS 583 |
| <u>16</u> | |

Spring⁴

| | |
|-----------|---|
| 1 | CIS Professional Seminar/CIS 302 |
| 3 | Philosophy II Series/LPHI |
| 1 | Essentials of UNIX Administration/ CIS 305 |
| 3 | Intro to Enterprise Architecture/IS 337 |
| 3 | Marketing in the Global Env/BCOR 240 |
| 3 | Business Analytics/IS 336 |
| 3 | Business Elective |
| <u>17</u> | |

SENIOR

Fall

| | |
|-----------|--|
| 3 | Senior Design I/CIS 457 |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Requirements & Project Management/ CIS 350 ⁶ |
| 3 | Advanced DBMS/IS 365 ⁷ |
| 3 | LS Science |
| 3 | Statistical Computing/GCIS 523 |
| <u>18</u> | |

Spring

| | |
|-----------|----------------------------------|
| 3 | Senior Design II Lab/CIS 458 |
| 3 | Business Process Modeling/IS 460 |
| 3 | Fine Art Series/LFIN |
| 3 | Literature Series/LENG |
| 3 | GCIS Elective or GCIS 66x/65x |
| <u>15</u> | |

MS YEAR

Fall⁸

| | |
|----------|---------------------------------------|
| 3 | GCIS 66x or GCIS65x (track dependent) |
| 3 | GCIS 66x or GCIS65x (track dependent) |
| 3 | GCIS 605 Scholarship Seminar |
| <u>9</u> | |

Spring

| | |
|----------|--|
| 3 | GCIS 66x or GCIS65x (track dependent) or elective |
| 3 | GCIS 698/799 Directed Project |
| 3 | GCIS Elective |
| <u>9</u> | |

³ May take any LS Approved SPCH course⁴ Students should apply to and be accepted to the MS-CIS program before registration⁵ Accepted for placement (not credit) as GCIS 583 Intro Cloud Architecture⁶ Substitutes for CIS 350 Requirements and Project Management⁷ Substitutes for IS 365 Data Centric Concepts & Methods⁸ Students propose their GCIS Project or Thesis

DATA ANALYTICS MINOR REQUIREMENTS (18 credits)

- 3 Database Management & Admin/CIS 255
 - 3 Intro to Data Analytics/CIS 210
 - 3 Applied Statistics/MATH 213 *or* BCOR 220
 - 3 Business Analytics/IS 336
 - 3 Discrete Mathematics 1/MATH 222
 - 3 Data Driven Decision Making/IS 425
-
- 18

INFORMATION SYSTEMS MINOR REQUIREMENTS (18 credits)

- 3 Problem Solving and Computer Programming & Lab/CIS 180 & CIS 181
 - 3 Object-Oriented Programming & Lab/CIS 182 & CIS 183
 - 3 Principles of Systems/CIS 195
 - 3 Information Technology and Operations/CIS 270
or Database Management Systems/CIS 255
or Introduction to Networks/CIS 290
 - 3 Systems Analysis and Design/CIS 335
 - 3 IS Technical Elective (IS 3xx *or* IS 4xx)
-
- 18

Note: IS Majors may not declare an IS Minor.

IS COURSE DESCRIPTIONS

IS 230: Information Systems Security Foundations

In this course, students will acquire skills and knowledge of the techniques, practices and principles of information systems security supporting the principles of confidentiality, integrity, and availability. Core topics includes ethics, privacy and legal issues; threats, attacks and vulnerabilities; identity and access management (IAM); risk management; and an introduction to IS security implementation. It is expected that after completing this course, students should be able to prepare and take entry level information security certifications such CompTIA Security+.

Prerequisites: THEO 101 AND LENG 112 or Permission of the Instructor *3 credits, Spring*

IS 270: Information Technology and Operations

An in-depth, experiential course focusing on hardware and systems maintenance procedures. Topics include troubleshooting options, system configuration, system recovery, data and network maintenance, and general management capabilities to enable system operations.

Prerequisite: None *3 credits, Spring Even Years*

IS 335: Systems Analysis and Design

An introduction to the role and responsibilities of a systems analyst. Students examine systems by analysis, modeling, and design at the enterprise, process, logical, data, and technology levels. Optionally included topics are feasibility analysis, technology evaluation, project management, object-oriented analysis.

Prerequisite: CIS 180, CIS 181, and CIS 195 or CIS 287 *3 credits, Fall*

IS 336: Business Analytics

Business Analytics is a highly sought-after skill by 21st century employers. The aim of this course is to help students acquire knowledge and skills to collect and perform descriptive, prescriptive and predictive analytics on data. Topics include data sourcing & collection principles, visualization techniques, cluster analysis, association rules and text mining. This course extends probability distributions and statistical inference. Students develop foundational skills in SAS or other modern analytics platform used in business enterprises.

Prerequisites: CIS 210 & [BCOR 220 or MATH 213] & MATH 222
or Permission of the Instructor

3 credits, Spring Odd Years

IS 337: Intro to Enterprise Architecture

A project and team-based course emphasizing the practical issues in the design and implementation of enterprise architectures (EA). This course helps students to understand the contributions of various enterprise architecture frameworks such as TOGAF, EA3 Cube and Zachman Framework. Students apply enterprise modeling tools such as visual paradigm to develop architecture components and artifacts at various EA domains (view points) of an enterprise. Key topics include business values, benefits and risks of EA, EA repositories, EA Stakeholder Management, EA feasibility analysis and development issues; creating AS-IS and TO-BE models of enterprise components.

Prerequisites: [CIS 195 and CIS 335] or CIS 287

3 credits, Spring Even Years

IS 340: Managing IS in the Cloud

This introductory cloud computing course equips students with the basic skills and knowledge required to manage IS/IT infrastructure and resources in the cloud. Leveraging cloud computing principles and technologies (e.g., data center and virtualization), this project and team-based course emphasizes the practical issues in designing and implementing IT infrastructure in the cloud. Coverage areas include business drivers that motivate the cloud computing model, challenges and risks of deploying IT/IS resources to a cloud environment, and an introduction to cloud security mechanisms. A key aspect of the course includes students developing competency in matching of cloud architectures best suited to address particular business problems. The course supports student preparation to pursue the introductory level of cloud industry certification e.g., AWS Cloud Practitioner Certification.

Prerequisites: CIS 290 & CIS 219 or Permission of the Instructor

3 credits, Fall, Even Years

IS 365: Advanced Database Systems:

This course builds on introductory database management and administration skills. Students acquire advanced knowledge and skills in database management. Students learn how to manage storage, process and optimize queries, index and hash data, perform concurrency control, design data warehouse schemas and database architectures.

Prerequisites: CIS 255 or Permission of the Instructor

3 credits, Fall Odd Years

IS 425: Data-Driven Decision Making:

Businesses face shifts in regulation, customer expectations and technology, requiring professionals to adapt quickly and effectively to remain competitive. This course examines the technologies, information, and analytics that are important for effective management and control of modern firms. With a focus on dynamic decision making and optimization approaches for complex decisions as well as strategies for data driven decision making, you'll learn to look at company data from a deeper perspective and use the data to make decisions that will strengthen your competitive position in the marketplace.

Prerequisites: IS 336 or Permission of the Instructor

3 credits, Spring Odd Years

IS 460: Business Process Management and Modeling:

Students develop skills and knowledge to design, model and analyze organizations' business process, as well as identify improvements opportunities. Business process is the sequence of logically organized activities performed to deliver a product or service. This course delivers content covering the key phases of business process management lifecycle including process identification, discovery, analysis, redesign, implementation and monitoring/control.

Prerequisites: [IS 335 or SE210] or OR CIS 350 or permission of the instructor

3 credits, Spring

MECHANICAL ENGINEERING (ME)

DAVID J. GEE, Ph.D., *Chair*

FACULTY: Professors: Mahesh C. Aggarwal, Michael J. Panza, Hamid Torab, Karinna M. Vernaza. Associate Professors: David J. Gee, Robert J. Michael, Scott E. Steinbrink. Assistant Professors: Pezhman Hassanpour, Mahboobe Mahdavi. Lecturer: Michael Sirak.

Overview and Objectives

The overall goal of the Mechanical Engineering Program is to provide the student with a fundamental and application-based education. This program is designed to prepare the student for employment in research, development, design and production in industry or government as well as to assure a high level of preparation for those students who continue to advanced studies. A part of this preparation is to recognize and respond to ethical and public issues, including safety, social and environmental concerns.

To facilitate and support student development, the department has up-to-date laboratories for education and research, including strength of materials lab, fluid mechanics lab, manufacturing lab, heat transfer lab, automatic control lab, computer graphics and CAD lab. Two technicians and a machine shop support these labs.

The ME Program maintains an up-to-date curriculum, has modern laboratories, well-qualified faculty and a strong academic and career advising system. Students have access to the University Career Exploration and Development Office and to the Faculty.

Program Educational Objectives

- (A) Demonstrate technical ability through application of analytical, experimental, and computer knowledge to physical systems, while engaging in careers in industry or government.
- (B) Demonstrate professional leadership gained from completing a rigorous engineering program and having the opportunity for campus involvement, as evidenced by promotion and/or acceptance of increasing professional responsibilities.
- (C) Demonstrate commitment to the ideals of a values-centered education as global citizens through workplace conduct, and professional and community activities undertaken for the benefit of the human condition.
- (D) Demonstrate recognition of the value of lifelong learning through the pursuit of continuing education while obtaining experience in their field of endeavor, workplace educational opportunities, or graduate studies related to engineering and management.

Student Learning Outcomes

Student learning outcomes for the Gannon Mechanical Engineering department are:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

The Program

Mechanical Engineers are required to take 32 credits of basic science and math, 36 credits of Liberal Studies Core composed of humanities and social science, and 67 credits of engineering, science, and design. This program leads to a Bachelor of Science degree in Mechanical Engineering.

The program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

A five-year cooperative professional practice program is also available. The student must meet the same course requirements as the four-year students. Additionally, a total of four work sessions in the industry are included. Students must maintain a minimum 2.75 GPA to participate in this option.

Mechanical Engineering Curriculum (135 credits)

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

- 3 History Without Borders/LHST 111
- 3 College Composition/LENG 111
- 3 Calculus 1/MATH 140
- 1 Digital Computer Usage/ME 205
- 1 Digital Computer Lab/ME 206
- 2 First-Year Seminar/ENG 100
- 3 Foundations of Theology/LTHE 101
- 1 Technical Communication/SPCH 110

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Second Semester

- 3 Critical Analysis & Comp/LENG 112
- 3 Calculus 2/MATH 141
- 3 Fund Physics 1: Mechanics/PHYS 210
- 3 Chemistry/CHEM 111
- 1 Chemistry Lab/CHEM 112
- 2 Engineering Graphics/ME 207
- 1 Engineering Comp Graphics Lab/ME 208

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SOPHOMORE

First Semester

- 3 Calculus 3/MATH 242
- 3 Fund Physics 2: Fluids and Thermodynamics/PHYS 212
- 3 Statics/ME 201
- 3 Materials Science/ME 315
- 3 The Bible: An Intro/LTHE 201
- 1 Instrumentation and Measurements Lab/ME 332
- 1 Lab for Engineers/PHYS 218

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Second Semester

- 3 Dynamics/ME 204
- 3 Differential Equations/MATH 304
- 3 Engineering Thermodynamics/ME 312
- 3 Calculus 4/MATH 243
- 3 Fund Physics 3: Electricity and Magnetism/PHYS 214
- 3 Strength of Materials/ME 214

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JUNIOR

First Semester

| | |
|-----------|--|
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Materials Processing/ME 329 |
| 3 | Fluid Mechanics/ME 336 |
| 3 | Advanced Thermodynamics/ME 440 |
| 3 | Intro Electrical Engineering/ECE 231 |
| 1 | Intro Electrical Engineering Lab/ ECE 232 |
| 1 | Strength of Materials Lab/ME 215 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------|
| 1 | Manufacturing Lab/ME 330 |
| 3 | Heat Transfer/ME 337 |
| 1 | Fluid Mechanics Lab/ME 338 |
| 3 | Machine Design/ME 360 |
| 3 | Engineering Analysis/ME 403 |
| 3 | Vibrations/ME 461 |
| 3 | Philosophy II Series/LPHI |
| <u>17</u> | |

SENIOR

First Semester

| | |
|-----------|----------------------------------|
| 3 | System Dynamics & Control/ME 326 |
| 1 | Heat Transfer Lab/ME 339 |
| 3 | Engineering Design/ME 350 |
| 3 | Project Economics/ECON 285 |
| 3 | Technical Elective* |
| 3 | LPHI 237 or any LTHE 300 course |
| 1 | Leadership Seminar |
| <u>17</u> | |

Second Semester

| | |
|-----------|--------------------------------|
| 1 | Automatic Control Lab/ME 327 |
| 3 | Senior Design Lab in ME/ME 354 |
| 3 | Technical Elective* |
| 3 | Technical Elective* |
| 3 | Literature Series/LENG |
| 3 | Fine Arts Series/LFIN |
| <u>16</u> | |

Total 135 credits

* *Advisor approval is required. Students, in consultation with their academic advisor, plan an individual course of study consistent with their career objectives. Students must follow one of the two options listed below (Note, additional technical elective courses for the major options are available):*

THERMAL SCIENCE

| | |
|---|---|
| 3 | Thermal Systems Design |
| 3 | Computer Assisted Engineering |
| 3 | Engineering Optimization |
| 3 | Finite Element Method |
| 3 | Energy Systems Design |
| 3 | Thermal Environmental Engineering Design |
| 3 | Heat Exchanger Design |
| 3 | Turbomachinery Design |

MACHINE DESIGN

| | |
|---|------------------------------------|
| 3 | Advanced Strength of Materials |
| 3 | Computer Assisted Engineering |
| 3 | Engineering Optimization |
| 3 | Finite Element Method |
| 3 | Dynamic Problems in Machine Design |
| 3 | Lubrication System Design |

Mechanical Engineering Co-Op Professional Practice Option (135 credits)

Plan A

| | | | |
|--------|------------|------------|-----------------|
| Year 1 | Fall 1 | Spring 1 | Summer Vacation |
| Year 2 | Fall 2 | Spring 2 | 4 month WP* |
| Year 3 | Fall 3 | 4 month WP | Summer** |
| Year 4 | 4 month WP | Spring 3 | 4 month WP |
| Year 5 | Fall 4 | Spring 4 | |

Plan B

| | | | |
|--------|------------|------------|-----------------|
| Year 1 | Fall 1 | Spring 1 | Summer Vacation |
| Year 2 | Fall 2 | 4 month WP | Summer** |
| Year 3 | 4 month WP | Spring 2 | 4 month WP |
| Year 4 | Fall 3 | Spring 3 | 4 month WP |
| Year 5 | Fall 4 | Spring 4 | |

Plan C

| | | | |
|--------|------------|------------|-----------------|
| Year 1 | Fall 1 | Spring 1 | Summer Vacation |
| Year 2 | Fall 2 | Spring 2 | 4 month WP |
| Year 3 | Fall 3 | Spring 3 | 4 month WP |
| Year 4 | Fall 4 | 4 month WP | Summer** |
| Year 5 | 4 month WP | Spring 4 | |

* *Work Period*** *Liberal Studies Core Courses*

NOTES:

- (1) Fall and Spring follow the regular engineering schedule.
- (2) For maximum financial aid, 12 credits of The Liberal Studies Core Courses should be taken during the 4 month summer session listed.
- (3) Students should register for zero credit Co-Op Placement (ENG 399) for each work period.

**Accelerated 5-Year Program – B.S. in Mechanical Engineering and
Masters of Business Administration in Business Analytics (GROUND) (165 credits)**

The School of Engineering and Computing in cooperation with the Dahlkemper School of Business offers a special program for qualified undergraduates leading to a Bachelor of Science in Mechanical Engineering Degree and a Master of Business Administration Degree. The program may be completed in five years of full time study (includes two summers).

5-Year Mechanical Engineering/MBA Curriculum
(Numerals in front of courses indicate credits)
FRESHMAN*First Semester*

| | |
|---|----------------------------------|
| 3 | History Without Borders/LHST 111 |
| 3 | College Composition/LENG 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Lab/ME 206 |
| 2 | First-Year Seminar/ENG 100 |
| 3 | Foundations of Theology/LTHE 101 |
| 1 | Technical Communication/SPCH 110 |

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Second Semester

| | |
|---|------------------------------------|
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Calculus 2/MATH 141 |
| 3 | Fund Physics 1: Mechanics/PHYS 210 |
| 3 | Chemistry/CHEM 111 |
| 1 | Chemistry Lab/CHEM 112 |
| 2 | Engr Graphics/ME 207 |
| 1 | Engr Computer Graphics Lab/ME 208 |

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SOPHOMORE

First Semester

| | |
|-----------|--|
| 3 | Calculus 3/MATH 242 |
| 3 | Fund Physics 2: Fluids and Thermodynamics/PHYS 212 |
| 3 | Statics/ME 201 |
| 3 | Materials Science/ME 315 |
| 3 | The Bible: An Intro/LTHE 201 |
| 1 | Physics Lab/PHYS 218 |
| 1 | Instrument and Measure Lab/ME 332 |
| <u>17</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Dynamics/ME 204 |
| 3 | Differential Equations/MATH 304 |
| 3 | Engr. Thermodynamics/ME 312 |
| 3 | Calculus 4/MATH 243 |
| 3 | Fund Physics 3: Electricity and Magnetism/PHYS 214 |
| 3 | Strength of Materials/ME 214 |
| <u>18</u> | |

JUNIOR

First Semester

| | |
|-----------|--|
| 1 | Strength of Materials Lab/ME 215 |
| 3 | Materials Processing/ME 329 |
| 3 | Fluid Mechanics/ME 336 |
| 3 | Advanced Thermodynamics/ME 440 |
| 3 | Intro Electrical Engineering/ECE 231 |
| 1 | Intro Electrical Engineering Lab/ECE 232 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------|
| 1 | Manufacturing Lab/ME 330 |
| 3 | Heat Transfer/ME 337 |
| 1 | Fluid Mechanics Lab/ME 338 |
| 3 | Machine Design/ME 360 |
| 3 | Engineering Analysis/ME 403 |
| 3 | Vibrations/ME 461 |
| 3 | Philosophy II Series/LPHI |
| <u>17</u> | |

Third Semester (Summer)

- LPHI 237 or any LTHE 300 level course
- One of LENG (Literature Series) or LFIN (Fine Arts Series)
- Peregrine Modules: Foundations of Accounting, Foundations of Finance, Foundations of Microeconomics, Foundations of Business Integration and Strategic Management, Foundations of Marketing. These modules must be completed prior to taking GMBA courses.

SENIOR

First Semester

| | |
|-----------|--|
| 3 | System Dynamics & Control/ME 326 |
| 1 | Heat Transfer Lab/ME 339 |
| 3 | Engineering Design/ME 350 |
| 3 | Project Economics/ECON 285 |
| 3 | Technical Elective* |
| 3 | Technological Environment of Business/GMBA 615 |
| 1 | Leadership Seminar |
| <u>17</u> | |

Second Semester

| | |
|-----------|---|
| 1 | Automatic Control Lab/ME 327 |
| 3 | Senior Design Lab in ME/ME 354 |
| 3 | Technical Elective* |
| 3 | Technical Elective* |
| 3 | Fine Arts Series/LFIN or Literature Series/LENG |
| 3 | Data Driven Strategic Planning & Decision Making/GMBA 625 |
| <u>16</u> | |

Third Semester (Summer I, II)

- Managing Organizational Behavior & Dynamics/GMBA 675
- Socially Responsible Leadership/GMBA 655

FIFTH YEAR

First Semester

| | |
|----------|---|
| 3 | Financial Management & Modeling/ GMBA 635 |
| 3 | Org. Communication & Data Visualization/GMBA 685 |
| 3 | Entrepreneurship in a Technological Environment/GMBA 695 |
| <u>9</u> | |

Second Semester

| | |
|----------|--|
| 3 | Strategic Global Marketing & Analytics/ GMBA 645 |
| 3 | Operations & Supply Chain Analytics/ GMBA 665 |
| 3 | Integrated Business Strategy & Analytics/GMBA 725 |
| <u>9</u> | |

* *Advisor approval is required. Students, in consultation with their academic advisor, plan an individual course of study consistent with their career objectives. Students must follow one of the two options listed below (Note, additional technical elective courses for the major options are available):*

THERMAL SCIENCE

| | |
|---|---|
| 3 | Thermal Systems Design |
| 3 | Computer Assisted Engineering |
| 3 | Engineering Optimization |
| 3 | Finite Element Method |
| 3 | Energy Systems Design |
| 3 | Thermal Environmental Engineering Design |
| 3 | Heat Exchanger Design |
| 3 | Turbomachinery Design |

MACHINE DESIGN

| | |
|---|------------------------------------|
| 3 | Computer Assisted Engineering |
| 3 | Engineering Optimization |
| 3 | Finite Element Method |
| 3 | Advanced Strength of Materials |
| 3 | Dynamic Problems in Machine Design |
| 3 | Lubrication System Design |

Accelerated 5-Year Program – B.S. in Mechanical Engineering and M.S. in Mechanical Engineering (minimum 159 credits)

The School of Engineering and Computing offers a special program for qualified undergraduates leading to a Bachelor of Science in Mechanical Engineering Degree (135 credits) and a Master of Science in Mechanical Engineering Degree (30 credits). The program may be completed in five years of full time study (includes one summer).

Accelerated 5-yr BSME/MSME Program Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|----------|----------------------------------|
| 3 | History Without Borders/LHST 111 |
| 3 | College Composition/LENG 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Lab/ME 206 |
| 2 | First-Year Seminar/ENG 100 |
| 3 | Foundations of Theology/LTHE 101 |
| <u>1</u> | Technical Communication/SPCH 110 |
| 17 | |

Second Semester

| | |
|-----------|--|
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Calculus 2/MATH 141 |
| 3 | Fund Physics 1: Mechanics/PHYS 210 |
| 3 | General Chemistry/CHEM 111 |
| 1 | General Chemistry Lab/CHEM 112 |
| 2 | Engr Graphics/ME 207 |
| 1 | Engr. Computer Graphics Lab/ ME 208 |
| <u>16</u> | |

SOPHOMORE

First Semester

| | |
|-------|--|
| 3 | Calculus 3/MATH 242 |
| 3 | Fund Physics 2: Fluids and Thermodynamics/PHYS 212 |
| 3 | Statics/ME 201 |
| 3 | Materials Science/ME 315 |
| 3 | The Bible: An Intro/LTHE 201 |
| 1 | Physics Lab/PHYS 218 |
| 1 | Instrument and Measure Lab/ME 332 |
| <hr/> | |
| 17 | |

Second Semester

| | |
|-------|--|
| 3 | Dynamics/ME 204 |
| 3 | Differential Equations/MATH 304 |
| 3 | Engr. Thermodynamics/ME 312 |
| 3 | Calculus 4/MATH 243 |
| 3 | Fund Physics 3: Electricity and Magnetism/PHYS 214 |
| 3 | Strength of Materials/ME 214 |
| <hr/> | |
| 18 | |

JUNIOR

First Semester

| | |
|-------|--|
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Materials Processing/ME 329 |
| 3 | Fluid Mechanics/ME 336 |
| 3 | Advanced Thermodynamics/ME 440 |
| 3 | Intro Electrical Engineering/ECE 231 |
| 1 | Intro Electrical Engineering Lab/ECE 232 |
| 1 | Strength of Materials Lab/ME 215 |
| <hr/> | |
| 17 | |

Second Semester

| | |
|-------|-----------------------------|
| 1 | Manufacturing Lab/ME 330 |
| 3 | Heat Transfer/ME 337 |
| 1 | Fluid Mechanics Lab/ME 338 |
| 3 | Machine Design/ME 360 |
| 3 | Engineering Analysis/ME 403 |
| 3 | Vibrations/ME 461 |
| 3 | Philosophy II Series/LPHI |
| <hr/> | |
| 17 | |

SUMMER

| | |
|---|---------------------------------------|
| 3 | Literature Series/LENG |
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |

SENIOR

First Semester

| | |
|-------|--|
| 3 | System Dynamics & Control/ME 326 |
| 1 | Heat Transfer Lab/ME 339 |
| 3 | Engineering Design/ME 350 |
| 3 | Project Economics/ECON 285 |
| 3 | Technical Elective |
| 3 | Computer Assisted Engineering/GME 565 ¹ |
| <hr/> | |
| 16 | |

Second Semester

| | |
|-------|--|
| 1 | Automatic Control Lab/ME 327 |
| 3 | Senior Design Lab in ME/ME 354 |
| 3 | Technical Elective |
| 3 | Technical Elective |
| 3 | Engineering Analysis 1/GENG 603 ¹ |
| 3 | Fine Arts Series/LFIN |
| <hr/> | |
| 16 | |

FIFTH YEAR

| | |
|--------|---|
| Fall | 12 credits of Graduate Technical Electives* |
| Spring | 12 credits of Graduate Technical Electives* |

* From GENG, GME courses listed in Graduate Mechanical Engineering Section of Catalog. Refer to Graduate Mechanical Engineering Section of Catalog for MSME program requirements.

¹ This course is required for MSME program. A total of 30 credits (may include 6 credits of five hundred level courses taken at undergraduate level). GENG 603 and GME 565 must be taken within the first 9 graduate credits.

Accelerated 5-Year Program – B.S. in Mechanical Engineering and M.S. in Engineering Management (minimum 159 credits)

The School of Engineering and Computing offers a special program for qualified undergraduates leading to a Bachelor of Science in Mechanical Engineering Degree (135 credits) and a Master of Science in Engineering Management Degree (30 credits). The program may be completed in five years of full time study (includes one summer). “

Accelerated 5-yr BSME/MSEM Program Curriculum

The School of Engineering and Computer Science offers a special program for qualified undergraduates leading to a Bachelor of Science in Mechanical Engineering Degree (135 credits) and a Master of Science in Engineering Management Degree (30 credits). The program may be completed in five years of full time study (includes one summer).

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|----------------------------------|
| 3 | History Without Borders/LHST 111 |
| 3 | College Composition/LENG 111 |
| 3 | Calculus 1/MATH 140 |
| 1 | Digital Computer Usage/ME 205 |
| 1 | Digital Computer Lab/ME 206 |
| 2 | First-Year Seminar/ENG 100 |
| 3 | Foundations of Theology/LTHE 101 |
| 1 | Technical Communication/SPCH 110 |
| <u>17</u> | |

Second Semester

| | |
|-----------|------------------------------------|
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Calculus 2/MATH 141 |
| 3 | Fund Physics 1: Mechanics/PHYS 210 |
| 3 | General Chemistry/CHEM 111 |
| 1 | General Chemistry Lab/CHEM 112 |
| 1 | Engr. Computer Graphics Lab/ME 208 |
| 2 | Engr Graphics/ME 207 |
| <u>16</u> | |

SOPHOMORE

First Semester

| | |
|-----------|--|
| 3 | Calculus 3/MATH 242 |
| 3 | Fund Physics 2: Fluids and Thermodynamics/PHYS 212 |
| 3 | Statics/ME 201 |
| 3 | Materials Science/ME 315 |
| 3 | The Bible: An Intro/LTHE 201 |
| 1 | Instrument and Measure Lab/ME 332 |
| 1 | Physics Lab/PHYS 218 |
| <u>17</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Dynamics/ME 204 |
| 3 | Differential Equations/MATH 304 |
| 3 | Engr. Thermodynamics/ME 312 |
| 3 | Calculus 4/MATH 243 |
| 3 | Fund Physics 3: Electricity and Magnetism/PHYS 214 |
| 3 | Strength of Materials/ME 214 |
| <u>18</u> | |

JUNIOR

First Semester

| | |
|-----------|--|
| 1 | Strength of Materials Lab/ME 215 |
| 3 | Materials Processing/ME 329 |
| 3 | Fluid Mechanics/ME 336 |
| 3 | Advanced Thermodynamics/ME 440 |
| 3 | Intro Electrical Engineering/ECE 231 |
| 1 | Intro Electrical Engineering Lab/ECE 232 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------|
| 1 | Manufacturing Lab/ME 330 |
| 3 | Heat Transfer/ME 337 |
| 1 | Fluid Mechanics Lab/ME 338 |
| 3 | Machine Design/ME 360 |
| 3 | Engineering Analysis/ME 403 |
| 3 | Vibrations/ME 461 |
| 3 | Philosophy II Series/LPHI |
| <u>17</u> | |

SUMMER

- 3 Fine Art Series/LFIN
- 3 Literature Series/LENG

SENIOR

First Semester

| | |
|---|---|
| 3 | System Dynamics & Control/ME 326 |
| 1 | Heat Transfer Lab/ME 339 |
| 3 | Engineering Design/ME 350 |
| 3 | Project Economics/ECON 285 |
| 3 | Technical Elective |
| 3 | Graduate Engr Management Core/Elective* |

16*Second Semester*

| | |
|---|---|
| 1 | Automatic Control Lab/ME 327 |
| 3 | Senior Design Lab in ME/ME 354 |
| 3 | Technical Elective |
| 3 | Technical Elective |
| 3 | Graduate Engr Management Core/Elective* |
| 3 | LPHI 237 or LTHE 300 level course |
| 1 | Leadership Seminar |

17

FIFTH YEAR

Fall 12 credits of Graduate Engr Management Core/Electives**Spring* 12 credits of Graduate Engr Management Core/Electives*

* From courses listed in Graduate Engineering Management Section of Catalog. A total of 30 credits will be required. Refer to Graduate Engineering Management Section of Catalog for MSEM program requirements.

ME COURSE DESCRIPTIONS

ENG 100: First-Year Seminar in Engineering

Course description is listed in the Electrical and Computer Engineering section of the catalog.

*2 credits***ENG 201: Engineering and Biological Wonders of Panama**

Engineering and Biological Wonders of Panama is a three credit course that includes weekly seminars and a travel trip over spring break in Panama. This course enables the student to explore the technical design of the world famous Panama Canal and the diverse biological ecosystems found in Panama, including the rainforest and the waters and beaches of the Pacific Ocean. Participants stay in Panama City and travel on day trips to different locations within Panama. This course is a Liberal Studies Science option.

*3 credits***ENG 300: Leadership Seminar**

The Leadership Seminar introduces students to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in the various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for students' leadership development as reflected both in this course and in the corequisite Theology or Philosophy Series III course.

*1 credit***ENG 399: Co-op Placement**

For the students in the five year Co-op option. Students register for each full period in industry. Students are evaluated by an engineer in industry and are under the mentorship of the department faculty.

Prerequisite: Permission of the Department Chair is required.

*0 credit***ME 201: Statics**

A study of force systems acting on non-accelerating bodies; application of mathematical concepts involved in the use/application of 2-D and 3-D vectors representing kinematic and kinetic variables; learning how to generate and use free body diagrams; learning to use vector components & resultants, moments & couples. Study of friction, centroids, frames, trusses, and beams; associated computer assignments.

Prerequisites: PHYS 210, ME 205 and ME 206 (Co/Prerequisite);

or ECE 105 and ECE 106 (Co/Prerequisite) for BME only

3 credits

ME 204: Dynamics

This course studies motion and the forces that affect motion. It is based on a vector approach to kinematics and kinetics of particles and rigid bodies using free-body diagrams. Includes mathematical concepts and engineering skills used in the study of translation, rotation, and general plane motion, as well as dynamic force analysis, conservation of mechanical energy, work-energy principle, methods of impulse and momentum; associated computer assignments. Prerequisite: ME 201 3 credits

ME 205: Digital Computer Usage

An introduction to computer programming using Matlab. Emphasis on the logical thought process needed to solve engineering problems, and on the application of engineering principles. Students will use the computer lab to complete assignments. 1 credit

ME 206: Digital Computer Lab

Laboratory experience to complement ME 205. Three hours per week. Concurrent with ME 205 1 credit

ME 207: Engineering Graphics

An introduction to the principles and applications of engineering graphics. Learning drafting convention and the concepts of engineering documentation. Orthographic sketching and drawing. Auxiliary views and cut sections. Familiarization with standard parts such as threaded fasteners. Dimensioning principles. 2 credits

ME 208: Engineering Computer Graphics Lab

This course includes a detailed discussion of the computer-aided design (CAD) Creo software with extensive hands-on usage covering 3D parts creation and assembly design, as well as the generation of detailed engineering drawings. Laboratory: 3 hrs per week. Concurrent with ME 207 1 credit

ME 212: Introduction to Thermal Sciences

Introduction to thermodynamics, fluid flow, and heat transfer for non-Mechanical Engineers. Thermodynamic properties of substances, 1st and 2nd laws and applications to power cycles; control volumes. External and internal flows. Heat transfer through conduction, convection, and radiation. Prerequisite: PHYS 212 3 credits

ME 214: Strength of Materials

Concepts of stress & strain, Hooke's law, Poisson's ratio, axial tension, compression, torsion & shear. Transverse loading and bending; shear & moment diagrams, and deflections. Compound stress, Mohr's circle & principal stresses, statically indeterminate loading, and column instability. Associated computer problems. Prerequisite: ME 201 3 credits

ME 215: Strength of Materials Laboratory

Design and conducting experiments to understand basic principles and to compare theory vs. experiment. Experiments are on hardness, impact, tension, torsion, bending, fatigue, strain gages, photoelastic stress, and columns. Learning communication of results using clear technical writing. Use of Excel for processing experimental data, graphing results, and doing statistical analysis. Co/Prerequisite: ME 214 1 credit

ME 312: Engineering Thermodynamics

Introduction to concepts of system, control volume and control surface; properties of pure substances; equations of state for ideal and non-ideal gases; first and second laws of thermodynamics and their consequences. Application of first and second law to vapor power cycles, vapor refrigeration cycles and air standard power cycles: air-water vapor mixtures (concept of psychrometric chart). Prerequisite: PHYS 212 3 credits

ME 315: Materials Science

An introductory study of engineering properties of materials. Learning the engineering science of atomic structure, crystals, crystal imperfections, and diffusion. Learning mechanical properties, dislocations & strengthening, and failure mechanisms. Learning phase diagrams & transformations, thermal processing and alloys. Learning about material selection for design; most commonly used alloys of steel. Associated computer assignments on materials science.

Prerequisite: CHEM 111

3 credits

ME 326: System Dynamics and Control

An introduction to dynamic system modeling, analysis, and control. Representation of mechanical, thermal-fluid, electrical, and control components in various engineering systems, including vibration analysis. Steady state and transient specifications and stability characteristics to design interdisciplinary engineering systems including actuator, process, and control.

Prerequisites: ME 204, ME 403, ECE 231 (Co/Prerequisite)

3 credits

ME 327: Automatic Control Laboratory

In this, course students work both individually and in teams to conduct experiments. The experiments consist of modern equipment and contemporary methods in dynamics, vibrations, solid mechanics and materials science. Lab safety, experimental methods, statistical data analysis, interpretation, and report writing will be emphasized.

Prerequisite: ME 326

1 credit

ME 329: Materials Processing

An introduction to different methods of producing components of machines and structures as well as to the use of modern tools and techniques in materials processing. Application of the previously gained knowledge from the general area of engineering sciences, in particular materials science and strength of materials, to identifying and solving engineering problems encountered in designing various manufacturing processes. Topics covered include: casting, metal forming, welding, powder metallurgy, and machining. Important elements of material selection geometric dimensioning and tolerancing (GD&T) are also covered. Student will develop the ability to determine the equipment, materials, and processes, which are necessary to convert the design into reality in an efficient manner.

3 credits

ME 330: Manufacturing Lab

The Manufacturing Laboratory provides students with the opportunity to study selected aspects of manufacturing processes including laser scanners, knee mills, lathes, 3D printers and CNC equipment. Students can set up and operate machines, manufacture simple parts, measure process variables, and inspect manufactured parts. The Manufacturing Laboratory includes facilities to demonstrate and explore examples of machining processes, rapid prototyping and reverse engineering.

Prerequisite: ME 329

1 credit

ME 332: Instrumentation and Measurement Laboratory

This 1 credit laboratory course covers basic topics in instrumentation and measurements in mechanical engineering. Measurement procedures are essential components of engineering practice, from the inception of new ideas through experiments to the manufacturing process through prototype testing to the final product delivery through quality control. The current emphasis on low or no fault production and maintenance requires increasingly more accurate and reliable measurements. Rapid development of new measurement devices and computer technology has provided a wide array of measurement tools to meet these new demands. Faced with a variety of options, engineers need to make judicious choices and to be able to balance device capability with its limitations. In this course students will conduct experiments, analyze the results, prepare reports and become familiar with several common types of measurement systems and devices for engineering measurements.

Prerequisites: ENG 100, PHYS 212 (Co/Prerequisite)

1 credit

ME 336: Fluid Mechanics

Properties of fluids; Hydrostatic pressure, forces on submerged surfaces; Fluid flow, continuity, momentum, and energy (Bernoulli) equations; Similitude and dimensional analysis; Flows in closed conduits (laminar and turbulent flow), major and minor losses; Flow over external surfaces; Open channel flow; Inviscid flow; Basic principles of compressible flow.

Prerequisite: ME 312

3 credits

ME 337: Heat Transfer

Concepts of heat transfer characteristics; Generalized heat conduction equation; Special cases of one or two dimensional steady and non-steady heat conduction; Graphical and numerical solutions of more complex problems; Electrical analogy; Free and forced heat convection in fluids; Fundamental principles of viscous fluid flow and boundary layer concepts; Introduction to radiative properties/shape factors; heat exchange between ideal and non-ideal bodies; Introduction of heat exchangers.

Prerequisites: ME 312, ME 336

3 credits

ME 338: Fluid Mechanics Laboratory

This course is the complementary laboratory course to ME 336 Fluid Mech. Laboratory activities include the performance of experiments based on fluid mechanics principles, and the analysis and interpretation of the experimental data. Laboratory: Three hours per week.

Prerequisite: ME 336

1 credit

ME 339: Heat Transfer Laboratory

The lab includes the design and conducting of experiments and the analysis and interpretation of the experimental data. Laboratory: Three hours per week.

Prerequisite: ME 337

1 credit

ME 350: Engineering Design

Elements of engineering design, and introduction to the design process. Development of awareness of multifaceted design issues, such as social, economic, technical and environmental concerns, and their interrelation. Communication of ideas and results. Course culminates in a formal written proposal for the Senior Design Lab project, including appropriate and detailed project management plan.

Prerequisites: Senior Standing, MATH 242, ME 207, ME 337, ME 360

3 credits

ME 354: Senior Design Laboratory in Mechanical Engineering

Capstone project in Mechanical Engineering. The student will complete a project nominally defined in ME 350. Successful projects will be completed up to at least the preliminary (prototype-ready) design stage. Successful designs will demonstrate concern for ethical, social, and cultural issues appropriate to the design objectives. Students will be expected to present clear, correct and concise final reports in both oral and written formats.

Prerequisites: Senior Standing, ME 350, ME 337, ME 360

3 credits

ME 360: Machine Design

This course utilizes math and engineering science skills in the study of a variety of machine elements. Static and fatigue failure theories are used to design various machine elements and structures. Design of standard machine elements used in mechanical design are studied including: shafts, springs, screws, belts, chains, bolted joints, eccentrically loaded joints, welded joints, ball bearings, and spur and bevel gears.

Prerequisite: ME 214

3 credits

ME 403: Engineering Analysis

The theory and application of matrix and vector algebra, first order, second order, and systems of ordinary differential equations, numerical methods, and Laplace transforms for engineering problems. Application of MATLAB software.

Prerequisite: MATH 304

3 credits

ME 405: Finite Element Method

Basic approach to finite element method, and theoretical foundation of the method, including fundamentals of matrix algebra. Element formulation for solid mechanics and thermal analysis problems, by the direct method, potential energy and Galerkin's method of weighted residuals. Use of modern finite element analysis software such as ANSYS for analysis and design.

Prerequisites: MATH 304, ME 214, ME 337

3 credits

ME 407: Engineering Optimization

Fundamentals of vector and matrix algebra, economic analysis, numerical methods for solution of linear and nonlinear equations. Basic theory, concepts and methods of engineering optimization. Primary techniques from both classical and modern optimization as applied to engineering decision making.

Prerequisites: ME 214, ME 312, ME 403

3 credits

ME 410: Thermal Systems Design

This course reviews the fundamentals of thermal systems design and optimization. Basic considerations in thermal systems design will be discussed. General approach to system analysis, modeling, simulation and optimization will be introduced. Various optimization techniques and methods will also be presented and discussed.

Prerequisites: MATH 304, ME 312, ME 336, ME 337

3 credits

ME 411: Alternative Energy Systems

Various alternative energy systems are introduced, their operation discussed and their performance evaluated.

Prerequisites: ME 312, ME 336, ME 337

3 credits

ME 412: Application of CFD

This course offers an introduction to CFD with an emphasis on finite-difference and finite volume methods. The fundamental conservation principles and governing equations of fluid mechanics and heat transfer will be reviewed. Numerical methods, computational techniques and skills required for analyzing and solving the governing equations will be discussed. CFD applications in thermal-fluid engineering will be introduced. Modern CFD software will be used to analyze various applied fluid flow problems.

Prerequisites: ME 336

3 credits

ME 427: Internal Combustion Engines

This course introduces and reviews the fundamentals of internal combustion engines, including spark-ignition and compression-ignition engines. General engine systems and working cycles are described. Engine thermodynamics, gas exchange and combustion processes, engine fluid flow and heat transfer, and fuel injection systems are analyzed. The course also reviews the formation of engine exhaust emissions and methods for controlling the emissions of the internal combustion engines. Engine design and consideration of the effects of design and operating factors are introduced.

Prerequisite: ME 440

3 credits

ME 440: Advanced Thermodynamics

Application of first, second, and third law of thermodynamics, thermodynamic cycles, mixtures, chemical reactions, phase and chemical equilibrium, irreversibility and availability.

Prerequisite: ME 312

3 credits

ME 441: Lubrication Systems Design

Application of math & engineering science principles of lubrication in the design of mechanical systems. Understanding bearing classes & selection, lubricant properties, and bearing materials. Design concepts and engineering science in hydrodynamic bearings, gas lubricated bearings, elastohydrodynamic bearings, and antifriction bearings.

Prerequisites: ME 336, ME 360

3 credits

ME 444: Advanced Strength of Materials

Application of selected advanced engineering theories for analysis and design of structural components under static loading. Topics include: curved beams, inelastic action, beams on elastic foundation, plate theory, contact stresses; other topics as time and interest permit. Use of computer resources for solution of engineering design problems.

Prerequisite: ME 214

3 credits

ME 461: Vibrations

Modeling and analysis of linear and torsional mechanical vibratory systems. Study of free vibration and vibration damping. Properties and response for harmonic, periodic, shock, and random inputs. Solutions of systems with two or more degrees of freedom. Vibration of beams. Design for vibration control.

Prerequisites: ME 204, ME 403 (Co/Prerequisite)

3 credits

ME 462: Energy Systems Design

Basic principles and application of solar and biomass energy; fuel cell; basic principles and application of internal combustion engines, gas turbine engines and steam power plants.

Prerequisites: ME 312, ME 336, ME 337

3 credits

ME 463: Dynamic Problems in Machine Design

A project based course that applies the basic principles and methods of dynamics to the design of engineering systems. Special focus is on including the dynamic force analysis in designing translating, rotating, and reciprocating systems. Student will develop the ability to identify and solve problems associated with the dynamics and base design of a machine on the combined force analysis. Computer equipped with modern simulation software will be used to analyze dynamic behavior of the designed systems.

Prerequisites: ME 207, ME 208, ME 360

3 credits

ME 464: Thermal Environmental Engineering Design

In this course the relevant principles of engineering thermodynamics, heat transfer and fluid mechanics will be reviewed. Refrigeration and cryogenics along with liquefaction of air and natural gas will be covered. Thermodynamic properties of moist air will be reviewed along with various applications in heating and air conditioning and industrial processes. Human thermal comfort and indoor air quality will be covered and various methods of heating and cooling load calculations for buildings will be presented.

Prerequisites: ME 336, ME 337

3 credits

ME 465: Computer Assisted Engineering

Topics include the application of Matlab and Excel software to multi component mechanical and thermal/fluid system design, analysis and synthesis, static and transient systems. Mathematical techniques include nonlinear equation solution, nondimensional analysis, lumped vs. distributed models, optimization and design sensitivity analysis, probability and statistics, and Monte Carlo simulation. Examples are taken from industrial mechanical engineering problems of current interest.

Prerequisites: ME 204, ME 214, ME 337, ME 403

3 credits

ME 466: Turbomachinery Design

Application of general principles of fluid mechanics to fluid machinery design. Design principles of centrifugal and axial compressors, degree of reaction estimates, blade design, state performance calculations, axial flow turbines. Design calculations of blade stresses, disc stresses and thermal stresses.

Prerequisites: ME 312, ME 337, ME 336

3 credits

ME 470: Heat Exchanger Design

Application of general principles of heat transfer and fluid mechanics (pressure drop) in design of heat exchangers. Different types of heat exchangers will be studied in design-oriented projects.

Prerequisites: ME 336, ME 337

3 credits

ME 490-499: Special Topics in Mechanical Engineering

Special courses developed from student interest in all areas of mechanical engineering. Brief description of current content to be announced in schedule of classes.

Prerequisite: Permission of the Department Chair is required.

May be taken more than once.

3 credits

SECS (101, 102, 201, 202, 301, 302, 401, 402): Professional and Personal Enrichment Seminar

Course description is listed in Computer & Information Science section of the catalog. 0 credit

SOFTWARE ENGINEERING (SE)

The Software Engineering (SE) major is designed to produce graduates capable of developing high-quality software systems with a focus on the Mobile Application domain. Gannon software engineers learn how to apply the principles of computer science, engineering, and analysis to the design, creation, testing, and evaluation of software and digital systems. The program includes developing technical competency as well as the leadership and communication skills necessary to analyze, design, verify, validate, implement, and maintain software systems. As the societal dependence on software systems grows, the students will have the foundations necessary to face ethical dilemmas and act responsibly as part of their professional training.

The Software Engineering curriculum is delivered in five different ways –

1. SE-MS-CIS: Accelerated 5-year program culminating in a four year degree followed by one year to complete one of the MS-CIS program options, described here.
2. SE: four-year degree program, described here.
3. SE-CoOp: five-year cooperative mode, described in the **CIS Department** section above
4. CS-SE: dual degree program where students complete both the Computer Science and the Software Engineering degree requirements simultaneously described in the **Computer Science-Software Engineering Dual Degree** section.
5. SEID-SE: multi-degree, where students additionally completed the requirements for a Bachelors of Engineering (B.Eng) degree in Software Technology at Esslingen University of Applied Science described in the **International Software Engineering Degrees** section.

Opportunities

Software engineers specialize in the specification, design and development of quality software systems. Software systems now serve in life-critical as well as business-critical domains, and require professionals who are prepared to develop systems in a reliable manner, balancing business needs, technology, and human factors in order to yield a successful product. Software engineering continues to be listed as one of the fastest-growing occupations.

Aims and Objectives

The SE major prepares its graduates to achieve significant career and professional accomplishments in four ways: as employable and accountable professionals, competent problem solvers, and selfless contributors.

Employable Professional: SE graduates are well prepared for employment or graduate work in their field and to continue working in that field or related fields. This includes adaptability to different disciplines, environments, and tasks. They are fully prepared for employment in chosen post-graduate pursuits.

Accountable Professional: SE graduates are accountable for their professional roles, and pursue their profession in an ethical manner. This includes giving and receiving professional critique and review, communication and the responsibility for, and/or leadership in:

- Research/development projects or teams,
- Aspects of major system components, or
- Business development work.

Competent SE Problem Solver: SE graduates focus on software-based systems. They innovate, analyze, design, verify, validate, implement, and maintain software systems. SE graduates apply current computing knowledge, technology, skills, techniques, and methods to:

- Identify, analyze and develop effective solutions for problems,
- Improve product, process and/or organizational elements, and
- Apply creativity in design thinking and innovate where appropriate.

Selfless Contributors: Graduates value collaborative teamwork and contribute to team accomplishment that goes beyond personal development. They voluntarily give their time, talent, and/or resources to their community, profession, church and/or society.

Program Outcomes

Gannon's Software Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. Similarly, Gannon's Software Engineering program is built around the successes enjoyed by the successful Computer Science and Engineering programs whose students enjoy a long history of success in solving problems and building systems. The program has a strong focus on problem-solving beginning with the very first course in computing (CIS 180 Problem Solving & Computer Programming) and carried through into the senior design sequence (CIS 457/458 Senior Design). Throughout the learning process, students learn how to effectively define and represent both problems and the solutions needed to solve those problems. Throughout the course of study, students learn to and practice making ethical decisions.

All students learn the art and science of specifying, designing, building and testing software for high-quality systems. In addition, they learn how to utilize information and computer technology while developing and maintaining comprehension of the changing technology used in computer-based systems, as well as its global and local impacts. Through this learning process, we expect students to own a desire for continuous improvement and demonstrate effective verbal, written, and listening communication skills.

Specifically, Software Engineering students completing our program learn to:

- Realize and manage high-quality software development lifecycle processes
- Apply discrete mathematics, computer science and engineering principles to systems development.
- Demonstrate an ability to design, implement and analyze testing and other experimental measures to assess the quality of software and computing systems.

Integration

One of the hallmarks of Gannon's SE degree is its integration with traditional liberal-studies education. Gannon's SE majors learn computing well and learn how to synthesize, think critically, and communicate well. In the program, bridging traditional courses like writing, philosophy, theology and ethics begins in the CIS 103 CIS First-Year Seminar, and continues throughout the program, culminating in the CIS 457/458 Senior Design sequence.

The Program:

The SE degree requires 129 credits to graduate. These are divided into two primary sources, a Computer and Information Science (CIS) core and a Software Engineering core. These, integrated with the Core of Discovery, provide the breadth and depth to the program. The program also provides a one-semester study abroad option.

All CIS course descriptions are provided in the section **Computer and Information Science**

All CSC course descriptions are provided in the section **Computer Science**

All CYSEC course descriptions are provided in the section **Cybersecurity**

CIS Core Courses

| | | | |
|-------------|---------------------------------------|---------|---------------------------|
| CIS 103 | First-Year Seminar | CIS 302 | CIS Professional Seminar |
| CIS 180/181 | Problem Solving & Comp. Prog. and Lab | CIS 303 | CIS Leadership Seminar |
| CIS 182/183 | Object-Oriented Prog. and Lab | CIS 350 | Req. & Project Management |
| CIS 219 | Linux Programming | CIS 457 | Senior Design I |
| CIS 255 | Database Management Sys. | CIS 458 | Senior Design II Lab |
| CIS 290 | Introduction to Networks | | |

Computer Science Courses

| | | | |
|---------|---------------------------------------|----------|------------------------------|
| CSC 220 | Data Structures & Algorithms | ECE 337 | Computer Architecture |
| CSC 223 | Algorithm Development Lab Development | MATH 310 | Number Theory & Cryptography |
| CIS 326 | Formal Methods in Software | MATH 314 | Numerical Analysis |
| CSC 390 | Distributed Programming | | |

Software Engineering Courses

| | | | |
|---------|----------------------------|----------|--------------------------------------|
| CIS 239 | The User Experience | CIS 387 | System & Network Security |
| | CSC 330 Operating Systems | SOFT 320 | Software Architecture |
| CIS 277 | Mobile Application Dev. I | SOFT 310 | Software Testing & Quality Assurance |
| CIS 287 | Object-Oriented Design Lab | SOFT 410 | Software Maint. & Deployment |
| CIS 377 | Mobile Application Dev. II | | |

Suggested Science Course Sets

To complete their degree, students choose a two-course sequence in a science including labs with their academic advisor's approval. Science sets are two-course sequences in a particular science and include the appropriate experimental (laboratory) component, minimally 8 credits.

- | | |
|--|--|
| PHYS 210 Fund of Physics 1: Mechanics PHYS 211 Fund of Physics 1: Mechanics Lab | PHYS 214: Electricity and Magnetism & PHYS 215 Physics 3 Lab |
|--|--|
- | | |
|--|---|
| PHYS 210 Fund of Physics 1: Mechanics PHYS 211 Fund of Physics 1: Mechanics Lab | PHYS 212: Physics 2: Fluids and Thermodynamics & PHYS 213 Physics 2 Lab |
|--|---|
- | | |
|---|---|
| CHEM 111 General Chemistry I & CHEM 112 Chemistry I Lab | CHEM 114 General Chemistry II & CHEM 115 Chemistry II Lab |
|---|---|
- | | |
|---|--|
| BIO 122 Molecular Cell Biology & BIO 123 Molecular Cell Biology | BIO 124 Biology of Organisms & Lab BIO 125 Biology of Organisms Lab |
|---|--|

Software Engineering Curriculum (129 credits)*(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

- 2 First-Year Seminar/CIS 103
- 2 Problem Solving and
Computer Prog./CIS 180
- 1 Problem Solving and
Computer Prog. Lab/CIS 181
- 3 Calculus 1/MATH 140
- 3 Intro. Networks/CIS 290
- 3 College Composition/LENG 111
- 3 Foundation of Theology/LTHE 101

17*Spring*

- 2 Object-Oriented Programming/CIS 182
- 1 Object-Oriented Programming Lab/
CIS 183
- 3 Calculus 2/MATH 141
- 3 Critical Analysis & Comp./LENG 112
- 3 Introduction to Philosophy/LPHI 131
- 3 Science 1
- 1 Science 1 Lab

16**SOPHOMORE***Fall*

- 3 Data Structures & Algorithms/CSC 220
- 3 User Experience/CIS 239
- 3 Applied Statistics/MATH 213
or MATH 312
- 3 Discrete Mathematics 1/MATH 222
- 3 Mobile Application Development I/
CIS 277
- 1 Object-Oriented Design Lab/CIS 287

16*Spring*

- 3 Database Management & Admin/
CIS 255
- 1 Algorithm Development Lab/CIS 223
- 3 Discrete Mathematics 2/MATH 223
- 3 Computer Architecture/ECE 337
- 3 Mobile Application Development II/
CIS 377
- 3 Numerical Analysis/MATH 314

16**JUNIOR***Fall*

- 3 Formal Methods in Software/CIS 326
- 3 Requirements & Project Management/
CIS 350
- 1 CIS Leadership Seminar/CIS 303
- 3 Linux Programming/CIS 219
- 3 Software Testing & Quality
Assurance/SOFT 310
- 3 Project Economics/ECON 285
- 1 Technical Communication/SPCH 110

17*Spring*

- 1 CIS Professional Seminar/CIS 302
- 3 History Without Borders/LHST 111
- 3 The Bible: An Intro/LTHE 201
- 3 Software Architecture/SOFT 320
- 3 Philosophy II Series/LPHI
- 3 Science 2
- 1 Science 2 Lab

17**SENIOR***Fall*

- 3 Senior Design I/CIS 457
- 3 Operating Systems/CSC 330
- 3 Software Maintenance & Deploy./
SOFT 410
- 3 LPHI 237 or any LTHE 300 course
- 3 System and Network Security/CIS 387

15*Spring*

- 3 Senior Design II Lab/CIS 458
- 3 Distributed Programming/CIS 390
- 3 Fine Arts Series/LFIN
- 3 Literature Series/LENG
- 3 Number Theory & Cryptography/
MATH 310

15

Software Engineering (BS-SFEN) Study Abroad Curriculum (129 credits)*(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

| | |
|-----------|--|
| 2 | First-Year Seminar/CIS 103 |
| 2 | Problem Solving and Computer Prog./CIS 180 |
| 1 | Problem Solving and Computer Prog Lab/CIS 181 |
| 3 | Calculus 1/MATH 140 |
| 3 | Intro. Networks/CIS 290 |
| 3 | Foundation of Theology/LTHE 101 |
| 3 | College Composition/LENG 111 |
| <u>17</u> | |

Spring

| | |
|-----------|---|
| 2 | Object-Oriented Programming/CIS 182 |
| 1 | Object-Oriented Programming Lab/ CIS 183 |
| 3 | Calculus 2/MATH 141 |
| 3 | Critical Analysis & Comp./LENG 112 |
| 3 | History Without Borders/LHST 111 |
| 3 | Science 1 |
| 1 | Science 1 Lab |
| <u>16</u> | |

SOPHOMORE*Fall*

| | |
|-----------|--|
| 3 | User Experience/CIS 239 |
| 3 | Applied Statistics/MATH 213 (or MATH 312) |
| 3 | Discrete Mathematics 1/MATH 222 |
| 3 | Data Structures & Algorithms/CSC 220 |
| 3 | Mobile Application Development I/ CIS 277 |
| 1 | Technical Communication/SPCH 110 |
| <u>1</u> | Object-Oriented Design Lab/CIS 287 |
| <u>17</u> | |

Spring

| | |
|-----------|---|
| 1 | Algorithm Development Lab/CSC 223 |
| 3 | Discrete Mathematics 2/MATH 223 |
| 3 | Computer Architecture/ECE 337 |
| 3 | Numerical Analysis/MATH 314 |
| 3 | Mobile Application Development II/ CIS 377 |
| 3 | Science 2 |
| 1 | Science 2 Lab |
| <u>17</u> | |

JUNIOR*Fall*

| | |
|-----------|--|
| 3 | Operating Systems/CSC 330 |
| 3 | Requirements & Project Management/ CIS 350 |
| 3 | Linux Programming/CIS 219 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Software Testing & Quality Assurance/SOFT 310 |
| <u>18</u> | |

Spring (Semester abroad @ EUAS)

| | |
|-----------|---|
| 3 | Database Management & Admin/ CIS 255 |
| 3 | Distributed Programming/CIS 390 |
| 3 | Software Architecture/SOFT 320 |
| 3 | System and Network Security/CIS 387 |
| 1 | CIS Professional Seminar/CIS 302 ⁵ |
| <u>13</u> | |

SENIOR*Fall*

| | |
|-----------|---|
| 3 | Senior Design I/CIS 457 |
| 1 | CIS Leadership Seminar/CIS 303 |
| 3 | Formal Methods in Software/CIS 326 |
| 3 | Philosophy II Series/LPHI |
| 3 | Software Maintenance & Deploy./ SOFT 410 |
| <u>3</u> | Project Economics/ECON 285 |
| <u>16</u> | |

Spring

| | |
|-----------|----------------------------------|
| 3 | Senior Design II Lab/CIS 458 |
| 3 | Fine Arts Series/LFIN |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Literature Series/LENG |
| 3 | Number Theory & Crypto./MATH 310 |
| <u>15</u> | |

⁵ CIS 302 will be completed online

Accelerated 5-Year SE-MS-CIS Program

The SE program provides an excellent pathway to the M.S. program in Computer and Information Science. Students apply to the accelerated MS program during sophomore or junior year, prior to registration as a junior or senior for GR courses. The Accelerated Program Application will be approved by the department and the dean and sent to the registrar's office to make a note on the student's profile. In the Senior Year, students apply to the graduate program through Graduate Admissions to officially become a graduate student. Students have to select one of the available MS Program options: Data Science (DS), Information Technology (IT) and Software Engineering (SE).

To remain in the accelerated program, students are required to maintain a 3.00 GPA in their undergraduate courses. When accepted, students rearrange their graduation plan to match one of the patterns provided below. Six credits of identified UG work can be counted toward the MS-CIS degree; other MS-Equivalent courses can be counted for placement, but not credit toward MS-CIS degree requirements. The total credit count to complete the BS-SE and the MS-CIS is $129 + 24 = 153$ credits.

BS Software Engineering + MS Data Science or Information Technology Accelerated 5-year program (129+24 credits)

(Numerals in front of courses indicate credits)

FRESHMAN

| <i>Fall</i> | <i>Spring</i> |
|--|---|
| 2 First-Year Seminar/CIS 103 | 2 Object-Oriented Programming/CIS 182 |
| 2 Problem Solving and Computer Prog./CIS 180 | 1 Object-Oriented Programming Lab/CIS 183 |
| 1 Problem Solving and Computer Prog. Lab/CIS 181 | 3 Calculus 2/MATH 141 |
| 3 Calculus 1/MATH 140 | 3 Critical Analysis & Comp./LENG 112 |
| 3 Intro. Networks/CIS 290 | 3 Introduction to Philosophy/LPHI 131 |
| 3 College Composition/LENG 111 | 3 Science 1 |
| 3 Foundation of Theology/LTHE 101 | 1 Science 1 Lab |
| 17 | 16 |

SOPHOMORE

| <i>Fall</i> | <i>Spring</i> |
|--|---|
| 3 Data Structures & Algorithms/CSC 220 | 3 Database Management & Admin/CIS 255 |
| 3 User Experience/CIS 239 | 1 Algorithm Development Lab/CIS 223 |
| 3 Applied Statistics/MATH 213 or MATH 312 | 3 Discrete Mathematics 2/MATH 223 |
| 3 Discrete Mathematics 1/MATH 222 | 3 Computer Architecture/ECE 337 |
| 3 Mobile Application Development I/CIS 277 | 3 Mobile Application Development II/CIS 377 |
| 1 Object-Oriented Design Lab/CIS 287 | 3 Numerical Analysis/MATH 314 |
| 16 | 16 |

JUNIOR

Fall

| | |
|-----------|--|
| 3 | Formal Methods in Software/CIS 326 |
| 3 | Requirements & Project Management/ CIS 350 ⁶ |
| 1 | CIS Leadership Seminar/CIS 303 |
| 3 | Software Testing & Quality Assurance/ SOFT 320 |
| 3 | Project Economics/ECON 285 |
| 1 | Technical Communication/SPCH 110 |
| 3 | Science 2 |
| 1 | Science 2 Lab |
| <u>18</u> | |

Spring

| | |
|-----------|----------------------------------|
| 1 | CIS Professional Seminar/CIS 302 |
| 3 | History Without Borders/LHST 111 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Software Architecture/SOFT 310 |
| 3 | Philosophy II Series/LPHI |
| 3 | Linux Programming/CIS 219 |
| 3 | Literature Series/LENG |
| <u>18</u> | |

SENIOR

Fall

| | |
|-----------|--|
| 3 | Senior Design I/CIS 457 |
| 3 | Operating Systems/CSC 330 |
| 3 | Software Maintenance & Deploy./ SOFT 410 ⁶ |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | System and Network Security/CIS 387 |
| 3 | Data Centric/GCIS 516 ⁷ |
| <u>18</u> | |

Spring

| | |
|-----------|---|
| 3 | Senior Design II Lab/CIS 458 |
| 3 | Distributed Programming/CIS 390 |
| 3 | Fine Arts Series/LFIN |
| 3 | Number Theory & Cryptography/ MATH 310 |
| 3 | Statistical Computing/GCIS 523 ⁷ |
| <u>15</u> | |

GRADUATE

Fall

| | |
|----------|---------------------------------------|
| 3 | GCIS 66x or GCIS65x (track dependent) |
| 3 | Cloud Architecture/GCIS 583 |
| 3 | Scholarship Seminar/GCIS 605 |
| <u>9</u> | |

Spring

| | |
|----------|---------------------------------------|
| 3 | GCIS 66x or GCIS65x (track dependent) |
| 3 | GCIS 66x or GCIS65x (track dependent) |
| 3 | Directed Research/GCIS 698 |
| <u>9</u> | |

⁶ GCIS Credits count for both UG and GR degree requirements.⁷ GCIS Credits taken in addition to/beyond UG degree requirements.

BS Software Engineering + MS Software Engineering**Accelerated 5-year program (129+24 credits)***(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

| | |
|-----------|---|
| 2 | First-Year Seminar/CIS 103 |
| 2 | Problem Solving and Computer Prog./ CIS 180 |
| 1 | Problem Solving and Computer Prog. Lab/CIS 181 |
| 3 | Calculus 1/MATH 140 |
| 3 | Intro. Networks/CIS 290 |
| 3 | College Composition/LENG 111 |
| 3 | Foundation of Theology/LTHE 101 |
| <u>17</u> | |

Spring

| | |
|-----------|---|
| 2 | Object-Oriented Programming/CIS 182 |
| 1 | Object-Oriented Programming Lab/ CIS 183 |
| 3 | Calculus 2/MATH 141 |
| 3 | Critical Analysis & Comp./LENG 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Science 1 |
| 1 | Science 1 Lab |
| <u>16</u> | |

SOPHOMORE*Fall*

| | |
|-----------|---|
| 3 | Data Structures & Algorithms/CSC 220 |
| 3 | User Experience/CIS 239 |
| 3 | Applied Statistics/MATH 213 <i>or</i> MATH 312 |
| 3 | Discrete Mathematics 1/MATH 222 |
| 3 | Mobile Application Development I/ CIS 277 |
| 1 | Object-Oriented Design Lab/CIS 287 |
| <u>16</u> | |

Spring

| | |
|-----------|---|
| 3 | Database Management & Admin/ CIS 255 |
| 1 | Algorithm Development Lab/CIS 223 |
| 3 | Discrete Mathematics 2/MATH 223 |
| 3 | Computer Architecture/ECE 337 |
| 3 | Mobile Application Development II/ CIS 377 |
| 3 | Numerical Analysis/MATH 314 |
| <u>16</u> | |

JUNIOR*Fall*

| | |
|-----------|--|
| 3 | Formal Methods in Software/CIS 326 |
| 3 | Requirements & Project Management/ CIS 350 ⁸ |
| 1 | CIS Leadership Seminar/CIS 303 |
| 3 | Software Testing & Quality Assurance/ SOFT 320 |
| 3 | Project Economics/ECON 285 |
| 1 | Technical Communication/SPCH 110 |
| 3 | Linux Programming/CIS 219 |
| <u>17</u> | |

Spring

| | |
|-----------|----------------------------------|
| 1 | CIS Professional Seminar/CIS 302 |
| 3 | History Without Borders/LHST 111 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Software Architecture/SOFT 310 |
| 3 | Philosophy II Series/LPHI |
| 3 | Science 2 |
| 1 | Science 2 Lab |
| <u>17</u> | |

SENIOR*Fall*

| | |
|-----------|--|
| 3 | Senior Design I/CIS 457 |
| 3 | Operating Systems/CSC 330 |
| 3 | Software Maintenance & Deploy./ SOFT 410 ⁸ |
| 3 | LPHI 237 <i>or</i> any LTHE 300 course |
| 3 | System and Network Security/CIS 387 |
| 3 | Data Centric/GCIS 516 ⁹ |
| <u>18</u> | |

Spring

| | |
|-----------|--|
| 3 | Senior Design II Lab/CIS 458 |
| 3 | Distributed Programming/CIS 390 |
| 3 | Fine Arts Series/LFIN |
| 3 | Number Theory & Cryptography/ MATH 310 |
| 3 | Literature Series/LENG |
| 3 | Advanced Programming/GCIS 522 ⁹ |
| <u>18</u> | |

GRADUATE

Fall

3 Interactive Software Dev./GCIS 639

3 GCIS Elective

3 Scholarship Seminar/GCIS 6059

Spring

3 GCIS Elective

3 GCIS Elective

3 Directed Research/GCIS 6989⁸ GCIS Credits count for both UG and GR degree requirements.⁹ GCIS Credits taken in addition to/beyond UG degree requirements.

SOFT COURSE DESCRIPTIONS

SOFT 210: Software Engineering

The course provides an overview of software requirements analysis, the software design process, verification and validation, software maintenance, and documentation. The major emphasis of the course is a project that provides experience in the design and development of a significant software project.

Prerequisite: CIS 277 and CIS 287

*3 credits, Spring***SOFT 310: Software Testing and Quality Assurance**

The course is concerned with understanding the role of quality assurance in the software development cycle, and applying these techniques to software products. Course topics include test design methods, test planning, automated test support, quality measurement, and quality tracking techniques.

Prerequisite: MATH 223 and CIS 277 and CIS 287

*3 credits, Fall***SOFT 320: Software Architecture**

The course focuses on the issues, techniques, strategies, representations and patterns used to implement a software component or a large-scale system. Specifically, it emphasizes the defining architectures that conform to functional requirements and that work within defined constraints including resource, performance, reliability, and security.

Prerequisite: CIS 277 and CIS 287

*3 credits, Spring***SOFT 410: Software Maintenance and Deployment**

Introduces the concepts and approaches for the maintenance, refactoring and deployment of software projects, particularly in a rigorous life-cycle process. Focuses on materials associated with software maintenance, process, metrics and quality related to the development, improvement and deployment of high-quality software and systems. The course includes significant project work where students apply a rigorous process to deploy a refactored software product with improved features and quality.

Prerequisite: SOFT 310 & SOFT 320

3 credits, Fall

**SOFTWARE ENGINEERING
INTERNATIONAL DEGREES (SEID)**

The Computer and Information Science Department partners with Esslingen University of Applied Sciences (EUAS) in Esslingen am Neckar, Germany, to offer the Software Engineering International Degrees (SEID) programs. The unique partnership between Gannon and Esslingen University offers students the ability to complete two undergraduate degrees — an accredited BS degree in Software Engineering or Computer Science and European B.Eng. degree in *Studienschwerpunkt – Softwaretechnik* (software technology).

Opportunities

The programs include a semester of coursework followed by a required (typically paid) internship in Germany. This uniquely prepares with real-world experience that marks European bachelors studies, and the breadth and depth of the small-school, engineering at Gannon and to experience the workings of the global economy first-hand. As part of their B.Eng degree work, students are required to complete an internship/practical training of at least 100 working days in order to receive the 25 European Credit Transfer System (ECTS) credit points. These are normally paid positions, and EUAS will support students to find placements in companies with whom the university has a partnership.

Aims and Objectives:

The SEIS has the same aims as the Software Engineering or Computer Science degree program respectively. It prepares its graduates to operate in a global engineering environment, working with diverse and multi-lingual teams, and to achieve significant career and professional accomplishments as employable and accountable professionals, competent problem solvers, and selfless contributors. For more detailed descriptions, please see the aims and objective for the degree program in the **Computer Science** or **Software Engineering** sections.

Program Outcomes:

Gannon's Software Engineering International Degrees program has the same outcomes as the accredited Software Engineering and Computer Science degree programs respectively. Please see the outcomes for these programs in the **Computer Science** or **Software Engineering** sections.

Program Operation:

The program normatively spans 4½ years, including at least one summer semester, including a full academic year in Germany. The programs comprise ~158 semester credit hours, 128 of which should be earned at Gannon and at minimally 30 semester credits at EUAS. The SEID programs require a study abroad year at Esslingen University during a student's junior year that includes a paid internship in software development. During their year in Germany, students spend one semester taking software engineering courses, taught in English, as well as a course in German language, followed by a semester in an industrial internship.

The mutual courses which comprise the SEIDs are offered in English at both universities. Prior to their year abroad, SEID students from GU shall complete:

- Two years of Software Engineering or Computer Science studies at Gannon with a minimum GPA of 3.0.
- German language preparation to support finding an internship, which are provided in the semesters prior to travel and in the first semester at EUAS.

SEID students pay their normal GU tuition, fees and books throughout the program, as well as their living expenses while at GU or HE respectively. Students are responsible for their air travel to/from Esslinger, health insurance, visas and other documentation following normal study-abroad protocols. In addition, SEID students receive free tuition for their two required summer courses (typically German and a Philosophy course). SEID students are also eligible for, and encouraged to apply for scholarships available to other EUAS exchange students, as well as the subsidized student housing available to HE students.

Software Engineering International Degrees: Computer Science Curriculum
B.S. Computer Science (Gannon) &**B.Eng. Software Technology (Esslingen University of Applied Science)***(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

- 2 First-Year Seminar/CIS 103
- 2 Prob Solving and Comp Prog/CIS 180
- 1 Prob Solving and Comp Prog Lab/
CIS 181
- 3 Calculus 1/MATH 140
- 3 Intro. Networks/CIS 290
- 3 Foundation of Theology/LTHE 101
- 3 College Composition/LENG 111

17*Spring*

- 2 Object-Oriented Programming/CIS 182
- 1 Object-Oriented Programming Lab/
CIS 183
- 3 Calculus 2/MATH 141
- 3 Critical Analysis & Comp./LENG 112
- 3 History Without Borders/LHST 111
- 3 Fund. of Physics 1: Mechanics/PHYS 210
- 1 Fund. of Physics 1: Mechanics Lab/
PHYS 211

16**SOPHOMORE***Fall*

- 3 Linux Programming/CIS 219
- 3 User Experience/CIS 239
- 3 Data Structures & Algorithms/CSC 220
- 3 Discrete Mathematics 1/MATH 222
- 3 Mobile Application Development I/
CIS 277
- 1 Technical Communication/SPCH 110²
- 1 CIS Leadership Seminar/CIS 303
- 1 Object-Oriented Design Lab/CIS 287

17*Spring*

- 3 Database Management & Admin/CIS 255
- 1 Algorithm Development Lab/CSC 223
- 3 Discrete Mathematics 2/MATH 223
- 3 Numerical Analysis/MATH 314
- 3 Mobile Application Development II/
CIS 377
- 3 Physics 3: E & M Lab/PHYS 215
(or PHYS 212)
- 1 Physics 3: E & M/PHYS 214
(or PHYS 212)
- 1 CIS Professional Seminar/CIS 302

18*Summer³*

- 3 The Bible: An Intro/LTHE 201
- 3 German/GRMN 111 (or better)

JUNIOR (@ EUAS)*Fall*

- 3 German/GRMN 112 (or better)
- 3 Business Intelligence
- 3 Software Engineering/SOFT 210
- 3 Software Architecture/SOFT 320
- 3 Information Systems

15*Spring*

- 15 Paid Industrial Internship/CIS 400

15

SENIOR (@ Gannon)

Fall

| | |
|-----------|---|
| 3 | Senior Design I/CIS 457 |
| 3 | Comparative Languages/CSC 360 |
| 3 | Applied Statistics/MATH 213 or MATH 312 ⁸ |
| 3 | Operating Systems/CSC 330 |
| 3 | Project Economics/ECON 285 |
| 3 | Software Testing & Quality Assurance/SOFT 310 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>18</u> | |

Spring

| | |
|-----------|---------------------------------------|
| 3 | Senior Design II Lab/CIS 458 |
| 3 | Computer Architecture/ECE 337 |
| 3 | Distributed Programming/CIS 390 |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Software Maintenance & Deploy./SE 410 |
| 3 | Number Theory & Crypto./MATH 310 |
| <u>18</u> | |

SENIOR ++

Fall

| | |
|-----------|-------------------------------------|
| 3 | System and Network Security/CIS 387 |
| 3 | Formal Methods in Software/CIS 326 |
| 3 | Philosophy II Series/LPHI |
| 3 | Web Programming & Impl./CIS 355 |
| 3 | Literature Series/LENG |
| 3 | Fine Arts Series/LFIN |
| <u>18</u> | |

² May take any LS Approved SPCH course.

³ SEID students will get free tuition for their summer courses, specifically their German course and one required course. This German course will be specially staffed & managed to ensure proper language placement.

⁴ May also take Probability and Statistics/Math 312

Software Engineering International Degrees: Software Engineering Curriculum**B.S. Software Engineering (Gannon)****& B.Eng. Software Technology (Esslingen University of Applied Science)**

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|-----------|--|
| 2 | First-Year Seminar/CIS 103 |
| 2 | Prob Solving and Comp Prog/CIS 180 |
| 1 | Prob Solving and Comp Prog Lab/ CIS 181 |
| 3 | Calculus 1/MATH 140 |
| 3 | Intro. Networks/CIS 290 |
| 3 | Foundation of Theology/LTHE 101 |
| 3 | College Composition/LENG 111 |
| <u>17</u> | |

Spring

| | |
|-----------|--|
| 2 | Object-Oriented Programming/CIS 182 |
| 1 | Object-Oriented Programming Lab/ CIS 183 |
| 3 | Calculus 2/MATH 141 |
| 3 | Critical Analysis & Comp./LENG 112 |
| 3 | History without Borders/LHST 111 |
| 3 | Fund. of Physics 1: Mechanics/PHYS 210 |
| 1 | Fund. of Physics 1: Mechanics Lab/ PHYS 211 |
| <u>16</u> | |

SOPHOMORE

Fall

- 3 Linux Programming/CIS 219
- 3 User Experience/CIS 239
- 3 Data Structures & Algorithms/CSC 220
- 3 Discrete Mathematics 1/MATH 222
- 3 Mobile Application Development I/
CIS 277
- 1 Technical Communication/SPCH 110⁵
- 1 Object-Oriented Design Lab/CIS 287
- 1 CIS Leadership Seminar/CIS 303

18*Spring*

- 3 Database Management & Admin/
CIS 255
- 1 Algorithm Development Lab/CSC 223
- 3 Discrete Mathematics 2/MATH 223
- 3 Numerical Analysis/MATH 314
- 3 Mobile Application Development II/
CIS 377
- 3 Physics 3: E & M/PHYS 215
(or PHYS 212)
- 1 Physics 3: E & M Lab/PHYS 214
(or PHYS 213)
- 1 CIS Professional Seminar/CIS 302

18*Summer⁶*

- 3 The Bible: An Intro/LTHE 201
- 3 German/GRMN 111 (or better)

JUNIOR YEAR @ Esslingen University of Applied Sciences (Transfer Equivalents)⁷*Fall*

- 3 German/GRMN 112 (or better)
- 3 Business Intelligence
- 3 Software Engineering/SOFT 210
- 3 Software Architecture/SOFT 320
- 3 Information Systems

15*Spring*

- 15 Paid Industrial Internship/CIS 400

15

SENIOR

Fall

- 3 Senior Design I/CIS 457
- 3 Applied Statistics/MATH 213
or MATH 312
- 3 Web Programming & Impl./CIS 355
- 3 Operating Systems/CSC 330
- 3 Software Testing & Qual Assurance/
SOFT 310
- 3 Introduction to Philosophy/LPHI 131

18*Spring*

- 3 Senior Design II Lab⁸/CIS 458
- 3 Number Theory & Cryptography/
MATH 310
- 3 Computer Architecture/ECE 337
- 3 Distributed Programming/CIS 390
- 3 LPHI 237 or any LTHE 300 course
- 3 Literature Series/LENG
- 3 Fine Arts Series/LFIN

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SENIOR ++

Fall

- 3 Software Maintenance & Deploy./SOFT 410
- 3 Formal Methods in Software/CIS 326
- 3 Philosophy II Series/LPHI
- 3 System and Network Security/CIS 387
- 3 Requirements & Project Mgmt/CIS 350
- 3 Project Economics/ECON 285

18⁵ May take any LS Approved SPCH course.

- ⁶ SEID students will get free tuition for their summer courses, specifically their German course and one required course. This German course will be specially staffed & managed to ensure proper language placement.
- ⁷ There is latitude about which 20 ECTS (12 Credits) of courses are taken from the IT department at EUAS. Students must complete their plan for these courses when registering for their 4th Semester, and this plan must be approved by EUAS prior to enrollment at EUAS.
- ⁸ An individual report must be submitted and meet/exceed EUAS Thesis standards.

Software Engineering International Degrees (BS-SFEN-HE) Curriculum (152 Credits)

(Numerals in front of courses indicate credits)

FRESHMAN

| <i>Fall</i> | | <i>Spring</i> | |
|-------------|--|---------------|---|
| 2 | First-Year Seminar/CIS 103 | 2 | Object-Oriented Programming/CIS 182 |
| 2 | Prob Solving and Comp Prog/CIS 180 | 1 | Object-Oriented Programming Lab/ CIS 183 |
| 1 | Prob Solving and Comp Prog Lab/ CIS 181 | 3 | Calculus 2/MATH 141 |
| 3 | Calculus 1/MATH 140 | 3 | Critical Analysis & Comp./LENG 112 |
| 3 | Intro. Networks/CIS 290 | 3 | History Without Borders/LHST 111 |
| 3 | Foundation of Theology/LTHE 101 | 3 | Fund. of Physics 1/PHYS 210 |
| 3 | College Composition/LENG 111 | 1 | Fund. of Physics 1 Lab/PHYS 211 |
| <u>17</u> | | <u>16</u> | |

SOPHOMORE

| <i>Fall</i> | | <i>Spring</i> | |
|-------------|---|---------------|---|
| 3 | Data Structures & Algorithms/CSC 220 | 3 | Database Management & Admin/ CIS 255 |
| 3 | User Experience/CIS 239 | 1 | Algorithm Development Lab/CS 223 |
| 3 | Linux Programming/CIS 219 | 3 | Discrete Mathematics 2/MATH 223 |
| 3 | Discrete Mathematics 1/MATH 222 | 3 | Numerical Analysis/MATH 314 |
| 3 | Mobile Application Development I/ CIS 277 | 3 | Mobile Application Development II/ CIS 377 |
| 1 | Technical Communication/SPCH 110 ⁹ | 3 | Fund. of Physics 3: E & M/PHYS 214 ¹⁴ or PHYS 213 |
| 1 | CIS Leadership Seminar/CIS 303 | 1 | Fund. Physics 3 E & M Lab/PHYS 215 or PHYS 214 |
| 1 | Object-Oriented Design Lab/CIS 287 | 1 | CIS Professional Seminar/CIS 302 |
| <u>18</u> | | <u>18</u> | |

Summer¹⁰

- 3 The Bible: An Intro/LTHE 201
- 3 German/GRMN 111 (or better)

JUNIOR YEAR (@ EUAS)

Fall

| | |
|----------|--------------------------------|
| 3 | German/GRMN 112 (or better) |
| 3 | Business Intelligence |
| 3 | Software Engineering/SOFT 210 |
| 3 | Software Architecture/SOFT 320 |
| <u>3</u> | Information Systems |
| 15 | |

Spring

| | |
|-----------|------------------------------------|
| 15 | Paid Industrial Internship/CIS 400 |
| <u>15</u> | |

SENIOR (@ Gannon)

Fall

| | |
|----------|---|
| 3 | Senior Design I/CIS 457 |
| 3 | Web Programming & Implementation/CIS 355 |
| 3 | Applied Statistics/MATH 213 (or MATH 312) |
| 3 | Operating Systems/CSC 330 |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Software Testing & Quality Assurance/SOFT 310 |
| <u>3</u> | Introduction to Philosophy/LPHI 131 |
| 18 | |

Spring

| | |
|-----------|--|
| 3 | Senior Design II Lab/CIS 458 |
| 3 | Computer Architecture/ECE 337 |
| 3 | Distributed Programming/CIS 390 |
| 3 | Fine Arts Series/LFIN |
| 3 | Literature Series/LENG |
| 3 | Number Theory & Crypto./MATH 310 ¹⁶ |
| <u>18</u> | |

SENIOR ++

Fall

| | |
|----------|---|
| 3 | Software Maintenance & Deploy./SOFT 410 |
| 3 | Formal Methods in Software/CIS 326 |
| 3 | Philosophy II Series/LPHI |
| 3 | System and Network Security/CIS 387 |
| 3 | Project Economics/ECON 285 |
| <u>3</u> | Requirements & Project Management/CIS 350 |
| 18 | |

⁹ May take any LS Approved SPCH course.¹⁰ Students may take {PHYS 212 & 212} instead of {PHYS 214 & 215}¹¹ SEID students will get free tuition for two summer courses, specifically their German course and one required course. This German course will be specially staffed & managed to ensure proper language placement.¹² MATH 310 is an every-other-year course. MATH 310 can be replaced with another 300-level math course if it is not available.

College of Humanities, Education, and Social Sciences

LORI D. LINDLEY, Ph.D., *Dean*

LEIGHANN S. FORBES, Ed.D., *Associate Dean for Faculty and Development*

JULIA M. MACK, Ph.D., *Associate Dean for Curriculum and Student Affairs*

The College of Humanities, Education and Social Sciences (CHESS) consists of a community of students, faculty and staff dedicated to the academic growth and lifelong learning of its members. We seek to provide the highest quality professional and pre-professional preparation in the context of a broad liberal education in the Judeo-Christian tradition. We continue to be convinced that such an education, rooted in the liberal arts and humanities and undergirded by a foundation of moral and ethical teachings, provides the foundation for a productive, rewarding and ethical life. The richly diverse educational programs within the College include a focus on integrating knowledge and developing student abilities in critical thinking, communication, information literacy and the application of knowledge across a wide range of social, professional and learning contexts. We are also committed to providing students with opportunities to understand cultural, international and global experiences in order to be informed and effective global citizens. Students from the College of Humanities, Education and Social Sciences are prepared to pursue a wide variety of professions, graduate programs and forthcoming careers of the future.

The College is composed of the **School of Humanities and Social Sciences** and the **School of Education**. Majors are offered in 25 baccalaureate degree programs and 4 two-year, associate degree programs. Students are also offered a wide variety of interdisciplinary learning opportunities as well as minor programs to complement their selected programs of study. The College is committed to promoting an engaged learning environment with students participating in a collaborative learning process including student research and practical experiences through service learning, internships and cooperative education.

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

Comprehensive Education

The professional lives of this year's freshmen will extend through the mid-21st century. Given the rapidity of change today, it is almost impossible to predict what professions will be in demand that far into the future. Certainly many of the careers that will be in demand do not yet exist. Furthermore, the U.S. Department of Labor estimates that this generation of college students will change careers an average of three times. Thus it is important to provide a broad, comprehensive education, fostering skills that will not become obsolete and will be transferable from one profession to another.

Skills for a Lifetime

Communication skills are vital in almost all careers and professions and are central to the development of the capacity for lifelong learning that the 21st century demands. The refinement of our students' reading, writing, speaking and listening skills, along with facilitating the use of communication technologies, is among the most important objectives of our programs in the Humanities.

Challenging yet reasonable reading assignments are designed to inform, enhance understanding and stimulate curiosity. Students come to regard books and professional journals as tools for their continued learning after graduation. It is important to note that they learn to read and understand publications based on sophisticated research methodologies and quantitative analyses.

While the English Department has special responsibilities in the teaching of writing and our School of Communication and the Arts offers work in introductory and advanced public speaking, all departments and programs make extensive use of writing assignments as well as formal and informal opportunities for the refinement of oral communication. Essay examinations, research papers, journals, speeches and debates enhance students' abilities to "think on their feet" and communicate well. Many classes make use of sophisticated electronic audio and video equipment and integrate modern computer technology into the curriculum. Increasingly, students and faculty enjoy connectivity with one another and the world outside the classroom through the use of the Internet, video conferencing, social media and the like.

Equally important are the skills of analysis and synthesis, as well as the power to think critically and independently and to make sound ethical decisions and judgments. Courses in the Humanities and Social Sciences complement the University's Liberal Studies Core to help our students hone these abilities. Quantitative as well as qualitative reasoning is encouraged and all curricula in the Humanities and Social Sciences require at least one math course.

The typical class size permits discussions in which students have the opportunity to express their ideas. Group work, class discussion and other means of interactive learning encourage students to take responsibility, learn teamwork and become active rather than passive learners.

International Education

Our students will live in a world community and compete in a global economy. Thus the Humanities and Social Sciences are committed to the notion that we are all international students; that we must know and appreciate our culture as well as those of others; and that we must learn to speak and understand a global language.

The Department of Global Languages and Cultures is the heart of international education at Gannon, and every humanities and social science student in a four-year major must take a minimum of six credits of a global language. Students are strongly advised to fulfill this requirement no later than the fall semester of the junior year. International education is additionally enhanced by courses in history, political science, anthropology, sociology, geography, philosophy and literature.

Fields of Specialization

In addition to career preparation through a comprehensive, international education, the Humanities and Social Sciences offers several majors through which students develop the specialized skills of particular professions. The School of Communication and the Arts prepares students for careers in radio and television, while English majors may explore career options in journalism and other types of professional writing. Through programs in political science, social work, psychology and criminal justice, students may develop careers in public service or the private sector. The legal profession is served by the Pre-Law and Paralegal Programs, while the Public Service and Global Affairs Program leads to careers in government, business and industry. Future teachers participate in these programs as students pursuing careers in the secondary education major in the subjects they wish to teach.

Integration of Knowledge

One of the hallmarks of the Humanities education is a commitment to the integration of knowledge and a focus on the interrelationships of the various subject areas. The Departments of Philosophy and Theology play a central role in the synthesizing effort and also perform a special function in the ethical education of Gannon students. They help to develop professionals who are capable of distinguishing between right and wrong in complex situations, enabling students to become moral leaders in our society.

Fine Arts

The Humanities are committed to instilling appreciation of the arts and fostering the development of aesthetic values in our students, including a variety of Fine Arts courses offered through the School of Communication and the Arts. A Fine Arts minor is available. The Schuster Theatre, the Schuster Art Gallery and student poetry readings sponsored by the Department of English provide students with opportunities to showcase their talent and to appreciate the work of their peers. Field trips to the internationally renowned Cleveland Museum of Art and the Albright Knox Gallery in Buffalo, the Erie Art Museum and Erie Philharmonic Orchestra are extraordinarily beneficial to students' cultural growth.

Experiential Education

In the Humanities and Social Sciences, it is accepted that a great deal of student learning can and should take place outside the classroom. We are committed to the idea of the integration of experiential education throughout the curriculum. Students are encouraged to engage in a wide range of activities in service learning, fieldwork, practical research, internships and cooperative education. This is facilitated by Gannon's location in Erie's center, close to City Hall, the County and Federal courthouses, other government offices, numerous businesses, banks, health facilities and non-profit organizations.

Co-Curricular Activities

Many activities are sponsored by the College which complement formal course work and provide opportunities for student leadership. Humanities students organize and lead Gannon's Model United Nations each year and play leadership roles in student publications such as the literary magazine, Totem, and the student newspaper, The Gannon Knight. Cocurricular activities provide the opportunity for students to meet and interact with elite members of various professions and disciplines.

The Faculty

Composed of scholarly teachers whose research is designed primarily for the benefit of the education of our students, the faculty also contribute to their disciplines through research, publication and to the community through professional service. First and foremost, however, they are teachers who challenge and support our students. They are living proof that it is both possible and desirable to be life-long learners. The faculty recognize their responsibility to nurture the curiosity and sense of wonder of our youth and are committed to the idea that we are educating rather than just training our students. More importantly, they are committed to preparing our students to educate themselves throughout their lives. An education in the Humanities and Social Sciences is only the beginning for our students.

ARCHAEOLOGY AND CULTURE

SUZANNE RICHARD, Ph.D., *Program Coordinator*

MINOR IN ARCHAEOLOGY AND CULTURE**Description:**

The Minor in Archaeology and Culture is intentionally interdisciplinary. The minor is structured to complement the Liberal Studies Core at Gannon University. Study abroad is integral to the minor and is structurally ensured, as are exposure to multi-cultural values, a science and technology application and textual analysis.

ARCHAEOLOGY & CULTURE MINOR CURRICULUM OUTLINE

Completion of 18 credits is required to satisfy the requirements of the Minor. In consultation with the program coordinator, the student will develop a Minor focused either on Track 1 or on Track 2.

Cognate Track 1: Near Eastern Archaeology & Culture**Required (12 credits)**

- 3 Foundations of Theology/LTHE 101
- 3 Archaeology Methods and Lab/ARCH 202
- 3 Study Abroad*/ARCH 396
- 3 Archaeology & History of the Ancient Near East/ARCH 201

Electives (6 credits)

- 3 World Archaeology/World History I/ARCH/HIST 302
- 3 Museum Studies/ARCH 304
- 3 Cultural Anthropology/SOC 292 *or* Physical Anthropology/SOC 293
- 3 Special Topics in Archaeology/History/Culture/ARCH 390/HIST 390

Cognate Track 2: Pre-Columbian Archaeology & Culture**Required (12 credits)**

- 3 Colonial Latin American/HIST 271
- 3 Archaeology Methods and Lab/ARCH 202
- 3 Study Abroad*/ARCH 396
- 3 World Archaeology/World History I/ARCH/HIST 302
or Cultures of Mesoamerica/GLOBL 280
or Literature of the Native Americas 1/GLOBL 281
or Literature of the Native Americas 2/GLOBL 282

Electives (6 credits)

- 3 Spanish 111/112
- 3 Cultural Anthropology/SOC 292 *or* Physical Anthropology/SOC 293
- 3 World Archaeology/World History I/ARCH/HIST 302
- 3 ARCH 390 Special Topics in Archaeology *or* HIST 390 Special Topics in History
or Cultures of Mesoamerica/GLOBL 280
or GLOBL 281 Literatures of the Native Americas 1: Pre Columbian and Colonial
or GLOBL 282 Literatures of the Native Americas 2: Postcolonial to Present
- 3 Museum Studies/ARCH 304

***Study Abroad**

- 3 Gannon University Archaeological Expedition to Khirbet Iskander, Jordan
- 3 Gannon University approved Meso-American/Latin American Tour and/or Archaeological Expedition
- 3 Gannon University sponsored-study tour to the Near East
- 3 Gannon University sponsored-study tour to Greece/HIST 394
- 3 Or under special circumstances Internship in the Gannon University Collins Institute for Archaeological Research/ARCH 395

COURSE DESCRIPTIONS

ARCH 201: Archaeology and History of the Ancient Near East

This course will offer a basic survey of the archaeological culture and history of the ancient Near East, including the Biblical Lands of Israel and Transjordan and contemporary societies in neighboring Mesopotamia and Egypt. The purpose of this particular course is specifically to introduce the student to a broad sweep of civilizations, peoples, and ancient lifeways, dating primarily to the Bronze and Iron Ages (4th – 1st millennia BCE roughly). *3 credits*

ARCH 202: Archaeology Methods and Lab

This course will offer a basic introduction to the theoretical and scientific aspects of archaeology. Archaeology relies on a body of theories and methods for reading human prehistory from the incomplete record left by past cultures; likewise in the historical era, this body of theories and methods serves to provide a comprehensive view of ancient lifeways, by including artifact analysis. Topics include techniques of excavation and artifact analysis and classification of materials, e.g., ceramics, objects, lithics, faunal and floral analysis, among others. The course is divided between lecture and laboratory sessions in which students analyze archaeological data.

3 credits

ARCH 302: Becoming Human–Becoming the World

This course intends to study culture continuity and change by concentrating on the most important turning points and developments in Asia, Europe, Africa, and the Americas, covering the time span from Human Origins to the edge of the Renaissance. The orientation is global, the themes integrative, the overall goal being to show interconnections in the development of civilization(s), along with divergence across cultural and societal boundaries. The course stresses the archaeological and textual evidence. Some of the over-arching themes that express both culture and cultural diversity in antiquity include: becoming human, first states, nomadic movements, empires, and universal religions.

3 credits

ARCH 304: Introduction to Museum Studies

This course intends to survey the field of museum studies and introduce the student to the world of museums/historical societies and to various facets of exhibit research, design, and implementation. There will be a “hands-on” component as well as a theoretical underpinning to museum best practices. The course will cover methods adopted by curators and educators in the care and preservation of artifacts, and issues currently debated in the field. Topics include: collection, acquisition, cataloging, and inventorying. There will be a class project in museum exhibit design, utilizing archaeological resources in the Archaeology Museum Gallery at Gannon.

3 credits

ARCH 390: Special Topics in Archaeology

This course focuses on a particular region or topics in the Ancient Near East. Special topics include: The Archaeology Egypt, Prehistoric Civilizations and the Rise of the State, The Archaeology of the Greco-Roman World in the Near East, Archaeological Remains of Religion and Cult in the Ancient Near East, Correlations between the Mediterranean World and the Ancient Near East in the Bronze Age.

3 credits

ARCH 395: Archaeological Laboratory Internship

This internship in the Gannon University Institute for Archaeological Research is designed to substitute for the Summer Study Abroad (ARCH 396) course, under special circumstances. The intent of this internship is to provide the student practice in archaeological post-excavation research, in lieu of actual field experience on an archaeological dig: The intern will, among other things, work on artifact analysis, classification, drafting, restoration, data entry.

3 credits

ARCH 396: Study Abroad

Credit awarded for participation in archaeological field season at Khirbet Iskander, approved study-tour abroad or other approved activities/internships.

3 credits

Liberal Studies Integration

This minor is designed to correlate well with the identified core outcomes of the Gannon University Liberal Studies core. The minor explicitly contributes to the following Liberal Studies Core outcomes:

- Understand major philosophical and theological principles: emphasis on History
- Synthesize and apply principles of science: archaeology methods and lab
- Awareness and appreciation of diverse cultures: study abroad experience

The following course list suggests the various ways in which the courses in the Ancient Near Eastern Studies Minor could satisfy Liberal Studies requirements:

- The Bible: An Introduction: satisfies current LS requirement
- Archaeology and History of the Ancient Near East: can satisfy social science requirement
- Archaeology Methods and Lab: satisfies current science and technology requirement for non-science majors
- Elective: can satisfy current social science elective requirement
- Study Abroad: can satisfy either Fine Arts requirement or social science elective requirement for science majors

SCHOOL OF COMMUNICATION AND THE ARTS

Co-Directors, Shawn Clerkin and MC Gensheimer

FACULTY: Associate Professor: Shawn Jeffery Clerkin. *Assistant Professors*: Jennifer Allen-Catellier, Frank Garland, M. C. Gensheimer, Lindsey DiTirro. *Associate Teaching Professors*: Anne O'Neill. *Assistant Teaching Professor*: Alaina Manchester, Angela Howell. *Instructor*: David Blaetz. *Adjunct Faculty*: Chet LaPrice, Lori Steadman.

The School of Communication and the Arts, located in the College of Humanities, Education and Social Sciences (CHESS) offers students a comprehensive education in digital media, advertising, public relations, journalism and the visual and the performing arts. Faculty members in the school teach the Liberal Studies fine arts courses as well as the courses in Speech Communication.

Mission Statement (School of Communication and the Arts)

The School of Communication and the Arts at Gannon University is designed to prepare students to become accomplished communicators and artists in a variety of professions. Students in the school engage in comprehensive, multidisciplinary education in communication studies, digital media production, advertising, public relations, journalism, health communication, and the performing arts, with emphases on writing, producing, performing, working in teams, and developing adaptability.

Vision Statement (School of Communication and the Arts)

Our vision for the School of Communication and the Arts at Gannon University is to inspire our students to be content creators, message makers and storytellers for one another as well as for Gannon University, the Erie community and the wider business world. We hope that our students come to appreciate the myriad of beautifully transferable and marketable experiences, skills, sensitivities and talents they have developed during their studies. And then learn to generously share those experiences, skills and talents for the affirmation of their creative selves, as well as sharing the gifts with their fellow communicators and communities.

The School of Communication and the Arts offers seven programs of study:

- Advertising Communication
- Digital Media Communication
- Journalism Communication
- Public Relations
- Theatre Performance for Media and Stage
- Theatre Design and Technologies
- Theatre Communication

In addition, the School of Communication and the Arts offers seven minors: Advertising, Digital Media, Journalism, Fine Arts, Music and Culture, Theatre and Communication and Rhetorical Studies.

ADVERTISING COMMUNICATION

ANNE O'NEILL, *Program Director*

The art of advertising has been a part of the selling process for as long as people and organizations have exchanged desired products and services. Today, with a multitude of media attempting to reach targeted audiences, businesses and organizations need to take an integrated approach to the promotions industry. An integrated marketing communication effort combines the promotional mix efforts of advertising, public relations, direct marketing, sales promotion and internet/social media to provide one clear, consistent and targeted message. Gannon's Advertising Communication program, housed in the university's School of Communication and the Arts, provides students an integrated approach with classes, assignments, projects, practica and an internship that draw on all of the promotional efforts to ensure knowledge and skills necessary for career success in the fast-changing world of the integrated promotional industries. The option to double major in Advertising and Public Relations is not available at this time.

Advertising Communication Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First-Year Seminar/COMM 161
- 3 College Composition/LENG 111
- 3 History Without Borders/LHST 111
- 3 Presentational Strategies/SPCH 115
- 3 Introduction to Electronic Media/
COMM 111
- 3 Fine Arts Series

17

Spring

- 3 Critical Analysis & Composition/
LENG 112
- 3 Introduction to Philosophy/LPHI 131
- 3 Integrated Marketing Communication/
COMM 101
- 3 Found of Theology and Christian
Morality/LTHE 101

6
18

SOPHOMORE

Fall

- 3 Global Language I
- 3 Philosophy II Series/LPHI
- 3 TV Production/COMM 211
- 3 TV Radio Performance/COMM 230
- 4 Electives

16

Spring

- 3 Global Language II
- 3 The Bible: An Introduction/LTHE 201
- 3 Emerging Media Marketing/COMM 325
- 9 Electives

18

JUNIOR

Fall

- 3 Media Ethics and Criticism/
COMM 350
- 3 Fundamental Christology, Ecclesiology,
Worship, Bible, Moral, Comparative, *or*
LPHI 237 Phil of Ethical Responsibility
- 1 Leadership Seminar
- 3 Fundamentals of Advertising/
COMM 342
- 3 Internship/COMM 375 *or*
Practicum/COMM 162, 262, & 362
(over several semesters)

$\frac{2}{15}$ Electives

Spring

- 3 Sales Promotion and
Direct Marketing/COMM 349
- 3 Math
- 3 Literature Series/LENG
- 3 Principles of Public Relations/
COMM 372
- 3 Electives

$\frac{15}{15}$

SENIOR

Fall

- 3 Liberal Studies Science
- 3 Advertising Research/COMM 388
- 3 Integrated Marketing Campaigns/
COMM 402

$\frac{6}{15}$ Electives

Spring

- 3 Senior Seminar and Thesis
(LS Capstone)/COMM 400
- 3 Social Science
- 8 Electives

$\frac{14}{14}$

ADVERTISING MINOR (18 Credits)

Persuasive skills are valued in every business. This 18-credit minor focuses on developing an integrated portfolio of skills and projects that would support any promotional process. This dynamic minor would enhance many students' career goals.

- Introduction to Integrated Marketing Communication COMM 101
or Fundamentals of Advertising COMM 342
- Principles of Public Relations COMM 372
- Broadcast Copywriting COMM 321
- Introduction to Sales Promotion and Direct Marketing COMM 349
- Advertising for Electronic Media COMM 381
- Integrated Marketing Campaign Development COMM 402

DIGITAL MEDIA COMMUNICATION

M.C. GENSHEIMER, *Program Director*

Communication skills are valued in every business. As a Digital Media Communication major, you will build the skills necessary to develop a varied communication portfolio, gain valuable real world experience in the field and get a head start on your career. You will learn to design engaging content for a variety of audiences and media. Our experienced faculty will help you to develop your creativity in a challenging and caring environment. The Communication world is exploding with opportunity; as a Digital Media major you will be prepared for a vibrant career. Juniors and Seniors are eligible for professional internships at local media outlets, advertising agencies and corporate offices.

Digital Media Communication Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First-Year Seminar/COMM 161
- 3 College Composition/LENG 111
- 3 History Without Borders/LHST 111
- 3 Presentational Strategies/SPCH 115
- 3 Introduction to Electronic Media/
COMM 111
- 3 Fine Arts Series

17

Spring

- 3 Critical Analysis & Composition/
LENG 112
- 3 Introduction to Philosophy/LPHI 131
- 3 Digital Audio Production/COMM 241
- 3 Found of Theology and Christian
Morality/LTHE 101
- 6 Electives

18

SOPHOMORE

Fall

- 3 Global Language I
- 3 Philosophy II Series/LPHI
- 3 TV Production/COMM 211
- 3 TV Radio Performance/COMM 230
- 4 Electives

16

Spring

- 3 Global Language II
- 3 The Bible: An Introduction/LTHE 201
- 3 Contemporary Issues in Media
and Theatre/ARTS 210
- 3 Digital Graphics/COMM 356
- 6 Electives

18

JUNIOR

Fall

- 3 Media Ethics and Criticism/COMM 350
- 3 Fundamental Christology, Ecclesiology,
Worship, Bible, Moral, Comparative, or
LPHI 237 Phil of Ethical Responsibility
- 1 Leadership Seminar
- 3 Corporate Video/COMM 330
- 5 Electives

15

Spring

- 3 Digital Drawing/COMM 358
- 3 Math
- 3 Literature Series/LENG
- 3 Photojournalism/COMM 252 or
Broadcast News Writing/COMM 411
- 3 Electives

15

SENIOR

Fall

- 3 Liberal Studies Science
- 3 Social Science
- 3 Internship/COMM 490 or
- 3 Practicum/COMM 162, 262, & 362
(over several semesters)

3

15

Spring

- 3 Intermediate Graphics/COMM 359
- 3 Senior Seminar and Thesis
(LS Capstone)/COMM 400
- 8 Electives (8 credits)

14

DIGITAL MEDIA NEXT STEP: 64 Credits total**Degree Program for Graduates of Two Year colleges***(Numerals in front of courses indicate credits)*

PRE- SENIOR YEAR: 33 credits

Fall

| | |
|-----------|--|
| 3 | Introduction to Electronic Media/ COMM 111 |
| 3 | Presentational Strategies/SPCH 115 |
| 3 | TV Radio Performance/COMM 230 |
| 3 | Contemporary Issues Communication and Arts/ARTS 210 |
| 3 | Global Language |
| <u>15</u> | |

Spring

| | |
|-----------|--|
| 3 | Digital Audio Production/COMM 241 |
| 3 | Global Language |
| 3 | Found of Theology and Christian Morality/LTHE 101 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Digital Graphics |
| 3 | TV Production/COMM 211 |
| <u>18</u> | |

SENIOR YEAR: 31 credits

Fall

| | |
|-----------|--|
| 3 | Media Ethics and Criticism/COMM 350 |
| 1 | Leadership Seminar |
| 3 | English Literature |
| 3 | Interpersonal Communication/ COMM 235 |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Elective or Practicum |
| <u>16</u> | |

Spring

| | |
|-----------|------------------------------------|
| 3 | Digital Drawing/COMM 358 |
| 3 | Corporate Video |
| 3 | Senior Seminar and Thesis/COMM 400 |
| 3 | Electives or Practicum |
| 3 | Fine Arts |
| <u>15</u> | |

Next Step

All students graduating from the Humanities must have completed six credits of a Modern Global Language. If a student has not completed six credits of a global language in the associate degree program, he or she must complete them as part of the Next Step program.

Students will be permitted to take other courses in substitution for any course listed above which they have satisfactorily completed prior to admission into the Next Step Program.

Students are required to complete 7-19 credits in the Liberal Studies Core. Students may transfer courses equivalent to Foundations of Theology, Introduction to Philosophy, the Literature Series, and/or the Fine Arts Series. Students must take the Leadership Seminar, the Theology/Philosophy III Series, and the Senior Seminar or approved capstone at Gannon.

NOTE: Some of the courses are taught on a three-semester rotation so the actual timing may be changed.

DIGITAL MEDIA MINOR: 18 Credits

Digital communication skills are valued in every business. A Digital Media minor will provide students with visual skills, aural skills and software competencies that will support any area of digital message making. A Digital Media minor would complement any major available at Gannon.

- COMM 211 TV Production – 3 credits
- COMM 241 Digital Audio Production -3 credits
- COMM 330 Corporate Video Production – 3 credits
- COMM 356 Digital Graphics – 3 credits
- COMM 358 Digital Drawing – 3 credits
- COMM 359 Intermediate Graphics – 3 credits

JOURNALISM COMMUNICATION

FRANK GARLAND, *Program Director*

The Journalism Communication program, housed in the university's School of Communication and the Arts, enables students to master journalistic skills in new and digital media as well as traditional media. Students acquire the reporting, writing, speaking and design skills needed to work successfully in each medium and also tackle theoretical and ethical issues confronting today's media. Students complete practicum classes and pursue internship opportunities where classroom learning is put into practice. The Gannon Knight, which boasts a redesigned website, and WERG-FM and WERGF.com – Gannon's own 3,000-watt broadcast and web streaming station – provide students with valuable hands-on experience. The university also boasts a full TV production, digital editing and multimedia studio used for student instruction. In addition, the Journalism Communication program provides students with internship opportunities with the Erie Times-News, local television affiliates, advertising agencies, radio stations, nonprofit entities and public relations and marketing firms.

Journalism Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First-Year Seminar/COMM 161
- 3 College Composition/LENG 111
- 3 History Without Borders/LHST 111
- 3 Presentational Strategies/SPCH 115
- 3 Introduction to Electronic Media/
COMM 111
- 3 Fine Arts Series

17

Spring

- 3 Critical Analysis & Composition/
LENG 112
- 3 Introduction to Philosophy/LPHI 131
- 3 Digital Audio Production/COMM 241 *or*
TV Production/COMM 211
- 3 Found of Theology and Christian
Morality/LTHE 101
- 6 Electives

18

SOPHOMORE

Fall

- 3 Global Language I
- 3 Philosophy II Series/LPHI
- 3 Writing for Print & New Media/
COMM 214
- 3 TV Radio Performance/COMM 230
- 4 Electives

16

Spring

- 3 Global Language II
- 3 The Bible: An Introduction/LTHE 201
- 3 Contemporary Issues in Media
and Theatre/ARTS 210
- 3 Editing Production of Print Media/
COMM 215
- 6 Electives

18

JUNIOR

Fall

- 3 Media Ethics and Criticism/COMM 350
- 3 Fundamental Christology, Ecclesiology,
Worship, Bible, Moral, Comparative, *or*
LPHI 237 Phil of Ethical Responsibility
- 1 Leadership Seminar
- 3 Feature Writing/COMM 218
- 5 Electives

15

Spring

- 3 Advanced Specialized Reporting/
COMM 216
- 3 Math
- 3 Literature Series/LENG
- 3 Photojournalism/COMM 252 *or*
Digital Graphics/COMM 356
- 3 Electives

15

SENIOR

Fall

| | |
|-------|--|
| 3 | Liberal Studies Science |
| 3 | Social Science |
| 3 | Internship/COMM 490 <i>or</i> |
| 3 | Practicum/COMM 162, 262, & 362 (over several semesters) |
| 3 | Electives |
| <hr/> | |
| 15 | |

Spring

| | |
|-------|---|
| 3 | Media Management/COMM 341 <i>or</i> Broadcast Newswriting/COMM 411 |
| 3 | Senior Seminar and Thesis (LS Capstone)/COMM 400 |
| 8 | Electives |
| <hr/> | |
| 14 | |

JOURNALISM MINOR: 18 Credits

Writing skills are valuable in every business. Skilled journalistic writing requires quality research, thoughtful interviews and an ethical framework. This 18 credit minor will provide students with writing strategies and media insights that would enhance any student portfolio.

- 3 COMM 214 Writing for the Print/News Media
- 3 COMM 215 Editing/Production of Print Media
- 3 COMM 216 Advanced/Specialized Reporting
- 3 ENGL 371 Mass Media and Popular Culture
- 3 COMM 218 Feature Writing
- 3 Electives with instructor approval

PUBLIC RELATIONS

ANNE O'NEILL, *Program Director*

The public relations profession is about influencing, engaging and creating relationships with key audiences to contribute to the way an organization is viewed. The PR professional has skills that will help to offer insights into the development of an organization's message across multiple channels to internal and external publics within the for-profit, not-for-profit and government sectors. Students in this program will develop strategic planning, writing, organizational, digital media and interpersonal skills that will enable them to assist an organization in multiple promotional activities. The option to double major in Public Relations and Advertising is not available at this time.

Public Relations Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|-------|---|
| 2 | First-Year Seminar/COMM 161 |
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Presentational Strategies/SPCH 115 |
| 3 | Introduction to Electronic Media/ COMM 111 |
| 3 | Fine Arts Series |
| <hr/> | |
| 17 | |

Spring

| | |
|-------|--|
| 3 | Critical Analysis & Composition/ LENG 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Integrated Marketing Communication/ COMM 101 |
| 3 | Found of Theology and Christian Morality/LTHE 101 |
| 6 | Electives |
| <hr/> | |
| 18 | |

SOPHOMORE

Fall

| | |
|-------|-------------------------------|
| 3 | Foreign Language I |
| 3 | Philosophy II Series/LPHI |
| 3 | TV Production/COMM 211 |
| 3 | TV Radio Performance/COMM 230 |
| 4 | Electives |
| <hr/> | |
| 16 | |

Spring

| | |
|-------|-------------------------------------|
| 3 | Foreign Language II |
| 3 | The Bible: An Introduction/LTHE 201 |
| 3 | Emerging Media Marketing/COMM 325 |
| 3 | Fundamentals of PR/COMM 372 |
| 6 | Electives |
| <hr/> | |
| 18 | |

JUNIOR

Fall

| | |
|-------|---|
| 3 | Media Ethics and Criticism/COMM 350 |
| 3 | Fundamental Christology, Ecclesiology, Worship, Bible, Moral, Comparative, or LPHI 237 Phil of Ethical Responsibility |
| 1 | Leadership Seminar |
| 3 | Internship/COMM 375 or |
| 3 | Practicum/COMM 162, 262, & 362 (over several semesters) |
| 2 | Electives |
| <hr/> | |
| 15 | |

Spring

| | |
|-------|--------------------------------------|
| 3 | Event Planning/COMM 327 |
| 3 | Math |
| 3 | Literature Series/LENG |
| 3 | COMM 389/Strategic PR |
| 3 | Fundamentals of Advertising/COMM 342 |
| <hr/> | |
| 15 | |

SENIOR

Fall

| | |
|-------|---|
| 3 | Liberal Studies Science |
| 3 | Advertising Research/COMM 388 |
| 3 | Integrated Marketing Campaigns/COMM 402 |
| 6 | Electives |
| <hr/> | |
| 15 | |

Spring

| | |
|-------|--|
| 3 | Senior Seminar and Thesis (LS Capstone)/COMM 400 |
| 3 | Social Science |
| 8 | Electives |
| <hr/> | |
| 14 | |

4+1 BA/MA IN HEALTH COMMUNICATION

DR. JENNIFER ALLEN CATELLIER, *Program Director*

This program allows highly qualified students to complete a Bachelor's and a Master's Degree in five years. All students interested in the 4+1 program must apply to the program in their Junior year. With provisional acceptance they will be able to take three courses during their senior year. Upon successful completion of their undergraduate degree, students will be admitted to the graduate program and will take the remaining graduate courses following their senior year. This option is available to qualified students in any major. The Program Director will provide the course plan.

COURSE DESCRIPTIONS

COMM 101: Introduction to Integrated Marketing Communication

Students will be introduced to the concept of integrated marketing communication (IMC), where the promotional elements of marketing are incorporated into a multidisciplinary approach. An overview of each of the promotional mix elements – general advertising, public relations, direct marketing (including internet marketing) and sales promotion – is presented along with the concept of integration of all the elements for successful promotional management. Marketers in business today need to be proactive while having an understanding of all stakeholders, technologies and communication opportunities involved. IMC addresses

these issues while this course provides the rudimentary knowledge to prepare students for future study and experiences in a specialized area. *3 credits*

COMM 111: Introduction to Electronic Media

This course is a survey of the technological and programming history of Electronic Media inclusive of government, social opinion, and advertising influences from the beginning to present. *3 credits*

COMM 112: Electronic Media Programming

This course will study the theory and technique of programming for radio, television, and internet. Topics include the design and implementation of radio formats and television program schedules with a focus on the marketing and managerial aspects of the program executive's role in station operations. *3 credits*

COMM 161: First-Year Seminar: Practicum in Media and Theatre

Fall Practicum is a "hands on" class in which the students gain one credit for planned discussion sessions and project-based experience in theatre, radio, video and new media. The course will introduce the first-time student to the inner workings of "department people" and "department projects." The student will begin the process of portfolio development, take part in departmental activities, and participate in a final production. *2 credits, Fall*

COMM 162: Practicum in Media and Theatre

Students gain one credit for practical hands-on experience in media and theatre activities on and off campus under the direct supervision of the department's faculty and staff members. *1 credit*

COMM 211: Television Production

This course is a skills orientation in the basic technological considerations of television studio production inclusive of camera operation, lighting, audio, graphics, special effects, switching, and nonlinear editing. *3 credits*

COMM 214 Writing for Print/New Media

This workshop course introduces new students to the basics of journalistic reporting and writing. Students receive practice in how to identify, gather, and write news and make ethical judgments about news. The course should help students who want to work for newspapers and magazines as well as for broadcast and online media. This course is a prerequisite for COMM 216 and COMM 252.

Prerequisites: LENG 111, 112

3 credits

COMM 215 Editing/Production of Print Media

The course introduces students to the production of printed material, whether for newspaper, magazines, advertising, in-house publications, brochures, books, or anything else on paper.

Prerequisites: LENG 111, LENG 112

3 credits

COMM 216 Advanced and Specialized Reporting

This workshop course focuses on specialized news beats including police, courts, government, education and the environment and introduces students to computer-assisted reporting and research techniques.

Prerequisites: COMM 214/ENGL 214

3 credits

COMM 218 Feature Writing

This workshop course introduces students to various genres of feature writing for newspapers, magazines and online publications, including profiles, entertainment pieces and trend stories.

Prerequisites: LENG 111, LENG 112

3 credits

COMM 219: Sports Journalism I

Sports Journalism I is designed to introduce students to several genres of writing often found in the sports pages of newspapers and other publications, both in print and digital formats.

Course work will include short, deadline-oriented assignments such as game stories and advances as well as longer pieces that will require more reporting and rewriting. *3 credits*

COMM 220: Sports Journalism II

Sports Journalism II is designed to build on the skills and knowledge that students gained in Sports Journalism I. Course work will include some short, deadline-oriented assignments, but emphasis will be put on in-depth research and long-form writing that will yield stories suitable for publication. *3 credits*

COMM 225 Philosophy of Communication

An analysis of the epistemological foundations underlying all forms of communicative processes from individual gestures to the electronic world-wide media. Philosophy of communication considers philosophical theories used to analyze, describe, and interpret the process of communication. Basic philosophical assumptions of traditional and contemporary philosophers of communication are examined. This course emphasizes the nature of persons, consciousness, and social exchange related to human communication. *3 credits*

COMM 230: Television and Radio Performance

This course is a practice in the skills of basic performance and broadcast styles, ranging from news and interview formats to dramatic presentation, emphasizing specific talent problems. *3 credits*

COMM 235 Interpersonal Communication

This course develops communication skills in a variety of personal and professional relationships, including friendships, romantic relationships, work relationships, and family relationships. *3 credits*

COMM 240: Leadership Seminar

The Leadership Seminar introduces students to leadership, including a repertoire of leadership skills and means of using those skills responsibly in the various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for students' leadership development as reflected both in this course and in the corequisite Theology or Philosophy Series III course. Individual and team-based assignments serve as the methods for the students to assess, analyze and evaluate their learning style and leadership style, and to demonstrate this knowledge through the completion of a LIFECORE-based major assignment. *1 credit*

COMM 241: Digital Audio Production

This course is a study of audio mixing and editing techniques in commercials, promos, and news applications. Professional material from the RAB will be used in class. *3 credits*

COMM 250: WERGi

The purpose of this course is to develop skills in online/digital media production and performance. Through planning, writing, production, performance and feedback, the student will be able to build a portfolio of quality audio work. This course involves a skill orientation in the basic technological considerations of digital audio production, inclusive of computers, microphones, on-air work, special effects, and editing. There is an additional emphasis on the process of radio show preparation and quality air shift production. Prerequisites: COMM 241 *3 credits*

COMM 252 Photojournalism

This course introduces students to the principles of photojournalism. Students study and practice photojournalism techniques, with consideration of the ethical issues involved with creating and using visual images. Prerequisite: COMM 214 *3 credits*

COMM 262: Practicum in Media and Theatre

Students gain one credit for practical hands-on experience in media and theater activities on and off campus under the direct supervision of the department's faculty and staff members. *1 credit*

COMM 313 Intercultural Communication

Develops students' understanding of cultural, international and global communication in order to be informed and effective global citizens. Students research the influences of history, belief, cultural practices, values, and ethics on intercultural conflict, moving toward a goal of better ethical global citizenship and civic engagement. *3 credits*

COMM 314 Persuasion

This course is a study of the nature and methods of persuasion as they relate to oral communication with emphasis on increasing the student's skill in persuasive speaking and ability to recognize and evaluate persuasive appeals.

Prerequisite: SPCH 111 or SPCH 113 or SPCH 115

3 credits

COMM 321: Broadcast Copywriting

A study of the forms and formats of material suitable for both radio and television with an analysis of selected problems in the commercial uses of the media; practice in selection, adaptation and organization of content and production materials such as film, slides and graphics.

3 credits

COMM 322 Argumentation and Debate

Practice in the art of rhetoric as it relates to persuasive, logical speechmaking. Prerequisite SPCH 111 or SPCH 113 or SPCH 115

3 credits

COMM 325: Emerging Media Advertising

This course will focus primarily on the Internet as an emerging advertising medium. Traditional as well as new developing strategies for the creation and dissemination of persuasive messages, through online promotional campaigns will be analyzed.

3 credits

COMM 327 Event Planning

This course is designed to prepare students going into the promotions, communication, business or sport industries to conceptualize, create, coordinate and implement a variety of events for for-profit and non-profit organizations. Activities will include the conceptualization, establishing objectives, identifying audiences, strategies, logistics, budgeting, management, implementing and the follow up of events.

3 credits

COMM 330: Corporate Video

A survey of the growing uses of video for instructional, institutional, corporate, and public access applications. The emphasis will be on the planning, scriptwriting, production and computer editing of these non-broadcast forms. The editing system software used is "Adobe Premiere Pro".

Prerequisite: COMM 211

3 credits

COMM 342: Fundamentals of Advertising

This course explores the fundamentals of advertising, including: history of advertising; creativity; evolution of integrated marketing communications; marketing and advertising; advertising agency structure; the various media relative to placement and production; influences of computer technology; ethics of advertising; an introduction to the promotional mix elements, sales promotion, direct marketing and public relations (including the Internet); and career opportunities in the industry. Terminology and procedures will be introduced and incorporated in the presentation of advertisements and promotional campaigns.

3 credits

COMM 341: Media Management

A study of the basic principles of management theory as they apply specifically to broadcast station organization, programming, sales, engineering, and the broadcast regulatory environment using both lecture and case study approaches.

3 credits

COMM 349: Introduction to Sales Promotion and Direct Marketing

This is an intermediate level course for Advertising Communication and Public Relations majors, minors and others interested in the promotional mix elements of sales promotion and direct marketing. The course will incorporate an introduction of each and examples of uses in the industry, along with student application projects. The course will explore the fundamentals

of sales promotions and direct marketing activities, how they are used in the industry, why they are used, and how they are integrated with other promotional mix elements. Terminology and procedures will be introduced and incorporated in the presentation of the materials. *3 credits*

COMM 350: Media Ethics and Criticism

An historical consideration of public opinion and the major media critics of the electronic media with practical writing experience in evaluating network television and local radio.

Prerequisite: Junior/Senior status

3 credits

COMM 356 Digital Graphics

This course is an exploration of the theories and skills required for visual electronic communication. Using traditional and nontraditional studio techniques, the student will create a portfolio of digital images. Through the accumulation of sensitivities and skills, the visual communicator will be able to produce messages effectively and efficiently for the electronic/digital medium. *3 credits*

COMM 357: Animation

Animation class is designed to explore the area of visual communication in the digital media, specifically the areas of vector graphics and motion. Through the exploration of various fundamental animation techniques, the student will create a portfolio of moving images and text. Through the accumulation of sensitivities and skills in creating animated visuals, the student will be able to communicate, effectively and efficiently, in the digital and electronic medium. *3 credits*

COMM 358: Digital Drawing

Digital Drawing is a drawing class designed to explore the area of visual communication in the digital media. The student will use both pencil and digital stylus to create images. In addition, the student will explore the relationship between the "objective of the communication" and its influence on the plan for the image. The student will create a portfolio of various vector-based images. The software used is "Adobe Illustrator." Skill in drawing is required. Drawing skill will be part of the evaluation. *3 credits*

COMM 359 Intermediate Graphics

This course is the intermediate level of experience for the student interested in furthering their digital arts portfolio. Using *Photoshop* the course will develop 10 distinct projects using type, layers and the layers adjustment palette, masks, selections and other tools in Photoshop. The basic layout tools in InDesign will also be used to create composite elements for a final project.

Prerequisite: COMM 356

3 credits

COMM 362: Practicum in Media and Theatre

Students can gain one credit for practical hands-on experience in media and theater activities on and off campus under the direct supervision of the department's faculty and staff members.

1 credit

COMM 365: Health Communication

A foundational course introducing students to communication theory and research in a variety of health communication contexts, including interpersonal, organization, intercultural, family and public communication. *3 credits*

COMM 372: Principles of Public Relations

This is an introductory level course on the topic of public relations, a component of the promotional mix elements. Strategies and communication tools will be introduced and studied as they relate to an organization's efforts to communicate with and position itself with its internal and external publics. *3 credits*

COMM 375: Advertising Communication Organizational Internship

Selected students will be able to spend a period of time (150 hours) working as an Intern with an organization. During this period the student will maintain a journal and will meet regularly with a faculty member and a supervisor to provide continuing evaluation of quality and progress of the student's work. At the conclusion of the experience, the student will submit a

paper and portfolio to the supervisor and faculty member and make an oral presentation.

Prerequisite: Senior level

3 credits

COMM 380: Media Law and Regulation

A study of the laws and regulations that comprise the legal environment of broadcasting. The course moves from the historical perspective to current applications of Federal law and FCC Rules and Regulations.

3 credits

COMM 381: Advertising for Electronic Media

A study of skills and theory of Radio and Television advertising salesmanship. Includes discussion of ratings, rate structures, advertising packages, station promotions and role play in sales techniques.

3 credits

COMM 388: Advertising Research

Advertising Research is designed for Advertising Communication majors and minors in the junior year to prepare them for the development, gathering and analysis of research that is used to assist in the creation of promotional messages to targeted audiences. The hands-on course will provide students with a variety of learning opportunities in developing primary research, uncovering secondary research, analyzing results and presenting conclusions.

3 credits

Prerequisites: COMM 101, COMM 340

COMM 389: Strategic Public Relations

Strategic Public Relations is designed to develop the student's public relation skills with an understanding and application of the strategies used in a comprehensive public relations effort. The course will provide to students the opportunity to apply the fundamentals of the industry to an actual identified client. The class will include public relations case studies, issues in the industry (technology, research, ethics) and at the development and execution of a public relations plan. Strategies and communication tools will be studied and applied as they relate to an organization's efforts to communicate with and position itself with its internal and external audiences.

Prerequisites: COMM 101, COMM 372, COMM 214, COMM 215

3 credits

COMM 390-394 Special Topics in Communication

1-3 credits

COMM 395-399 Independent Study

1-3 credits

COMM 400: Senior Seminar and Thesis

Prerequisite: COMM 350 or ARTS 421; Senior status required; For majors only.

3 credits

COMM 402: Integrated Marketing Campaign Development

This course is designed for Advertising Communication major/Public Relations major and minor students to be taken Senior year as an opportunity to integrate their course work in the Advertising Program and Public Relations Program along with their Communication and Liberal Studies courses, and any work, co-curricular or internship experiences, into a comprehensive, original advertising/promotional plan. The completion of the required promotional plan (as a group effort) and portfolio (as an individual effort) will provide students the opportunity to express their creative communication ideas, participate in issues of ethics and morals, apply their knowledge and experience in active listening, apply their knowledge of research, apply their knowledge of the business and promotional industries, apply and develop their analytical thinking abilities, and assist in helping them to determine how their proposed campaign will influence not only their target audience but the world around them.

3 credits

COMM 411: Broadcast Newswriting and Production

An examination of the techniques used in writing material for broadcast in contrast to print, including shaping the spoken message to conform to broadcasting time limitations.

3 credits

COMM 462: Practicum in Media and Theatre

Students gain one credit for practical hands-on experience in media and theatre activities on and off campus under the direct supervision of the department's faculty and staff members.

1 credit

COMM 490: Professional Internship I in TV/Radio/Theatre

A full-semester work experience with a professional communication system. Internships at other Radio/TV stations and advertising agencies available based on student's interests and career goals. Requires recommendation of faculty . 3 credits

COMM 491: Professional Internship II in TV/Radio/Theatre

A full-semester work experience with a professional communication system. Requires recommendation of faculty. 3 credits

PERFORMING AND VISUAL ARTS PROGRAM

Mission Statement

The Performing and Visual Arts program in the School of Communication and the Arts is designed to prepare students to become accomplished artists in a variety of media, including arts appreciation, media performance, music appreciation, theatre performance, theatre technologies and design. Students in the programs (Theatre and Communication Arts, Theatre Performance for Media and Stage, Theatre Technologies and Design majors, as well as Fine Arts and Theatre minors) engage in comprehensive, multidisciplinary education in performing and visual arts including advertising and promotions, digital media production, human communication studies, music and culture, the performing arts, theatrical and stage management, theatrical production and design, and appreciation of the visual and performing arts.

Vision Statement

Our vision for the Performing and Visual Arts program in the School of Communication and the Arts is to provide sound instruction and creative spaces whereby students grow in knowledge of the arts and can explore their crafts, gifts, and skills in many artistic disciplines. By doing so we engage students' intellects and emotions, inspire creative viewpoints by which students look at creation and the loving co-creators that we are to one another, prepare students for careers in the arts and/or careers where transferable skills are employable, and provide the Gannon University and Erie communities with quality artistic experiences that enhance all of our lives.

THEATRE AND COMMUNICATION ARTS

ALAINA MANCHESTER, *Program Director*

For those interested in a hybrid degree, encompassing all the best of what the School of Communication and the Arts has to offer, the BA in Theatre and Communication Arts is the perfect choice. Students are able to gain transferable skills in digital design production, theatrical design, screen and stage performance, theatre management, cultural studies in media and the arts, along with practicums and internships, on and off campus, to apply the skills and learning experiences from the classroom in professional settings with regional professional arts organizations and media outlets, regional for- and non- profit arts organizations, major television network affiliates, and advertising/public relations/website design and promotion creators.

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|----------|---|
| 2 | First-Year Seminar/COMM 161 |
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Presentational Strategies/SPCH 115 |
| 3 | Introduction to Electronic Media/COMM 111 |
| 3 | Introduction to Fine Arts/LFIN 257 |
| <u>3</u> | |
| 17 | |

Spring

| | |
|----------|---|
| 3 | Critical Analysis & Composition/LENG 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Scene Technology/ARTS 112 |
| 3 | Foundations of Theology and Christian Morality/LTHE 101 |
| 6 | Electives |
| <u>6</u> | |
| 18 | |

SOPHOMORE

Fall

| | |
|-----------|---------------------------------|
| 3 | Global Language I |
| 3 | Philosophy II Series/LPHI |
| 3 | Theatre History/ARTS 212 |
| 3 | Fundamentals of Acting/ARTS 140 |
| 4 | Electives |
| <u>16</u> | |

Spring

| | |
|----------|--|
| 3 | Global Language II |
| 3 | The Bible: And Introduction/LTHE 201 |
| 3 | Contemporary Issues in Communication and The Arts/ARTS 210 |
| 3 | Digital Graphics/COMM 356 |
| 6 | Electives |
| <u>6</u> | |
| 18 | |

JUNIOR

Fall

| | |
|----------|--|
| 3 | Introduction to Electronic Media/COMM 111 |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | Principles of Design |
| 5 | Electives |
| <u>5</u> | |
| 15 | |

Spring

| | |
|----------|--|
| 3 | Argumentation and Debate/COMM 322 |
| 3 | Math |
| 3 | Literature Series/LENG |
| 3 | TV Production/COMM 211 <i>or</i> Digital Audio Production/COMM 241 |
| 3 | Electives |
| <u>3</u> | |
| 15 | |

SENIOR

Fall

| | |
|----------|---|
| 3 | Liberal Studies Science |
| 3 | Social Science |
| 3 | Internship/COMM 490 <i>or</i> |
| 3 | Practicum/COMM 162, 262, & 362 (over several semesters) |
| 3 | Electives |
| <u>5</u> | |
| 15 | |

Spring

| | |
|----------|--|
| 3 | Contemporary Issues in Art and Architecture/ARTS 281 |
| 3 | Senior Seminar and Thesis (LS Capstone)/ARTS 400 |
| 3 | Production and Performance in The Arts/ARTS 360-376 |
| 5 | Electives |
| <u>5</u> | |
| 14 | |

THEATRE DESIGN AND TECHNOLOGIES

ALAINA MANCHESTER, *Program Director*

If you have a passion for theatrical design or as a technical artist, then Gannon's theatre design and technologies program provides diverse and extensive experience in stage, costume, lighting, prop and sound design in traditional and digital platforms, along with stage management, production and performance related courses. Here you can develop your technique and craft and learn to promote yourself as a professional artist/technician, for either professional employment or advanced studies in theatre. Students choose one of three tracks. Focus on scenic, lighting and sound design, arts/theatre management, or technical direction. Students can even create their own hybrid of courses to satisfy their personal interests. A community of artists produces more than fifty distinct performances, providing excellent and practical exposure to the job market. Many students have had the opportunity to explore international connections through participation in the International Collegiate Theatre Festival/Edinburgh (Scotland) Festival Fringe. Juniors and Seniors are eligible for professional internships with local theatres including the Erie Art Museum and the Erie Playhouse. It is not possible to double major in Theatre Design and Theatre Performance at this time.

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First-Year Seminar/COMM 161
- 3 College Composition/LENG 111
- 3 History Without Borders/LHST 111
- 3 Presentational Strategies/SPCH 115
- 3 Introduction to Electronic Media/
COMM 111
- 3 Introduction to Fine Arts/LFIN 257

17

Spring

- 3 Critical Analysis & Composition/
LENG 112
- 3 Introduction to Philosophy/LPHI 131
- 3 Scene Technology/ARTS 112
- 3 Foundations of Theology and
Christian Morality/LTHE 101
- 6 Electives

18

SOPHOMORE

Fall

- 3 Global Language I
- 3 Philosophy II Series/LPHI
- 3 Theatre History/ARTS 212
- 3 Fundamentals of Acting/ARTS 140
- 4 Electives

16

Spring

- 3 Global Language II
- 3 The Bible: And Introduction/LTHE 201
- 3 Contemporary Issues in Communication
and The Arts/ARTS 210
- 3 Digital Graphics/COMM 356
- 6 Electives

18

JUNIOR

Fall

- 3 Costume and Make-Up
Techniques/ARTS 252
- 3 LPHI 237 or any LTHE 300 level course
- 1 Leadership Seminar
- 8 Electives

15

Spring

- 3 Argumentation and Debate/COMM 322
- 3 Math
- 3 Literature Series/LENG
- 3 Puppetry/ARTS 253 or
Production and Stage
Management/ARTS 354
- 3 Electives

15

SENIOR

Fall

- 3 Liberal Studies Science
- 3 Social Science
- 3 Internship/COMM 490 *or*
- 3 Practicum/COMM 162, 262, & 362
(over several semesters)
- 3 Electives

15*Spring*

- 3 Contemporary Issues in Art
and Architecture/ARTS 281
- 3 Senior Seminar and Thesis
(LS Capstone)/ARTS 400
- 3 Production and Performance
in the Arts/ARTS 360-376
- 5 Electives

14

THEATRE PERFORMANCE FOR MEDIA AND STAGE

ALAINA MANCHESTER, *Theatre Director*

If you have a love for performance as an actor or as a spokesperson on stage or on screen, then Gannon's program in performance has unlimited possibilities for you with classes in acting, improvisation, television and radio performance and other performance and production related courses. Here you can develop your technique and craft in voice and body communication and performance, as well as learn to promote yourself as a professional artist or a student of further study. The Schuster Theatre and School of Communication and the Arts company creates and shares more than fifty distinctive performances each year which provide excellent exposure to the job market, and some graduates have explored international experiences through our educational partners in Great Britain, Ireland, Italy, and Scotland. Juniors and Seniors are eligible for professional performing arts internships with local theatres including the Erie Playhouse. It is not possible to double major in Theatre Design and Theatre Performance at this time.

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First-Year Seminar/COMM 161
- 3 College Composition/LENG 111
- 3 History Without Borders/LHST 111
- 3 Presentational Strategies/SPCH 115
- 3 Introduction to Electronic Media/
COMM 111
- 3 Introduction to Fine Arts/LFIN 255

17*Spring*

- 3 Critical Analysis & Composition/
LENG 112
- 3 Introduction to Philosophy/LPHI 131
- 3 Scene Technology/ARTS 112
- 3 Foundations of Theology and Christian
Morality/LTHE 101
- 6 Electives

18

SOPHOMORE

Fall

- 3 Global Language I
- 3 Philosophy II Series/LPHI
- 3 Theatre History/ARTS 212
- 3 Fundamentals of Acting/ARTS 140
- 4 Electives

16*Spring*

- 3 Global Language II
- 3 The Bible: And Introduction/LTHE 201
- 3 Contemporary Issues in Media
and Theatre/ARTS 210
- 3 TV/Radio Performance/COMM 230
- 6 Electives

18

JUNIOR

Fall

| | |
|-----------|---------------------------------------|
| 3 | Improvisation/ARTS 340 |
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |
| 8 | Electives |
| <u>15</u> | |

Spring

| | |
|-----------|-----------------------------------|
| 3 | Argumentation and Debate/COMM 322 |
| 3 | Math |
| 3 | Literature Series/LENG |
| 3 | Advanced Acting/ARTS 350 |
| 3 | Electives |
| <u>15</u> | |

SENIOR

Fall

| | |
|-----------|--|
| 3 | Liberal Studies Science |
| 3 | Social Science |
| 3 | Internship/COMM 490 or |
| 3 | Practicum/COMM 162, 262, & 362 (over several semesters) |
| 3 | Electives |
| <u>15</u> | |

Spring

| | |
|-----------|--|
| 3 | Arts Criticism/ARTS 421 |
| 3 | Senior Seminar and Thesis (LS Capstone)/ARTS 400 |
| 3 | Production and Performance in the Arts/ARTS 360-376 |
| 3 | Principles of Play Directing/ARTS 310 |
| 2 | Electives |
| <u>14</u> | |

COURSE DESCRIPTIONS

ARTS 101-106: Mixed Chorus 1-6

Reading, rehearsal and performance of sacred and secular choral literature. Open to all qualified students. One hour rehearsal weekly with performance at the end of each semester. May be taken on a non-credit basis. *1 credit*

ARTS 151-159: Band 1-9

Opportunity for qualified students to perform in the Concert Band. Two-hour rehearsal weekly with performances at the end of each semester. May be taken on a non-credit basis. *1 credit*

ARTS 111: The Collaborative Art of Theatre

A foundations course which specifically considers Theatre as a Liberal Art, focusing on theatre as a multi-cultural phenomenon. *3 credits*

ARTS 112: Scene Technology

An examination of the technologies and practices of theatrical production. Emphasis is given to the interrelationship of the production team and the processes team and processes by which theatre is created. *3 credits*

ARTS 140: Fundamentals of Acting

A laboratory course exploring the fundamental craft of acting. Development of skills in creativity, improvisation, imagination, concentration, and text analysis. *3 credits*

ARTS 201-208: Instrumental Ensemble 1-8

Opportunity for students with instrumental background to perform in small ensembles (string, wind, etc.) *1 credit*

ARTS 210: Contemporary Issues in Communication and the Arts

An introduction to academic theatre and media scholarship forming a critical foundation on which students can formulate opinions based on factual observation and argue various points of view relating to current production in theatre, radio, television, digital communication, and performance studies. This course is both writing intensive and argumentatively provocative. *3 credits*

ARTS 212: Issues in Theatre History

A historiographical survey of the forces which have related theatrical forms. Emphasis on Aesthetic, Social, Political, and Economic influences. *3 credits*

ARTS 213: Issues in Music History

An in-depth study of the interactions between European and American musical life and gender. Students will gain an understanding of the changing ideas of gender roles and performance and how these work together with the development of musical style in various periods. This course explores how women acted as patrons in early music, gender performance, and male vs. female composers. 3 credits

ARTS 215: Problems in Contemporary Art and Culture

The role of modern art criticism, the desacralization of modern art, and the demise of the art object. One seminar meeting per week. 3 credits

ARTS 216: Music in the Theatre

Examines the role of music as an inherent element of drama. The course surveys various forms of musical and dramatic expression and their application in theatrical productions. 3 credit
Prerequisite: ARTS 111/LFIN 250 or LFIN 251

ARTS 221: Renaissance Art

The arts of the so-called "rebirth" of western culture, from the International Style of ca. 1400-256 A.D. and "Late Gothic" style in Northern Europe, through the early and high Renaissance in Italy and their spread northward. 3 credits

ARTS 224: Baroque Art

The development of art and architecture from the change in style ca. 1520 known as Mannerism, through the Baroque and Rococo phases in Mediterranean and Northern Europe. 3 credits

ARTS 226: Modern Art

A survey of the leading movements in painting, sculpture, and architecture during the 19th and 20 centuries. 3 credits

ARTS 228: American Art

The development of American painting, sculpture and architecture from their provincial status in colonial times to their preeminence on the world scene after World War II. 3 credits

ARTS 232: Erie Architecture

A close-up study of the built environment in Erie, Pennsylvania. The course examines the various ways in which architecture shapes the places, in which Erie residents live, work, pray, and recreate. Class sessions are almost entirely outside the classroom and will include tours of important buildings and local architectural firms. 3 credits

ARTS 235: Christian Art and Architecture

A broad survey of the various ways in which Christian faith has been expressed in the pictorial and building arts. Special attention is devoted to the evolution of the Christian place of worship, from the earliest house-church and basilica settings to the high-tech, televangelization centers of today. 3 credits

ARTS 251: Principles of Theatre Design

An exploration of the fundamental principles of design: space, time, composition, etc. Emphasis on creative problem solving and aesthetic development. 3 credits

ARTS 252: Costume and Make-Up Techniques

This course is designed to introduce the student to the basic materials and techniques of theatrical stage makeup. Emphasis will be on basic application of two-dimensional makeup, analysis of character as it relates to physical appearance, the development of a makeup portfolio and morgue, and exposure to more advanced three-dimensional techniques. An examination of costume as part of the character mask completes the overview. 3 credits

ARTS 256 American Popular Music

Aims to introduce students to various types of popular music in America. Throughout the course, participants will consider the basic musical features of popular music as well as its significance in society and culture. Although the bulk of the course will explore music from the

20th century, earlier 19th century influences and popular music of the 21st century inform a significant part of the discussion. By focusing on genres that originated and gained popularity in the United States, the course will work to develop an understanding of the various factors that influence popular music, including changing technologies and social conditions. *3 credits*

ARTS 260: Music and Media

Explores the contribution of music to modern advertising and marketing. The course devotes particular attention to the relationship between audio and visual effects in radio and television advertising. Rhythmic patterns, voice timbre, consonance/dissonance, and melodic devices will be examined. *3 credits*

ARTS 310: Principles of Play Directing

A laboratory exploration of the directing process from play selection and analysis to rehearsal techniques. Emphasis on developing leadership qualities, communication skills, and aesthetic sensitivity. *3 credits*

ARTS 331: Writing for the Stage and Screen

Practical writing experience at transferring ideas into written dramatic forms, including playwriting and critical writing. *3 credits*

ARTS 340: Improvisation

This laboratory course stresses basic improvisation performance skills such as focus, teamwork, mime, character development, status work, story development and scene work. You will develop a number of practical skills that can be applied in almost any real-life situation, including creative problem-solving, quick-thinking skills, spontaneity, interpreting non-verbal communication, resolving conflict respectfully with others, and holding your place while working within a group dynamic. *3 credits*

ARTS 345: Voice and Diction

A practical examination of the voice as a communicative tool. Emphasis on vocal flexibility, breathing, vocal expansion, and a working understanding of the phonetic alphabet. *3 credits*

ARTS 350: Advanced Acting

The course focuses on character development and script analysis for theatrical performance focusing on, but not limited to, American realism. *3 credits*
Prerequisite: ARTS 140 or ARTS 340

ARTS 360-376: Production and Performance in the Arts

A laboratory course investigating the creation/rehearsal and production/performance process of artistic product. Students work independently and/or assume various roles, both on production crew and cast, and are evaluated on the quality of their productivity and participation in the work. The course culminates in public exhibit or show performance and post-performance evaluation, by students and advisors/mentors. *3 credits*

ARTS 380: Art and the Sacred

This course invites students to explore the historic relationship between aesthetic and spiritual experience. While the course focuses primarily on artistic expression in the JudeoChristian tradition, students are encouraged to examine the ways in which other world religions give rise to sacred image-making, music, dance, drama, sculpture and architecture. A fundamental premise of the course is that the arts are, in the Christian sense, both “incarnational” and “sacramental” in that they mimic Jesus Christ’s own enfleshment as “the visible image of the invisible God” (Col. 1:15), and serve as means by which people of faith make contact with the sacred, the transcendent, the divine. The course relies heavily on group discussion of ideas and images related to the topic. As often as possible, students are introduced to the work of local artists, theologians and persons involved in religious ministries and receive firsthand experience of sacred artworks. *3 credits*

ARTS 385: American Architecture

A broad survey of the American architectural tradition. The entire range of American building practices is examined, from the earliest colonial experiments to the latest Postmodern skyscrapers.

3 credits

ARTS 390-394: Special Topics

1-3 credits

ARTS 395-399: Independent Study

1-3 credits

ARTS 400: Senior Seminar and Thesis (prerequisite: ARTS 421)

Prerequisite: ARTS 421

3 credits

ARTS 421: Arts Criticism

A capstone course focusing on ethical, moral, and aesthetic issues. Emphasis on both written and oral application of the principles of criticism to specific problems.

3 credits

FINE ARTS MINOR

The Fine Arts Minor is intended to serve those students who, while not necessarily choosing to pursue professional involvement in the fine arts, nevertheless wish to learn more about the history, theory and practice of the various modes of human creativity. The minor is conceived as a broad, interdisciplinary survey of the expressive arts that places heavy emphasis on the creative act as a way of shaping thought. Guiding students through the minor are faculty members from various academic departments whose own interests lie in the area of creative expression. Students pursuing the minor are encouraged to make use of the University's urban campus and close proximity to such local art resources as the Fine Art Museum, Erie Playhouse, and the Erie Philharmonic.

The minor offers two options or 'tracks' students may take to suit their particular, academic interests:

Track 1: Theoretical

This track consists exclusively of theoretical courses offering participants a broad view of various modes of creative expression and their interrelatedness.

Track 2: Applied

This track requires participants to complete no fewer than two studio-type courses (e.g., Introduction to Photography, Fiction Writing) that challenge them to apply their acquired knowledge of arts theory and history to some creative act. Students opting for Track 2 will be required to present for faculty review a formal portfolio or performance demonstrating growth in their chosen art form.

Course Requirements:

Track 1: Theoretical: 6 credits from Level One, Foundation Course Selection, plus 12 credits from Level Two, Elective Course Selection.

Track 2: Applied: 6 credits from Level One, Foundation Course Selection, plus 12 credits from Level Two, Elective Course Selection (of which 6 must be applied arts.) A non-credit, synthesizing portfolio or performance is also required for successful completion of this track.

Level One – Foundation Course Selection (6 credits)

LFIN 250: Theatre and Culture

LFIN 251: The Art of Listening: Music and Society

LFIN 252: Women in Photography

LFIN 253: The Art of Seeing: Creative Visual Arts

LFIN 254: Art of the Film

LFIN 256: American Popular Music

LFIN 257: The Creative Human Spirit: An Appreciation of the Artistic Impulse

Level Two – Elective Course Selection (12 credits)

Any ARTS, COMM, or LFIN course.

Applied arts courses include:

- ARTS 101-106: Mixed Chorus (1 credit)
- ARTS 151-159: Band (1 credit)
- ARTS 140: Fundamentals of Acting
- ARTS 251: Principles of Theatre Design
- ARTS 252: Costume and Makeup
- ARTS 331: Writing for Stage and Screen
- ARTS 340: Improvisation
- ARTS 360-376: Production and Performance in the Arts
- ARTS 390: Special Topics (1-3 credits)
- COMM 356: Digital Graphics
- COMM 357: Animation
- COMM 358: Digital Drawing
- ENGL 210: Creative Writing
- ENGL 250: Introduction to Photography
- ENGL 312: Poetry Writing Workshop
- ENGL 313: Fiction Writing
- PSYC 300: Psychology of Creativity

MUSIC AND CULTURE MINOR

Undergraduate students with a passion for music and whose vocational trajectory would benefit from the academic exploration of the history and relevance of music in our lives explore various courses in music as popular art form, cultural expression and lucrative business. All of the ARTS courses in the music minor are approved to meet the Liberal Studies Fine Arts series option.

- LFIN 251: The Art of Listening: Music and Society (3 credits)
 - LFIN 256: American Popular Music (3 credits)
 - ARTS 213: Issues in Music History (3 credits)
 - ARTS 216: Music in the Theatre (3 credits)
 - ARTS 260: Music and Media (3 credits)
 - Any ARTS or LFIN Elective(s) (totaling 3 credits)
- 18 credits*

THEATRE MINOR

For undergraduate students with a desire to hone performances for sales, teaching, presentations, etc., or for students whose major would benefit from the applied fine arts minor, the most collaborative of the fine arts.

- ARTS 112: Scene Technology (3 credits)
 - ARTS 140: Fundamentals of Acting (3 credits)
 - ARTS 212: Issues in Theatre History (3 credits)
 - ARTS 251: Principles of Theatre Design (3 credits)
 - ARTS 340: Improvisation (3 credits)
 - ARTS 360-376: Production and Performance in Theatre (3 total credits)
- 18 credits*

Speech – These are the only courses that satisfy the Liberal Arts Speech Requirement

SPCH 110: Technical Communication

This course is an introduction to the exploration of the procedures of preparing a public speech with emphasis on personal credibility, audience analysis, and effective delivery techniques. This course fulfills Gannon University's Liberal Studies Speech requirement for students enrolled in programs approved by the Liberal Studies Committee.

SPCH 111: Public Speaking

This course introduces both the theory and the practice of public speaking in a variety of contexts. Students will develop the communication skills necessary to analyze verbal discourse and perform effectively in a variety of public speaking situations.

SPCH 113: Human Communication & Society

This course introduces both the theory and the practice of public speaking in a variety of professional contexts. Special emphasis is given to public presentations, interviewing and interacting in group meetings.

SPCH 115: Presentational Strategies

This course introduces both the theory and the practice of public speaking in a variety of technologically mediated contexts. Special emphasis is given to students interested in the fields of media and/or performance who wish to develop their performance skills in mediated presentational environments.

COMMUNICATION & RHETORICAL STUDIES MINOR

This 15-credit minor focuses on understanding and developing the traits and strategies of a professional communicator. This minor will benefit the student who desires a career in sociopolitical environments, public relations, or any type of administrative/corporate leadership.

Completion of the following 15 credits will satisfy the requirements for a minor in Communication & Rhetorical Studies.

- 3 Presentational Strategies/SPCH 115
- 3 Philosophy of Communication/COMM 225 *or* PHIL 225
- 3 Interpersonal Communication/COMM 235
- 3 Persuasion/COMM 314
- 3 Argumentation & Debate/COMM 322

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COUNSELING AND HELPING PROFESSIONS MINOR

REBECCA WILLOW, ED.D., *Advisor*

The Counseling and Helping Professions minor is designed to provide basic counseling and helping skills for students who are interested in pursuing a career in behavioral and human service related fields such as Professional Counseling, Social Work and Criminal Justice. Issues such as the diverse needs of human service clients, theoretical frameworks for services and multiple roles of helping professionals will be addressed. The courses included in this minor can also be of use to health professions majors such as Nursing, Physical Therapy and Occupational Therapy.

COUNSELING AND HELPING PROFESSIONS MINOR (18 credits required)

Two Courses Required of All Minors:

- 3 Introduction to Counseling/
PSYC 215 and EITHER
- 3 Helping Relationships/PSYC 307 *or*
- 3 Interviewing Skills/SCWK 360

Choose 12 additional credits from:

- 3 Human Development/PSYC 222
 - 3 Psychopathology/PSYC 232
 - 3 Cross-Cultural Psychology/PSYC 265
 - 3 Psychology of Women/PSYC 275
 - 3 Psychological Assessment/PSYC 308
 - 3 Group Dynamics/PSYC 309
 - 3 Adulthood and Aging/PSYC 314
 - 3 Psychotherapy Theories/PSYC 362
 - 3 Personality Theory/PSYC 372
 - 3 Human Diversity/SCWK 230
 - 3 Counseling Older Adults/SCWK 316
 - 3 Drugs of Abuse/SCWK/CRJS 328
 - 3 Victimology/SCWK/CRJS 333
 - 3 Mental Health and the Elderly/SCWK 336
-
- 18

All course descriptions are available in the corresponding sections of the catalog.

CRIMINAL JUSTICE

JULIA MACK, Ph.D., *Program Director*; CHRIS MAGNO, Ph.D. *Chair*

FACULTY: Associate Professors: Gerald Clark, Christopher N. Magno Assistant Professors: Julia Mack. Teaching Professors: Ted Yeshion. Instructors: Jason Wick, Keith A. Hardner. Adjunct Faculty: Erik Christensen, David Conde, Paul Gambill, Jon McEnroe, Jeffrey Shaw, Ann Stancliff, Anne Slyn, John Trucilla.

Vision

The faculty in the Criminal Justice Program (CRJS) is dedicated to teaching students how to search for truth and justice by applying theory, practical investigative knowledge, and ethical reasoning in the effort to improve society.

Mission

The Criminal Justice Program (CRJS) at Gannon University is an interdisciplinary, undergraduate major that is dedicated to education, research, and service in the fields of criminal justice, public safety, and social justice. With the capacity to develop graduates who have intellectual curiosity, moral commitment and professional competence to confront the challenges of crime and justice, CRJS strives to provide students with critical thinking and effective communication skills as well as to cultivate their capacity for personal growth and creative problem solving.

Goal

- Students will demonstrate the research, investigative and forensic skills important for working in justice or a related field.
- Students will integrate explanations of crime and deviance and how to apply them to various types of crime.
- Students will demonstrate a critical understanding of the systems, processes and innovations in criminal justice.
- Students will be able to analyze moral and ethical complexities and to find suitable resolutions.

- Students will apply research, knowledge, data analysis and computer skills to examine problems associated with crime, deviance and justice.
- Students will critically analyze issues of global diversity in terms of race, ethnicity, gender and class in relation to crime and crime control.
- Students will utilize professional skills necessary for career exploration and preparedness.

Curriculum

Consistent with contemporary standards of education in Criminal Justice, our curriculum emphasizes the need for students to be exposed to the most significant areas of study in the criminal justice system – law enforcement, policing, corrections, probation, parole, juvenile justice, criminal law and criminology. In each of these areas, course offerings stress both theoretical concepts and practical applications. As a complement to classroom experiences, the program requires students to engage in experiential learning such as field placement, internships and service-learning projects. These allow the student to observe the day to day operation of specific agencies.

In addition to preparing students for their initial criminal justice careers, the Criminal Justice Program provides students with a solid academic foundation for subsequent graduate education in criminal justice, related social science disciplines and law.

There is an increasing need for para-professionals to earn a minimum of an Associate Degree to gain entry into the criminal justice system or related occupations. **The Criminal Justice Program offers an Associate Degree (AA) in Criminal Justice.**

Recognizing the importance of language proficiency among criminal justice professionals has led to the development of a special sequence of language courses necessary for degree completion in the area of Criminal Justice. The Department of Global Languages and Cultures in conjunction with the Criminal Justice Program offer the opportunity to acquire relevant language skills and familiarity with the associated culture, sufficient to enhance effective communication in criminal justice settings. The Criminal Justice Program highly recommends Spanish fluency for its students. Criminal Justice majors are encouraged to develop competency in this language as a means of broadening professional skills and expanding employment opportunities.

All criminal justice students are encouraged to concentrate their general elective courses to pursue minors or second majors in areas which enhance career goals, such as global language, social and behavioral sciences, business administration, computer science and chemistry/ biology sequences.

COURSE DESCRIPTIONS

Act 120: Opportunity

Act 120 is the 6-month police officer training program required by the state. As a requirement to become a local police officer, individuals are required to have their Act 120 certification, which is awarded through the Municipal Police Academy. Students interested in becoming a local police officer for the state of Pennsylvania have an opportunity to attend the Municipal Police Academy which is affiliated with a local University. During this experience, students are able to earn 15 general elective credits through Gannon while also obtaining their Act 120 certification, all without having to transfer schools. It is recommended that interested students attend the academy during senior year, therefore it is important to work closely with your advisor and program director early in your academic career to ensure that all required coursework is completed before attending the academy. There is a lengthy application process to attend the police academy, please work with the program director to obtain all relevant information.

CRJS 101: Defense Tactics and Safe Physical Management

This course is designed to focus on the application of the use of force by criminal justice personnel and the benefit that traditional martial arts can have in carrying out this aspect of law enforcement/criminal justice responsibility. Law enforcement agencies advocate a use of force continuum that indicates options available in response to levels of resistance that may be encountered by enforcement personnel. This course has been developed to meet the needs of students that are anticipating careers in criminal justice agencies. Students from other academic disciplines will also derive benefits in the use of personal self-defense. CRJS 101 is intended to be a general elective for criminal justice majors. *3 credits*

CRJS 108: First-Year Seminar: Issues in Crime and Justice

Applied Concepts in Crime and Justice is a First-Year Seminar that is required of all CRJS students and open to all students at Gannon University. This is a discussion/experience-based course intended to orient the new student to Gannon University, to introduce the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life, and to encourage development of academic, personal and spiritual aspects of the student's life. This course is unique to the investigation of crime and justice issues and ethical responsibility. The course is offered in the freshman year and is designed to help make your first year of college a positive experience and prepare you for (4) years of success at Gannon University and the Criminal Justice Program. *2 credits*

CRJS 110: Introduction to Criminal Justice

This course introduces students to the field of criminal justice through the examination of police, courts, and correctional arenas. It includes a review of historical data, statistical information, and evaluation of criminal justice system policies, procedures, and trends. Students learn the terminology of the field, gain an awareness of the methods of inquiry utilized in the field, and have the opportunity to examine personal attitudes and values regarding crime and responses to crime. Students will examine how criminal justice decision making involves a delicate balance between community and individual rights as it responds to crime in society. *3 credits, Fall, Spring and Distance Learning (Internet)*

CRJS 201: Correctional Process

Analysis of punishment in our criminal justice system, with focus on why we punish and how we punish, all examined within the context of correction philosophies. The history and development of corrections, including relevant theories, practices, systems analysis, and treatment modalities is also evaluated.

Prerequisites: CRJS 110

3 credits, Fall and Spring

CRJS 202: The Police Function

An introduction to American policing that will provide an analytical framework for understanding the police as a product of a balance of social, historical, political, legal, individual, and organizational forces. The course will examine theoretical propositions about the police in light of current research literature and analyze the three major functions of policing in the United States: law enforcement, service provision, and the maintenance of order. The legal parameters of policing and police administration are reviewed in relation to contemporary issues that pose substantial challenges to police officers and administrators and finally probes contemporary concerns and future challenges such as the critical issues of deadly force, AIDS, affirmative action, and police deviance. The student will also explore the contemporary police industry including public and private agencies at the federal, state and municipal levels. *3 credits*

CRJS 205: Principles of Private Security and Loss Prevention

An introduction to principles of private security and loss prevention, including the history and role of private security; threat assessment and security survey; and principles of physical security, including personnel security and functional area security systems. This course will also focus on the legal aspects of private security, touching on civil and criminal liabilities. *3 credits*

CRJS 210: Criminalistics I: Introduction to Investigative Forensics

An introduction to Forensic Science course that introduces the non-scientific student as well as the science based student to the field of forensic science through an exploration of its applications to criminal investigations, with clear explanations of the techniques, abilities, and limitations of the modern crime laboratory. Forensic science is the application of science to those criminal and civil laws that are enforced by agencies in a criminal justice system. This course will familiarize the student with the most current technologies in forensic analysis that private, police and law enforcement professionally rely on to approach criminal perpetrators and to link them through trace evidence to crime scenes. You will also be introduced to the various forensic sciences that make up a typical full service crime laboratory and the role it plays as part of the criminal justice system. This course will also provide students with insight into the issues surrounding physical evidence; introduce students to basic concepts and encourage their exploration of latest websites. Actual cases enable students to see the role of forensic science in criminal investigations and highlight the integral part forensic science plays in modern criminal investigations. *3 credits*

CRJS 212: Intro to Forensic Psychology

Forensic Psychology is generally defined as the application of the science and profession of psychology to issues relating to law and the legal system. This course is intended to provide an overview of the various applications of psychology to forensic settings. This course focuses on the production and application of psychological knowledge and research findings for the civil and criminal justice systems. The student will explore criminal profiling, crime scene investigations, and serial murders. Based on this applications approach, the course also investigates police psychology, legal psychology, psychology of crimes and delinquency, "victimology" and victim services, psychological assessments, mental disorders, and correctional psychology.

Prerequisite: CRJS 110 and PSYC 111

3 credits

CRJS 230: Juvenile Delinquency and Adolescent Development

This course examines delinquency in American society, the history of delinquency and major theoretical concepts that have been utilized to explain criminal behavior and juvenile delinquency with suggestions for the future. Ethnographic research methods will be utilized to identify behaviors and place qualitative meaning to the observed behaviors. *3 credits*

CRJS 240: Criminological Theory

This course is designed to provide an overview of the scientific study of crime as a social phenomenon of criminal behavior. Criminological theory will be addressed from a sociological perspective and issues related to the measurement and extent of crime. The major schools of thought will be discussed utilizing the founders of each school and supplementing their premises with supporting criminology research. *3 credits, Spring*

CRJS 241: Cyber Crime and Society

This course introduces students to the co-evolution of cyber society, cyber-crime and cybersecurity. It will provide a broad overview of history, socio-political relations, economics, social structure and culture in cyber space. The course also will examine cases of cyber offenses. Students in this course will gain familiarity with laws designed to control cyber-crime and terminology used in talking about cyber-crimes. Students also will critically analyze cyber laws and regulations and consider how these codes delimit freedom of expression and violate human rights in cyber space. *3 credits*

CRJS 242: Careers in Criminal Justice

This course provides an overview of the field of Criminal Justice, designed to orient students to the Criminal Justice major and how best to tailor it to meet their interests and professional goals. Topics to be covered relate to locating, obtaining, employment opportunities and maintaining careers, resume writing, and professional involvement in Criminal Justice. Potential careers to be discussed include those in Law Enforcement, Corrections, the Court System, Juvenile Justice and other security related careers. Professional concerns such as stress, promotion and civil service requirements will also be addressed. *3 credits, Fall and Spring*

CRJS 250: Criminal Justice Research Methods

This course is designed to introduce the student to the basic concepts, terminology, and techniques germane to criminal justice research. More specifically, the student will become familiar with both qualitative and quantitative research designs, formulating research hypotheses, asking appropriate questions on a survey or interview, data recording, data analysis, and ethical responsibilities. The skills acquired in this course will be beneficial for both the future graduate student and the criminal justice practitioner.

Prerequisite: CRJS 240

3 credits, Spring

CRJS 261: Introduction to Crime Mapping

Crime is often a function of time and place, the right or wrong people coming together at a specific location at a particular time. Certain areas in cities and towns draw criminals for the purpose of committing crimes, while others draw people for non-criminal reasons and simply increase the number of potential victims for those seeking a criminal opportunity. Place plays a large role in police decisions about enforcement and special projects. Crime hot spots are identifiable and require specific types of enforcement and programs to decrease criminal activity in those areas. Students who take the class will deepen their knowledge of theories of environmental criminology, criminogenic and non-criminogenic land use, as well as place based crime prevention. Students will gain practical experience in geographical profiling and crime mapping.

3 credits

CRJS 302: Contemporary Correctional Programs

This course introduces the student to modern American correctional programs. It examines the nature of programs as well as a wide variety of contemporary programs, both inside and outside institutions, judged to be exemplary by correctional professionals. This course provides a broad overview of effective correctional treatment as well as career opportunities in the field. Through research, class presentations and a paper focusing on one effective program per student, this course will expose the student to both the variety and complexity of modern correctional programs.

Prerequisites: CRJS 110, 201

3 credits

CRJS 303: Issues in Law Enforcement

Topics of current interest will be discussed, including police-community relations, police decision-making, and concepts in police practice and administration.

Prerequisite: CRJS 110

3 credits

CRJS 304: Issues in Corrections

This course will focus on alternatives to traditional modes of incarceration, current trends in the treatment of offenders and innovations and problems in correctional administration. *3 credits*

CRJS 310: Investigative Concepts

This course of study should help the Criminal Justice student to gather and analyze data gathered in the process of criminal and civil investigations including: investigative techniques, photography, note taking, sketching; identifying, collecting, examining, processing physical evidence; obtaining information, developing, identifying and locating suspects.

Prerequisites: CRJS 110 or CRJS 210

3 credits, Fall

CRJS 315: Introduction to Criminal Law

This course is a generic study of criminal law in the United States, and does not cover any specific federal or state law. Topics include principles of criminal law, principles of criminal liability, complicity, inchoate crimes, defenses, justifications, excuses, crimes against persons, crimes against property, and crimes against public order. (No prerequisites)

3 credits

CRJS 320: Criminal Law and Procedure

This course examines the dynamic balance of the power of the government (to enforce the criminal law) against the rights of the individual to come and go as they please without government interference. Additionally, we will study about judicial review, constitutional supremacy, and the protections of state constitutional rights concerning criminal procedure as related to federal constitutional protections. The course will cover the area of search and seizure

law, its current status as well as its historical development (through the tracing of case law); the ever-changing laws on interrogation, confessions, identifications, and courtroom procedures such as right to counsel, right to jury trials, the laws governing sentencing and direct and collateral attacks on convictions. There will be a review of the remedies afforded by law to an individual when the government violates the rights its constitution and statutes provides. This is a required Criminal Justice Upper level core course.

Prerequisite: CRJS 110 or CRJS 210

3 credits, Spring

CRJS 321: Criminal Evidence

This course provides a thorough study of the evidence rules, with specific emphasis on the application of these rules in preparing and presenting evidence. This includes a discussion of the history and approach to the study of evidence; proof by evidence and substitutes; general admissibility tests, including relevancy and materiality; opinion and expert testimony, and hearsay rule; evidence by way of witness testimony, documents, scientific and real evidence; and exclusion of evidence on constitutional grounds. For better understanding of the evidence rules, judicial decisions are cited and some are included in Part II of the required text. This is a Criminal Justice upper level Elective course.

Recommended but not required: CRJS 110, 320

3 credits

CRJS 322: Correctional Counseling and Case Management

An examination of strategies for affecting offender behavior change by correctional counseling and case management in both institutional and community based settings. Emphasis will be on functional and contemporary approaches. CRJS elective.

Prerequisite: CRJS 201

3 credits

CRJS 324: Issues in Criminal Justice

This course will examine the nature and extent of crime in society. It will emphasize issues selected from, but not limited to, crime prevention/crime control, emerging patterns of offending and incarceration, and the globalization of crime. Primarily discussion/seminar oriented.

3 credits

CRJS 325: Culture Diversity in Criminal Justice

This course analyzes various issues related to the intersections of gender, race, class, crime and the administration of justice in the United States and other countries. The course focuses on overt, institutional, and subtle racism; gender and class bias; and structural discrimination as well as the relationship of all of these phenomena to social justice. The course examines critical cases that illustrate how gender, race and class influence participation in crime and how the criminal justice system processes members of groups who experience discrimination on the basis of their gender, race and/or class.

3 credits

CRJS 326: White Collar, Occupational, and Organized Crime

The focus of this course is crime committed in professional organized and other occupational settings. The emphasis will be on current research and case histories, and will include material on etiology and law enforcement. CRJS elective.

3 credits

CRJS 327: Gangs in Society

This course will examine contemporary gangs, gang life and law enforcement efforts to study and coordinate the community's response to them. A wide variety of topics and issues will be covered, including: female gangs and ganging, ethnic diversity, economic, neighborhood, and school gang behavior; gun and drug relationships, and research methods used in the study of gangs. There will also be discussions on recruiting, gang identification, gang slang, graffiti, and major national gangs.

3 credits

CRJS 328: Drugs of Abuse

The U.S. has the highest rate of drug abuse of any industrialized country in the world. This course is designed to provide the student with a broad understanding and insight into drug use and abuse with American society and its impact upon society in general. Students will gain an understanding on current trends in drug use, specifically the types of drugs on the American market today and how they are used and abused. The primary focus will be on how

the criminal justice system attempts to deal with the nation's drug problem. The course will focus on the drug themselves, interdiction, drug enforcement policy, drug courts and drug abuse treatment. *3 credits*

CRJS 330: The Juvenile Justice System

This course will provide an overview of our juvenile justice system. Students will review the history, theories and origin of juvenile justice. Consideration will be given to influential factors and explore various causes that contribute to delinquent behavior. This includes issues confronting status offenders as well as deprived, dependent, neglected and abused children. Our approach will include issues of early development by the family, school, community and peer relationships. Throughout the course, we will examine these behaviors and take into account several variables. These variables will be analyzed to determine how they contribute to proper development and/or anti-social behavior. The course will examine victim's rights and the roles of law enforcement, juvenile courts, probation officers, and social workers. Discussions will focus on the community service providers, preventative techniques and treatment modes, each of which are aimed at impacting the dependent/delinquent youth. *3 credits*

CRJS 332: Alternative Social Control Systems

This course develops a critical understanding of crime and justice. In the field of criminal justice, the course's critical stance is called "Radical Criminology." The main emphasis of this course is to critically examine concepts and practices related to crime and justice. We will consider an alternative way of defining crime that includes "the crimes of imperialism, the crimes of capitalism, the crimes of racism, the crimes of sexism, and crimes by the state" (Krisberg 1974). We also will explore alternative ways of controlling crime that do not involve punitive, oppressive, and violent responses. These alternatives include nonviolent interventions such as mediation, peacemaking, and community reconciliation. In order to figure out which alternatives might be most effective in preventing crime, we will examine societal contexts in which crime arises by looking at what crime is through the lenses of poverty, class, gender, capitalism, imperialism, terrorism and racism. In this course we also will explore new ways of understanding crime and justice from the viewpoint of "new criminology", which includes Peacemaking Criminology, Green Criminology, Postcolonial Criminology, Black Criminology, and Buddhist Criminology. *3 credits*

CRJS 333: Victimology

This course will examine the plight of victims including child maltreatment, domestic violence, victimization at work and school. It further explores the extent of homicide victimization. In reviewing the above mentioned topics, guest speakers with expertise in these areas will present their viewpoints on the extent of victimology. Throughout this course, the BARJ principle will be the focus in balancing the victim's role in the criminal justice system. *3 credits*

CRJS 335: Administrative Management of Criminal Justice Agencies

This course introduces the student to the realities of both administration and management of criminal justice agencies in contemporary America. It provides a comprehensive perspective regarding interpersonal skills, basic management techniques, training, motivating and supervising and appraising others, dealing with difficult people, and getting things done through others. This is a CRJS upper level elective.

Prerequisites: CRJS 110, 201 *3 credits*

CRJS 336: Introduction to Terrorism

This course provides an overview of terrorism as it relates to the discipline of criminal justice. Murder, theft, kidnapping, weapons violations, destruction of private and public property are all crimes encompassed by terrorism. Terrorists are criminals and terrorist organizations are similar to other criminal groups. Because of this, a criminological approach to terrorism can assist in the development of antiterrorism and homeland security policy, as criminological theories identify many of the root causes of terrorism. This course will cover international groups, agro and environmental terrorism, and narco-terrorism. CRJS majors/minors. *3 credits*

CRJS 340: Seminar: Women and Crime

This course examines how the Criminal Justice System, and the influences of formal and informal social controls to which women have been subjected. Historical perspective is integrated with contemporary reality, and attention is focused on women as professionals, offenders, and victims. Theoretical perspectives on gender inequality will be explored by reviewing the strengths and the limitations of traditional Social Theories. Marxism, Rational choice theories, Psychoanalysis, Ethnomethodology, and Expectation states theory will be some of the theories reviewed. This is a CRJS upper level elective and an accepted course in the Women's Studies minor. 3 credits

CRJS 341: Basic Firearms and Law Enforcement Application

This course trains students in basic firearm techniques, proper shooting principles and proficiency in handling some types of handguns, shotguns and rifles. Students learn handgun safety, care and cleaning techniques. Students also acquire an understanding of general laws regarding firearms. Students become familiar with the physical components of shotguns and rifles. They will be able to successfully draw on weapons nomenclature to identify each type of gun and will develop the ability to handle firearms effectively and safely in various settings. In addition, each student will acquire proper loading, unloading and shooting techniques associated with general marksmanship, law enforcement, and long gun shooting through a combination of lectures, classroom dry fire drills and live fire exercises at the firearms range. The course also uses videos and photos of actual gunshot wounds to familiarize students with the capabilities of various firearms. Availability for course is restricted to upper level criminal justice majors and others only by permission of the Director of the Criminal Justice Program. 3 credits

CRJS 345: Digital Evidence

This course is designed to introduce the student to the basic concepts, terminology, and techniques germane to electronic crimes and techniques for the investigation of those crimes, find, identify, and preserve evidence of the crime. More specifically, the student will become familiar with criminal and civil law governing search and seizure of digital evidence. The skills acquired in this course will be beneficial for both the future graduate student, intelligence analyst, and the criminal justice practitioner. 3 credits

CRJS 350: Criminal Justice Ethics

An introduction into the application of ethical theories relevant to the practice of the criminal justice system. The course is designed to focus upon and emphasize the most significant moral issues faced by criminal justice professionals today. The student will be required to conduct a detailed examination of these issues and to apply the various ethical theories, codes, and canons to arrive at a moral decision. CRJS majors/minors. Upper level.

Prerequisite: CRJS 110

3 credits, Fall

CRJS 351: Arson

This course provides an overview of the procedures for determining the origin and cause of accidental and incendiary fires. Topics include collection, preservation, and submission of evidence, documentation of the fire scene, detection and determination of ignitable liquids, courtroom procedures and testimony. Recognition of evidence, proper use of standards, and chain of custody issues important to the fire scene investigator will be described as well as examples provided when fire science is not properly used in investigations. The role of the crime laboratory as part of the criminal justice system will be discussed. CRJS majors/minors. Upper level elective.

Prerequisite: CRJS 210

3 credits

CRJS 352: Wrongful Convictions

This course examines the substantive causes of wrongful convictions and evaluates reforms to reduce the frequency of these unjust cases. Topics of study generally include the role of police, prosecutors, defense lawyers, and forensic scientists in wrongful convictions. In addition, phenomena such as unreliable witness identification, contaminated confessions, and snitch

testimony will be investigated. Students will review and discuss historical and contemporary cases and explore related ethical issues focusing on wrongful convictions and the death penalty. Upper level elective.

Prerequisite: CRJS 210

3 credits

CRJS 360: Criminal Justice Statistics

Statistics are used (and misused) in the criminal justice system on a regular basis. This course is designed to familiarize students how data is collected and analyzed in the criminal justice field so that students are comfortable with performing the quantitative tasks that will be required of them as practitioners in the criminal justice system. This course is open to all majors/minors.

No specific prerequisite is required, but an understanding of basic mathematical functions is expected.

3 credits

CRJS 361: Crime Scene Forensic Techniques

This course is designed to help you collect and process physical evidence correctly, analyze it thoroughly, and understand its relevance in a criminal case. There is a strong focus on a systematic approach that uses proven, reliable methods for field applications in the investigation of criminal cases and evidence collection. Traditional and new technologies will be discussed in the framework of actual cases. This is an essential hands-on course for everyone involved with physical evidence, from the first responding officers, to crime scene processors, laboratory technicians, investigators, and attorneys trying a criminal case. The students will be exposed to the newest chemical and instrumental techniques, and covers new areas such as forensic analysis of computers and advanced shooting scene reconstruction methods.

Prerequisite: CRJS 110 or CRJS 210

3 credits

CRJS 362: Expert Witnessing

This course incorporates the court's concern with reliability, relevance, and the admissibility of expert testimony along with the proper court room demeanor. It will also define the avenues of attack used by opposing attorneys regarding expert qualifications and examine the significance of the expert's use of sophisticated technologies to present demonstrative evidence in the courtroom. The student will explore the increased importance of deposition testimony by experts in the light of the recent trend to mediate and settle cases, rather than go to jail. Case studies are provided for the student's critique and analysis. Actual courtroom testimony for forensic scientists and crime scene investigators will be studied and critiqued. In-class mock crime scene investigations will be conducted resulting in scientific findings. These findings will be thoroughly discussed and the student will have an opportunity to present his/her findings in 'court'.

Prerequisite: CRJS 210

3 credits

CRJS 363: Digital Evidence/Computer Crime

This course is designed to introduce the student to what investigators do to collect, preserve, and authenticate digital evidence. How the legal admissibility of digital evidence can be assured and how digital evidence can be used to reconstruct crimes and generate leads.

This course is important to train criminal justice students, police, lawyers, programmers or System administrators, and forensic scientists involved in the investigation or prosecution of Computer-related crimes. The course will provide step-by-step instructions for dealing with an assortment of evidentiary problems and will also illustrate how these details fit within the broader contexts of forensic science, crime, and society in general. The difficult balancing act between a secure computing environment and individual privacy will also be evaluated.

3 credits

CRJS 364: Investigation Internet Crime

The objective of this course is to teach students about technical aspects of the Internet and how the Internet can be used as an investigative tool. As detailed in the syllabus, this is a demanding technical course, requiring participants to submit weekly assignments to demonstrate their understanding of the materials. Topics covered include advanced Internet searching, locating the origin of e-mail messages, tracking criminals who operate on chat networks, investigating

computer fraud and intrusions, and dealing with personal computers as an extension of the crime scene. Articles and case examples are used to give a sense of current crimes and law enforcement efforts on the Internet. The course ends with a final investigative assignment that ties together many of the lessons and techniques taught throughout the course. *3 credits*

CRJS 365: Principles of Forensic (Kinesic) Interview and Interrogation

Kinesic interview and interrogation is viewed as a multiphase behavioral analysis system used to conduct more effective and efficient interpersonal communications. The foundation of the techniques used in this course is to conduct more effective and efficient interpersonal communications. This technique rests on the observation of common everyday behavior of human beings and their diverse communication abilities. The course will explore principles of basic kinesics in terms of speech and body language, and also the same behaviors exhibited in written statements. It is suggested that speech and body language behaviors can give insight into the individual's personality type, indicating the "psychological fingerprint" of the person. By combining the information received through diagnosis of verbal and nonverbal behavior with this psychological fingerprint, an interviewer can conduct an interview and interrogation that is specifically tailored for the subject. *3 credits*

CRJS 366: Biological Evidence

This course focuses on the biology and technology behind serology and a DNA analysis method used today and provides a thorough introduction to students who are less familiar with biological evidence and DNA. This comprehensive course provides an overview of conventional Forensic Serology and DNA Profiling and the role of this section of the crime laboratory as part of the criminal justice system. Evidence collection and preservation, acquisition of known standards for comparison purposes, chain of custody issues and crime scene reconstruction techniques will be discussed. Safety issues regarding biological hazards will also be reviewed. This course concludes with reviews of the DNA testing performed in high-profile cases such as the O.J. Simpson trial, the President Clinton-Monica Lewinsky affair, identifying the remains of Russia's Romanov family and the Tomb of the Unknown Soldier, the Thomas Jefferson-Sally Hemings affair, and others.

Prerequisite: CRJS 210

3 credits

CRJS 390-394: Special Topics in Criminal Justice

1-3 credits

CRJS 395-399: Independent Study

By permission only.

1-3 credits

CRJS 490: Internship Field Placement

An opportunity for students to engage in participant observation, task performance or other related activities in an agency of the criminal justice system. The student is required to engage in such activities for a minimum of 10-20 hours per week during an entire semester. Open only to students with a minimum QPA of 2.5 and who have completed 15 credit hours of the criminal justice concentration.

Prerequisite: CRJS 110, 201. By permission only.

1-12 credits, Every semester

CRJS 495: Criminal Justice Capstone/Senior Seminar

This course examines the current status of the criminal justice system, specifically what constitutes a healthy community and how communities respond to crime and the reintegration of ex-offenders. We will analyze assets and pitfalls of communities as well as the programs and pitfalls to successful reintegration of ex-offenders. Students will be able to apply what they have learned in both a descriptive paper and a presentation format. Further-more, students will complete professional development activities. Students will also engage in a service learning project or conduct a neighborhood assessment of crime. The Criminal Justice Capstone course is interchangeable for the LS 383 requirement.

Prerequisites: CRJS 240, 250

3 credits, Spring

Criminal Justice Curriculum*(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

| | |
|-----------|--|
| 3 | College Comp/LENG 111 |
| 3 | Foundation of Theology/LTHE 101 |
| 2 | First-Year Seminar: Issues in CRJS/CRJS 108 |
| 3 | Intro to CRJS/CRJS 110 |
| 3 | Global Language 1 |
| 3 | Basic Sociology/SOCI 110 |
| <u>17</u> | |

Spring

| | |
|-----------|--|
| 3 | Critical Analysis & Composition/ LENG 112 |
| 3 | History without Borders/LHST 111 |
| 3 | Correctional Process/CRJS 201 |
| 3 | Global Language 2 |
| 3 | Political Science/POLI 111 or 133 |
| 3 | Intro to Psychology/PSYC 111 |
| <u>18</u> | |

SOPHOMORE*Fall*

| | |
|-----------|--------------------------------------|
| 3 | The Bible: An Intro/LTHE 201 |
| 6 | General Elective |
| 3 | Intro to Philosophy/LPHI 131 |
| 3 | Criminological Theory/CRJS 240 |
| 3 | Careers in Criminal Justice/CRJS 242 |
| <u>15</u> | |

Spring

| | |
|-----------|--|
| 3 | Human Communication & Society/ SPCH 113 or Public Speaking/SPCH 111 |
| 3 | Research Methods/CRJS 250 |
| 3 | Cyber Crime & Society/CRJS 241 |
| 3 | English Literature Series/LENG General |
| <u>15</u> | |

JUNIOR*Fall*

| | |
|-----------|--|
| 3 | Philosophy II Series/LPHI or PHIL |
| 3 | Criminal Justice Ethics/CRJS 350 |
| 3 | Investigative Concepts/CRJS 310 |
| 3 | Math: Criminal Justice Statistics/ CRJS 360 |
| 3 | General Elective |
| <u>15</u> | |

Spring

| | |
|-----------|-------------------------------------|
| 3 | LPHI 237 or any LTHE 300 course |
| 1 | Leadership Seminar |
| 3 | Natural Science |
| 3 | Criminal Law and Procedure/CRJS 320 |
| 6 | General Elective |
| 3 | Fine Art Series/LFIN |
| <u>16</u> | |

SENIOR*Fall*

| | |
|-----------|-------------------------------|
| 3 | Cultural Diversity/CRJS 325 |
| 9 | General Electives |
| 3 | Internship Placement/CRJS 490 |
| <u>15</u> | |

Spring

| | |
|-----------|-------------------------------------|
| 3 | Senior Seminar/LBST 383 or CRJS 495 |
| 14 | General Electives |
| <u>17</u> | |

* It is recommended that students take at least 15 credits of curriculum requirements each semester and at least 2 elective credits to obtain full benefit from tuition fees. This practice will insure that the student accrues more credit hours (137) at no additional cost, than the required (128) for graduation. (This is in addition to the (1) 18 credit semester).

4+1 BA/MS in Criminalistics

This program allows highly qualified students to complete the Bachelor's and Master's degree in five years rather than six. Students of exceptional promise may be admitted to the program at the time of undergraduate admission. These students would be accepted with the understanding that at the completion of their junior year they would have maintained a sufficiently high GPA both overall and particularly in their major (3.2 overall and 3.2 in the

major). Students not initially recruited for the program who met these criteria are also able to apply. A definite commitment on the part of the department and of the student would be made at the conclusion of their fifth semester (midway through the junior year). Students accepted into the program upon admission would be able to complete it without having to take summer courses. Students who are admitted later, and who have completed fewer than 68 credit hours by the end of their sophomore year, will need to take summer credits during the third summer. Students who are interested in the program, but who are not accepted at admission, will be encouraged to complete several major courses during the sophomore year and to take a full load.

All students interested in the 4+1 program must complete the 4+1 application during their junior year. With a provisional acceptance, they will be able to take three graduate courses during their senior year which will count for both Undergraduate and Graduate credits. Once successfully completing the graduate courses, those credits will transfer back to the undergraduate transcript to fulfill general elective credits. Upon successful completion of their undergraduate degree, students will be fully admitted to the graduate program and will take the remaining graduate courses during the fall following their senior year.

4+1 Matrix BA to MS Matrix

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 3 College Composition/LENG 111
- 3 Intro to Criminal Justice/CRJS 110
- 3 Global Language 1
- 3 Foundations of Theology/LTHE 101
- 3 Basic Sociology/SOCI 110
- 2 First Year Seminar/CRJS 108

17

Spring

- 3 Critical Analysis and Composition/LENG 112
- 3 Intro to Philosophy/LPHI 131
- 3 History Without Borders/LHST 111
- 3 Correctional Process/CRJS 201
- 3 Global Language 2
- 3 Intro to Psychology/PSYC 111

18

SOPHOMORE

Fall

- 3 The Bible: An Intro/LTHE 201
- 3 Political Science/POLI 111 or 133
- 3 Criminological Theory/CRJS 240
- 3 Careers in Criminal Justice/CRJS 242
- 3 English Literature Series

15

Spring

- 3 Public Speaking/SPCH 111
- 3 Philosophy II Series
- 3 Research Methods/CRJS 240
- 3 Cyber Crime and Society/CRJS 241
- 3 Natural Science
- 3 General Elective

18

JUNIOR

Fall

- 3 Criminal Justice Statistics/CRJS 360
- 3 Investigative Concepts/CRJS 310
- 3 Criminal Justice Ethics/CRJS 350
- 3 General Elective
- 3 Fine Arts Series

15

Spring

- 3 Cultural Diversity/CRJS 325
- 3 THEO/PHIL III Series
- 6 General Electives
- 3 Leadership Seminar
- 3 Criminal Law and Proc./CRJS 320

16

SENIOR

Fall

| | |
|-----------|----------------------------------|
| 3 | Crime Scene Techniques/GCRIM 501 |
| 3 | Crime Mapping/GCRIM 509 |
| 6 | General Elective |
| 3 | Internship/CRJS 490 |
| <u>15</u> | |

Spring

| | |
|-----------|--------------------------------|
| 3 | Senior Seminar/CRJS 495 |
| 3 | Courtroom Procedures/GCRIM 508 |
| 9 | General Electives |
| <u>15</u> | |

Summer

| | |
|----------|---------------------------------------|
| 3 | Interview and Interrogation/GCRIM 612 |
| 3 | Psychology and the Law/GCRIM 602 |
| <u>6</u> | |

GRADUATE

Fall

| | |
|----------|------------------------------------|
| 3 | Criminal Law of Evidence/GCRIM 507 |
| 3 | Criminalistics/GCRIM 601 |
| <u>6</u> | |

Spring

| | |
|----------|---|
| 3 | Medicolegal Investigation/GCRIM 622 |
| 3 | Physical and Pattern Evidence/ GCRIM 621 |
| 3 | Digital Evidence/GCRIM 611 |
| <u>9</u> | |

Summer

| | |
|----------|--|
| 3 | Forensic Investigation Practicum/GCRIM 641 |
| 3 | Applied Criminalistics/GCRIM 631 |
| <u>6</u> | |

Criminal Justice Associate Degree Curriculum

| | |
|-----------|--|
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Basic Sociology/SOCI 110 |
| 3 | Intro to Psychology/PSYC 111 |
| 2 | First-Year Seminar: Issues in CRJS/CRJS 108 |
| 3 | Introduction to Criminal Justice/CRJS 110 |
| 3 | Correctional Process/CRJS 201 |
| 3 | Criminological Theory/CRJS 240 |
| 3 | Cyber Crime and Society/CRJS 241 |
| 3 | Careers in Criminal Justice/CRJS 242 |
| 3 | Investigative Concepts/CRJS 310 |
| 3 | Criminal Law and Procedure/CRJS 320 |
| 3 | Criminal Justice Ethics/CRJS 350 |
| 6 | Criminal Justice Electives |
| 3 | U.S. Government and Politics/POLI 111 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Mathematics <i>or</i> Quantitative Reasoning |
| 9 | Electives |
| <u>65</u> | |

Tracks or Specializations in the areas of Corrections, Cyber Security, Forensic Investigation, Juvenile Justice and Law Enforcement are also available through the Criminal Justice Program.

CRIMINAL JUSTICE MINOR

Completion of the following courses and electives will satisfy the requirements for a minor in Criminal Justice:

- 3 Introduction to Criminal Justice/CRJS110
- 3 Correctional Process/CRJS 201
- 3 Criminological Theory/CRJS 240
- 9 Criminal Justice Electives*

* *These electives are to be selected in consultation with Minor advisor and chosen to meet student objectives in taking Criminal Justice as a minor*

Criminal Justice Tracks: Required and Elective Courses

Cyber Security Track

Required: Information Tech & Operations/CIS 270; Intro to Networks/CIS 290; Digital Evidence & Computer Crime/CRJS 363

Electives: Internet Crime Investigation/CRJS 364; Internship Placement/CRJS 490; Issues in Science and Technology/CHEM 166; Business Technology/CIS 150

Corrections Track

Required: Contemporary Correctional Programs/CRJS 302; Issues in Corrections/CRJS 304; Correctional Counseling and Case Management/CRJS 322

Electives: Gangs in Society/CRJS 327; Drugs of Abuse/328; Alternative Social Control Systems/CRJS 332; Victimology/CRJS 333; Women in Crime/CRJS 340; Internship Placement/CRJS 490; Psychopathology/PSYC 232; Helping Relationships/PSYC 307; Interviewing Skills/SCWK 360

Forensic Investigation

Required: Intro to Forensic Investigation/CRJS 210; Intro to Forensic Psychology/CRJS 212; Principles of Forensic Interview & Interrogation/CRJS 365

Electives: Criminal Evidence/CRJS 321; Crime Scene Forensic Techniques/CRJS 361; Digital Evidence & Computer Crime/CRJS 363; Internet Crime Investigation/CRJS 364; Internship Placement/CRJS 490

Juvenile Justice Track

Required: Juvenile Delinquency & Adolescent Development/CRJS 230; Correctional Counseling and Case Management/CRJS 322; Juvenile Justice System/CRJS 330

Electives: Gangs in Society/CRJS 327; Drugs of Abuse/328; Alternative Social Control Systems/CRJS 332; Victimology/CRJS 333; Internship Placement/CRJS 490; Deviant Behavior/SOCI 210; Social Work with Trauma, Abused, and Neglected Children/SCWK 393; Helping Relationships/PSYC 307; Interviewing Skills/SCWK 360

Law Enforcement Track

Required: Police Function/CRJS 202; Intro to Crime Mapping/CRJS 261; Issues in Law Enforcement/CRJS 303; Criminal Evidence/CRJS 321; Principles of Forensic Interview & Interrogation/CRJS 365

Electives: Basic Firearms and Law Enforcement Application/CRJS 341; Crime Scene Forensic Techniques/CRJS 361; Internet Crime Investigation/CRJS 364; Internship Placement/CRJS 490

THE NEXT STEP

Baccalaureate Degree Program for Graduates of Two Year Colleges

Criminal Justice

(Numerals in front of courses indicate credits)

PRE-SENIOR YEAR

| | |
|---|---|
| 3 | Basic Sociology/SOCI 110 |
| 3 | CRJS Research Methods/CRJS 250 |
| 3 | Criminal Justice Ethics/CRJS 350 |
| 3 | Cyber Crime & Society/CRJS 241 |
| 3 | Criminological Theory/CRJS 240 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Literature Series/LENG |
| 3 | Fine Arts Series/LFIN |
| 3 | U.S. Gov't. & Politics/POLI 111 or Intro to International Relations/ POLI 133 |

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SENIOR YEAR

| | |
|---|---|
| 3 | Investigative Concepts/CRJS 310 |
| 3 | Culture Diversity in CRJS/CRJS 325 |
| 3 | Criminal Law and Procedure/CRJS 320 |
| 3 | Introduction to Psychology/PSYC 111 |
| 6 | Global Language |
| 6 | Electives |
| 3 | Internship |
| 3 | Senior Seminar/LBST 383 <i>or</i> Criminal Justice Capstone/CRJS 495 |
| 3 | Theology <i>or</i> Phil III Series/ LTHE <i>or</i> LPHI |
| 1 | Leadership Seminar |

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Prerequisites

The above course requirements presume that the student has completed the following courses, or their equivalent, prior to matriculation. If not, they become additional required courses in the program.

- Introduction to Criminal Justice (CRJS 110)
- Correctional Process (CRJS 201)

Students will be permitted to take other courses in substitution for any course listed above which they have satisfactorily completed prior to admission into the Next Step program. Students are required to complete 7-19 credits in the Liberal Studies Core. Students may transfer courses equivalent to Foundations of Theology, Introduction to Philosophy, the Literature Series and/or the Fine Arts Series. Students must take the Leadership Seminar, the Theology/Philosophy III Series, and the Senior Seminar or approved capstone at Gannon.

All students graduating from the College of Humanities must have completed six credits of a Modern Global Language.

SCHOOL OF EDUCATION

JANICE M. WHITEMAN, M.Ed., *Director, School of Education*

FACULTY: *Associate Professors:* Leighann Forbes, Jill Merritt. *Associate Teaching Professor:* Janice Whiteman. *Assistant Professors:* Carmella Covell, Nancy Morris.

Mission of the Gannon School of Education: The School of Education is committed to the preparation of educators as reflected through the Gannon University Judeo-Christian tradition. Through extensive field experience, modeling, professionalism, and collaboration, we deliver a student-centered, research-based professional education program that provides opportunities for diverse community experiences and promotion of personal growth and continuous learning.

Vision Statement of the Gannon School of Education: The Gannon University School of Education undergraduate programs will prepare skilled professional practitioners who deliver instruction to meet the needs of diverse learners.

All Gannon University teacher certification programs have Pennsylvania Department of Education approval.

The School of Education currently offers the following initial certification baccalaureate program options:

Early Childhood Education PreK-4

Early Childhood Education PreK-4 and Special Education PreK-12

Special Education PreK-12

Middle Level 4-8

- English/Language Arts and Reading
- Mathematics
- Science
- Social Studies
- English/Language Arts and Mathematics
- English/Language Arts and Science
- Mathematics and Science
- Social Studies and Mathematics
- Social Studies and Science

Secondary Education grades 7-12

- Biology (BA and BS programs)
- English
- Mathematics
- Social Studies

Associate Degrees

- Early Childhood Education
- Early Childhood Education/Early Intervention

Teacher Certification

In compliance with Pennsylvania Law, Act 354, all individuals entering School of Education programs must have and maintain an overall GPA of 3.0 or greater. All individuals seeking teacher certification in Pennsylvania must fulfill the requirements of the University for the Baccalaureate Degree as well as the professional education requirements of the School of Education. Teacher candidates must also achieve passing scores, as determined by the Pennsylvania Department of Education (PDE), on the required teacher examinations. The process and requirements for teacher certification are described in the Gannon University Teacher Certification Handbook as well as this catalog. To obtain specific information about certification in other states, teacher candidates should review information online at each state's Department of Education web site.

Please note that current Pennsylvania Department of Education (PDE) standards and regulations take precedence over any information described in this document or the Gannon University Teacher Certification Handbook. Should PDE's standards and regulations change, Gannon will change its requirements. Teacher candidates will be responsible for meeting the new guidelines for certification. Candidates must meet the PDE guidelines that are in effect on the day candidates submit their certification application. Please refer to the PDE website at <https://www.education.pa.gov> for changes in regulations.

Admission to the School of Education

Acceptance and enrollment at Gannon University does not automatically guarantee acceptance into the School of Education as a teacher candidate. Each teacher candidate must apply for official admission to the School of Education. Applications are available in the School of Education office. Teacher candidates are required to formally apply to the School of Education between their first 48-60 credit hours. This usually occurs between the first and second semester

of the sophomore year, but application must be made no later than the end of the sophomore year. Continuation in the Education program is dependent upon acceptance into the School of Education.

The Education Review Committee evaluates applications for admission to the School of Education each semester. Individuals who meet the criteria are recommended to the Director of the School of Education for admission. The standards for admission and retention have been developed by the School of Education and require that teacher candidates accomplish the following academic requirements:

- Candidates must earn a grade of C or better in all education courses.
- An overall GPA of 3.0 or greater is required for acceptance into the School of Education. Computation of the overall grade point average considers all coursework completed at the point of application to the program.
- The School of Education is authorized by the Pennsylvania Department of Education to permit candidates to proceed with Education coursework when the overall GPA is lower than 3.0 but at least 2.8. When all other criteria for admission to the School of Education have been met, candidates with GPAs between 2.8 and 3.0 may be granted permission to continue taking upper-level Education courses for one additional semester. Please refer to the Teacher Certification Handbook for further details of the 2.8 GPA policy.
- All baccalaureate candidates, regardless of area of specialization, must have completed LENG 111, LENG 112, three credits of an approved literature course, six credits of math (103 or higher), EDCR 101, and EDCR 103 with a C or better.
- In addition, Early Childhood PreK-4 and Special Education PreK-12 majors must have completed ECED 100, ECED 111, ECED 200, EDCR 105, and SPED 101 with a C or better.
- In addition, Middle Level 4-8 majors must have completed EDCR 105, MLED 201, MLED 202, and SPED 101 with a C or better.
- In addition, Secondary majors also must have completed EDCR 105 with a C or better and have passed EDFL 101.
- Before completion of 60 credits and before applying for admission to the School of Education, candidates must show evidence that they have met PDE's basic skills requirement in reading, mathematics, and writing. Examinations meeting the basic skills requirement include: Core Academic Skills for Educators Tests (CORE), Pre-Service Academic Performance Assessments (PAPA), The Scholastic Achievement Test (SAT), and/or The American College Test (ACT). Candidates may combine reading, mathematics, and writing module scores from different test providers to meet the basic skills requirement. In addition, a composite score method is available. When using the composite score, each test must meet or exceed the minimum score listed. For complete details, refer to the Pennsylvania Department of Education website at www.education.pa.gov and enter Basic Skill Testing Requirements in the search box.
- Candidates who do NOT show evidence of meeting the basic skills requirement prior to enrolling in their 61st credit will not be permitted to enroll in upper-level Education courses and may be required to change their major.
- Individuals who have earned a BS or BA degree and who enroll in coursework to prepare for teacher certification do not have to meet the basic skills requirement.
- The School of Education has no control or responsibility for the timely receipt of test scores. Applications to the School of Education are assessed upon the most recent test scores on file. Teacher candidates who are learning disabled may make requests for adapted testing conditions.
- Candidates must earn an overall satisfactory rating in professional dispositions. Details are provided to teacher candidates during their first semester as Education majors.

Denial of Admission to the School of Education

An overall grade point average of 3.0 must be maintained. Individuals who do not meet state mandated minimums are not eligible for admission into the School of Education. Incomplete School of Education applications will result in denial of admission.

Application essays that earn a score of less than 15 will have one opportunity for revision. If the second revision earns a score of less than 15, the candidate will be denied admission to the School of Education.

Retention in the School of Education

Once admitted to the School of Education, candidates must abide by the following retention policies to remain in the program:

- Candidates must maintain a minimum grade point average of 3.0 or greater in all coursework.
- Candidates must maintain a C or better in all required coursework in professional education and the chosen teaching specialization(s).
- Candidates must successfully complete field experience requirements prescribed in the chosen teaching specialization(s).
- Candidates must demonstrate professional dispositions that are appropriate for teaching and managing instruction in diverse learning environments.
- The Director of the School of Education may recommend re-evaluation of status for any candidate previously admitted to the program when evidence exists that the individual may be unsuitable for the teaching profession.
- Only candidates meeting the Pennsylvania Department of Education requirements at the time of application are eligible to be recommended for certification.
- In some instances, the University may award a degree although the candidate is not eligible to be recommended for teacher certification.

Field Experiences Requirements

As freshmen, teacher candidates will complete their first field experience as part of EDCR 104 First-Year Seminar. This is an opportunity for candidates to observe for a total of 10 hours in one or more different educational settings. A variety of experiences in public, private, and diocesan schools located in urban, suburban and rural locations are directly linked to coursework. Expectations for each experience are described in the School of Education Field Experience Handbooks.

Grades for field experiences in the PreK-4, 4-8, and Special Education PreK-12 baccalaureate, associate or minor programs are included as part of specific courses. In order to pass the course, ratings in the field experience must be satisfactory.

All secondary majors must earn a passing grade in each field experience (i.e., EDFL 101, 102, or 103) before the next experience can be completed.

Students will be removed from a field experience if the Cooperating Teacher and University Supervisor determine that the field student's performance is unsatisfactory.

Required Clearances, Trainings, and Testing

Prior to beginning the first field experience, all students enrolled as Education majors and students enrolled in an Education minor must complete clearances, training, and testing mandated by the Pennsylvania School Code and the Diocese of Erie.

- If a student is continuously enrolled in an education preparation program, the criminal background, child abuse and fingerprint information originally submitted shall remain valid for 60 months unless a field site requires clearances that are less than one year old when the field experience ends. Complete details are available in the School of Education office or on our website.

Candidates whose clearances are not on file during the first month of the semester in which they are enrolled for their first field experience will be required to drop the course from their schedules.

Out-of-state candidates are also subject to background checks and must follow the same directions as residents of Pennsylvania.

Act 34 Criminal History Record Check: The application for this clearance is available online only. Go to <https://epatch.state.pa.us> and click on "Submit a New Record Check." Once the application has been completed, be certain to print the official clearance found under the heading "PA State Police Response for Criminal Record Check." Further details are available in the School of Education office or website.

Act 151 Pennsylvania Child Abuse History Clearance: The online application form can be found at <https://www.compass.state.pa.us/CWIS>. There is also a mail-in form available. Under the heading "Purpose of Clearance," select "School Employee." Online applicants will receive their clearance by mail within 14 days. For mailed applications, the clearance may take three to six weeks to receive.

Act 114 Fingerprinting Clearance: The fingerprint requirement includes all university students who are in a public or private school on field experiences of any type. Fingerprinting must be done in Pennsylvania, following these directions:

1. Go to <https://uenroll.identogo.com> and use service code **1KG6RT**. This service code is unique to Gannon. Do **not** use this code for another purpose.
 - a. Choose **PDE** under the category, **Choose Your Agency**.
 - b. When applying for clearances for **field placements**, choose **PDE – Colleges/Universities Teacher Education Program** under the category, **Select Your Reason for Fingerprinting =PDE-**.
If applying for clearances for **student teaching**, choose **PDE-School Districts** under the category, **Select Your Reason for Fingerprinting**.
2. Once the service code appears, click Continue; then, click Schedule or Manage Appointment.
3. Follow the on-screen directions and fill in the personal information.
 - a. Applicants are required to choose the official document they will bring to the fingerprinting center.
4. Choose the location for a fingerprinting appointment.
 - a. Applicants can create an appointment or can select *Walk In*.
5. Next, access to a **service summary will be provided**. Print the service summary.
6. Fee requirements can be found on the Identogo website and can be paid online, using a money order or credit card. **Payment may also be made** at the fingerprinting center, using a money order or credit card.

Act 82 Arrest/Conviction Certification Form: The Arrest or Conviction Report and Certification Form associated with Act 82 must be completed by Education students prior to participation in classroom teaching, clinical or field experience. The Act 82 form is completed annually. See the form for all reportable offenses. The form is available in the School of Education office.

Act 126 Child Abuse Training (3-hours): The training includes recognition of the signs of abuse, mandatory reporting requirements, maintenance of professional and appropriate relationships with students, etc. ACT 126 training can be completed online free of charge at www.reportabuse.pa.pitt.edu.

Protection of Children and Youth Training, Diocese of Erie: All School of Education students must have completed the adult online *Creating a Safe Environment* training session prior to the first field experience. The two-hour training is offered free of charge at www.eriercd.org/protectyouth.htm. Important notes: 1) Do not use Internet Explorer as the browser 2) Connection to a printer is required 3) Print two copies of the certificate of completion, one for the School of Education and one to keep for a personal file.

Tuberculosis Test: Prior to the first field experience, students must submit a valid negative tuberculin test certificate to the School of Education office. The certificate must be less than one-year old at the time of submission.

Arrangements for the test are the responsibility of the student.

Student Teaching Requirements

Student teaching is a capstone experience. To qualify for student teaching, teacher candidates must have met or exceeded all program requirements. In addition, candidates for student teaching must do the following:

- Demonstrate acceptance into the School of Education.
- Apply for student teaching one year prior to beginning the experience.
- Demonstrate overall satisfactory ratings in professional dispositions.
- Apply and submit clearances that will be less than one-year old by the end of the student teaching experience.
- Have a valid negative TB test on file in the School of Education prior to the first day of student teaching. Arrangements for the test are the responsibility of the teacher candidate.

If candidates are graduating in the semester of their student teaching experience, they are encouraged to complete the content specific exams designated by the Pennsylvania Department of Education prior to student teaching. Passage of these exams is not a graduation requirement, but passage is required before Level I teaching certification approved by the Pennsylvania Department of Education.

Individuals Returning for Initial Certification

Individuals with a BA or BS degree who are returning for certification must apply and be accepted through the University's Center for Adult Learning and meet all criteria for admission to the School of Education. Post-baccalaureate teacher candidates are not required to meet the basic skills requirements, but they must complete the School of Education application.

EARLY CHILDHOOD EDUCATION PreK-4 Bachelor of Science Degree

Mission of the Early Childhood Program: Gannon University's Early Childhood PreK-4 program prepares skilled professionals who improve the educational experiences of young children by designing and delivering developmentally appropriate, child-centered curricula, instruction and assessment.

Gannon's Early Childhood Education curriculum provides a solid foundation in development and learning theory as well as instruction in content areas including language and literacy, mathematics, physical activity, creative arts, social studies and science.

Gannon's unique developmental field experiences provide a practical hands-on application of knowledge with a diverse population of young children across all socioeconomic and cultural levels.

When combined with the Special Education PreK-12 curriculum, teacher candidates in the Early Childhood program will have additional opportunities for employment.

Early Childhood Education PreK-4 Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 3 Psychology of Learning/
Teaching/EDCR 101
- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104*
- 3 College Composition/LENG 111
- 3 Foundations of Theology/LTHE 101
MATH 103 *or* higher

 15

Spring

- 3 Early Childhood Overview/ECED 100*
- 3 Child Development: Birth-Middle
Childhood ECED 111
- 3 Instructional Design/Classroom
Management/EDCR 105+
- 3 Critical Analysis/Composition/
LENG 112
- 3 MATH 105 *or* higher
- 3 Special Education Overview/SPED 101

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SOPHOMORE

Fall

- 3 Early Language/Literacy
Development/ECED 200**
- 3 Concepts/Methods: Math/ECED 209*
- 3 Literature (Am, British, *or* Intro)/
LENG Series
- 3 Introduction to Philosophy/LPHI 131
- 3 Public Speaking/SPCH 111
- 3 Meeting Learning Needs Students
w/Except/SPED 245*

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Spring

- 3 Concepts/Methods: Early Lit/
Reading PreK-1/ECED 202**
- 3 Child/Adolescent Literature/
EDCR 220
- 1 Leadership Seminar/EDCR 240
- 3 History without Borders/LHST 111
- 3 Philosophy of Ethical Responsibility *or*
any LTHE 300 course/LPHI 237
- 3 Science Series

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JUNIOR

Fall

- 3 Integrated Curriculum: PreK-4/
ECED 300**
- 3 Concepts/Methods: Literacy/
Reading 2-4/ECED 303
- 3 Concepts/Methods: Science/
Technology/ECED 308
- 3 Elective
- 3 Data Driven Instruction/SPED 306*

 15

Spring

- 3 Concepts/Methods: Social Studies/
ECED 307
- 3 Expressive Arts/EDCR 302
- 3 Elective
- 3 Collab/Partner w/Families, Schools,
Community/SPED 220
- 3 Lit for Students w/Except/SPED 320++
- 3 Program Planning/Assessment/
SPED 343*

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SENIOR

Fall

- 3 Physical Well-being of the Child/
ECED 310
- 3 Methods/Materials: ESL/ELL/
EDCR 420*
- 3 Philosophy II Series/LPHI
- 3 The Bible: An Introduction/LTHE 201
- 3 Elective

 15

Spring

- 3 Professional Seminar/EDCR 401
- 12 Student Teaching/EDFL 410

 15

Total credits: 130

- * *Field experience embedded throughout the semester (6-15 hrs.)*
 + *Field experience embedded throughout the semester (60 hrs.)*
 ++ *Field experience embedded throughout the semester (30 hrs.)*
 ** *Three-week field experience (90 hrs.)*

EARLY CHILDHOOD EDUCATION PreK-4 and SPECIAL EDUCATION PreK-12 Bachelor of Science Degree

Mission of the Early Childhood Program: Gannon University's Early Childhood PreK-4 program prepares skilled professionals who improve the educational experiences of young children by designing and delivering developmentally appropriate, child-centered curricula, instruction, and assessment. Further details are available in the Early Childhood Education PreK-4 curriculum section of this catalog.

Mission of the Special Education Program: Gannon University's Special Education program prepares skilled professionals who improve the educational experiences of diverse learners by designing and delivering individualized curricula, instruction, and assessments in collaborative environments. Further details are available in the Special Education PreK-12 curriculum section of this catalog.

Early Childhood Education PreK-4 and Special Education PreK-12 Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 3 Psychology of Learning/Teaching/
EDCR 101
1 Foundations of Teaching/EDCR 103
2 First-Year Seminar/EDCR 104*
3 College Composition/LENG 111
3 Foundations of Theology/Morality/
LTHE 101
3 Math 103 *or* higher
3 Public Speaking/SPCH 111
-
- 18

Spring

- 3 Early Childhood Overview/ECED 100*
3 Child Development: Birth-Middle
Childhood/ECED 111
3 Instructional Design/Classroom
Management/EDCR 105+
3 Critical Analysis/Composition/
LENG 112
3 MATH 105 *or* higher
3 Special Education Overview/SPED 101
-
- 18

SOPHOMORE

Fall

- 3 Early Language/Literacy
Development/ECED 200**
3 Concepts/Methods: Math/ECED 209*
3 Literature (Am, British, *or* Intro)/
LENG Series
3 History without Borders/LHST 111
3 Introduction to Philosophy/LPHI 131
3 Meeting Learning Needs Students
w/ Except/SPED 245*
-
- 18

Spring

- 3 Concepts/Methods: Early Lit/Reading
PreK-1/ECED 202**
1 Leadership Seminar/EDCR 240
3 Child/Adolescent Literature/EDCR 220
3 Philosophy II Series/LPHI
3 LPHI 237 *or* any LTHE 300 course
3 Adolescent Development/MLED 202
3 Collaboration and Partnerships
w/ Families/Schools/Community/
SPED 220
-
- 19

(No additional charge for the 19th credit)

JUNIOR

| <i>Fall</i> | <i>Spring</i> |
|---|---|
| 3 Integrated Curriculum: PreK-4/ ECED 300** | 3 Concepts/Methods: Social Studies/ ECED 307 |
| 3 Concepts/Methods: Literacy 2-4/ ECED 303 | 3 Expressive Arts/EDCR 302 |
| 3 Concepts/Methods: Science/Tech/ ECED 308 | 3 Applications of Math/MLED 303+ |
| 3 Methods/Materials: ESL/ELL/ EDCR 420* | 3 Literacy for Students w/ Exceptionalities/SPED 320++ |
| 3 Data-Driven Instruction: Special Education/SPED 306* | 3 Positive Behavior Supports/ Interventions/SPED 322* |
| 3 High Incidence Disabilities/SPED 308* | 3 Program Planning/Assessment/ SPED 343* |
| 3 | |
| 18 | 18 |

SENIOR

| <i>Fall</i> | <i>Spring</i> |
|--|---------------------------------|
| 3 Physical Well-Being/Child/ECED 310 | 3 Professional Seminar/EDCR 401 |
| 1 Methods/Materials Seminar/EDCR 321* | 12 Student Teaching/EDFL 410 |
| 3 The Bible: An Intro/LTHE 201 | |
| 3 Literacy Dev. Strat. Assessments/ MLED 301* | |
| 3 Science Series | |
| 3 Low Incidence Disabilities/SPED 307** | |
| 2 Transitions/SPED 333* | |
| 2 | |
| 18 | 15 |

Total credits: 142* *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*++ *Field experience embedded throughout the semester (30 hrs.)*** *Three-week field experience (90 hrs.)*

SPECIAL EDUCATION PreK-12 EDUCATION
Bachelor of Science Degree

Mission of the Special Education Program: Gannon University's Special Education program prepares skilled professionals who improve the educational experiences of diverse learners by designing and delivering individualized curricula, instruction, and assessments in collaborative environments.

A wide variety of field experiences are available to special education candidates. Experiences are available in life skills, emotional support, learning support and autistic support classrooms.

The Special Education program exposes teacher candidates to the latest in assistive technologies and best practices in the field of special education.

The special education program contains specific content geared for learners with disabilities guided by the standards of the Council for Exceptional Children. Through coursework, candidates develop extensive knowledge of law, policies and procedures required of a special education professional.

Candidates are invited to join the Gannon University Society for Exceptional Children (GUSEC), a professional organization that participates in worthwhile community events providing beneficial experiences for individuals with disabilities, volunteers and teacher candidates.

Gannon has a close affiliation with the Barber National Institute, a multi-faceted facility that provides education and services to individuals and their families.

Special Education PreK-12 Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 3 Psychology of Learning/Teaching/
EDCR 101
- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104*
- 3 College Composition/LENG 111
- 3 Foundations of Theology/Morality/
LTHE 101
- 3 Math 103 *or* higher

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15

Spring

- 3 Child Development: Birth-Middle
Childhood/ECED 111
- 3 Instructional Design/Classroom
Management/EDCR 105+
- 3 Critical Analysis/Composition/
LENG 112
- 3 Introduction to Philosophy/LPHI 131
- 3 MATH 105 *or* higher
- 3 Special Education Overview/SPED 101

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18

SOPHOMORE

Fall

- 3 Early Language/Literacy
Development/ECED 200**
- 3 Concepts/Methods: Math/ECED 209*
- 3 Literature (Am, British, *or* Intro)/
LENG Series
- 3 Science Series
- 3 Public Speaking/SPCH 111
- 3 Meeting Learning Needs Students
w/ Except/SPED 245*

—
18

Spring

- 3 Concepts/Methods: Early Lit/Reading
PreK-1/ECED 202**
- 1 Leadership Seminar/EDCR 240
- 3 Child/Adolescent Literature/EDCR 220
- 3 Philosophy of Ethical Responsibility/
LPHI 237 *or* any LTHE 300 course
- 3 Adolescent Development/MLED 202
- 3 Collaboration and Partnerships *w/*
Families/Schools/Community/
SPED 220

—
16

JUNIOR

Fall

- 3 Concepts/Methods: Literacy 2-4/
ECED 303
- 3 Concepts/Methods: Science/Tech/
ECED 308
- 1 Methods/Materials Seminar/EDCR 321*
- 3 Literacy Dev, Strat/Assessments/
MLED 301*
- 3 Data-Driven Instruction/SPED 306*
- 3 High Incidence Disabilities/SPED 308*

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16

Spring

- 3 Concepts/Methods: Social Studies/
ECED 307
- 3 Expressive Arts/EDCR 302
- 3 Applications of Math/MLED 303+
- 3 Literacy for Students *w/*
Exceptionalities/SPED 320++
- 3 Positive Behavior Supports/
Interventions/SPED 322*
- 3 Program Planning/Assessment/
SPED 343*

—
18

SENIOR

Fall

- 3 Methods/Materials ESL/ELL/
EDCR 420*
- 3 History without Borders/LHST 111
- 3 Philosophy II Series/LPHI II
- 3 The Bible: An Intro/LTHE 201
- 3 Low Incidence Disabilities/SPED 307**
- 2 Transitions/SPED 333*

17*Spring*

- 3 Professional Seminar/EDCR 401
- 12 Student Teaching/EDFL 410

15**Total credits: 133*** *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*++ *Field experience embedded throughout the semester (30 hrs.)*** *Three-week field experience (90 hrs.)***MIDDLE LEVEL 4-8 EDUCATION****Bachelor of Science Degree**

Mission of the Middle Level Program: Gannon University's Middle Level Grades 4-8 program prepares skilled professionals who improve the educational experiences of young adolescents by designing and delivering multifaceted, integrative, challenging, and engaging curricula, instruction, and assessment.

Gannon's Grades 4-8 Middle Level Certification programs lead to a Bachelor of Science degree with certification in nine possible areas. The curriculum provides extensive field-based experiences in both self-contained and content-specific classrooms in rural, urban and suburban classrooms.

The professional education core creates a foundation for successful clinical practice. This core set of courses emphasizes middle level philosophy and strategies for success with young adolescents, regardless of whether the school is an elementary, middle or junior high school. The curriculum includes courses designed to provide content-area expertise as well as foundational knowledge in all core subject areas. These courses require field-based experiences that total approximately 340 hours before student teaching.

Middle Level Education 4-8**Concentration: English/Language Arts and Reading Curriculum***(Numerals in front of courses indicate credits)*

FRESHMAN

Fall

- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104 *
- 3 College Composition/LENG 111
- 3 History without Borders/LHST 111
- 3 College Algebra/MATH 111
- 3 Public Speaking/SPCH 111

15*Spring*

- 3 Psychology of Learning/
Teaching/EDCR 101
- 3 Critical Analysis/
Composition/LENG 112
- 3 Foundations of Theology/Morality/
LTHE 101
- 3 Fundamentals of
Mathematics/MATH 105
- 3 Special Education Overview/SPED 101

15

SOPHOMORE

Fall

- 3 Instructional Design/Classroom Management/EDCR 105+
- 3 Introduction to Literature/LENG 247
- 3 Introduction to Philosophy/LPHI 131
- 3 Applied Statistics/MATH 213 *or* Psychological Statistics/PSYC 211
- 3 Meet Needs Students
- 3 Exceptionalities/SPED 245*

15*Spring*

- 3 Child/Adolescent Literature/EDCR 220+
- 1 Leadership Seminar/EDCR 240
- 3 World Geography/GEOG 201
- 3 Philosophy of Ethical Responsibility/LPHI 237 *or* any LTHE 300 Course
- 3 Adolescent Development/MLED 202
- 3 U.S. Government/Politics/POLI 111

16

JUNIOR

Fall

- 3 General Biology/BIOL 101 *or* Human Biology/BIOL 104 *or* Essentials of Anatomy/Physiology I/BIOL 108
- 3 Advanced Composition/ENGL 211
- 3 Introduction to Linguistics/ENGL 217
- 3 Quantitative Literacy/MATH 103
- 3 Literacy Dev, Strategies/
Assessment: 4-8/MLED 301++
- 3 Data Driven Instruction/SPED 306*

18*Spring*

- 3 Environmental Issues/BIOL 103 *or* General Chemistry I/CHEM 111 *or* Issues in Science/Technology/CHEM 166 *or* Ecology of Yellowstone National Park/BIOL 384 and Special Topics in Biology/BIOL 492
- 3 Expressive Arts/EDCR 302
- 3 Philosophy II Series/LPHI II
- 3 The Bible: An Introduction/LTHE 201
- 3 Program Plan/Assessment/SPED 343*
- 3 Elective

18

SENIOR

Fall

- 3 Archaeology Methods/Lab/ARCH 202 *or* Intro to Organic/Biochemistry/CHEM 102 *or* Chemistry of Life 1/CHEM 103 *or* Concepts in Physics/PHYS 101
- 1 Methods/Materials Seminar/EDCR 321*
- 3 Structure of English Language/EDCR 419
- 3 Methods/Materials ESL/ELL/EDCR 420
- 3 Concepts Natural Science/MLED 302 ++
- 3 Elective

16*Spring*

- 3 Professional Seminar/EDCR 401
- 12 Student Teaching/EDFL 410

15**Total credits: 128*** *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*++ *Field experience embedded throughout the semester (30 hrs.)*

Middle Level Education 4-8

Concentration: Mathematics Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104*
- 3 College Composition/LENG 111
- 3 Foundations of Theology/LTHE 101
- 3 College Algebra/MATH 111
- 3 Trigonometry/MATH 112

 15

SOPHOMORE

Fall

- 3 Instructional Design/Classroom Mgmt/EDCR 105+
- 3 Introduction to Philosophy/LPHI 131
- 3 Calculus 2/MATH 141
- 3 Discrete Mathematics/MATH 222
- 3 U.S. Government/Politics/POLI 111
- 3 Meet Needs Students Exceptionalities/SPED 245*

 18

JUNIOR

Fall

- 3 General Biology/BIOL 101 *or* Human Biology/BIOL 104 *or* Essentials of Anatomy/Physiology I/BIOL 108
- 1 Methods/Materials Seminar/EDCR 321*
- 3 Calculus 3/MATH 242
- 3 Literacy Dev, Strategies/Assessments/MLED 301++
- 3 Philosophy II Series/LPHI
- 3 Data Driven Instruction/SPED 306*

 16

Spring

- 3 Psychology of Learning/Teaching/EDCR 101
- 3 Critical Analysis/Composition/LENG 112
- 3 History without Borders/LHST 111
- 3 Calculus 1/MATH 140
- 3 Public Speaking/SPCH 111
- 3 Special Education Overview/SPED 101

 18

Spring

- 3 Child/Adolescent Literature/EDCR 220+
- 1 Leadership Seminar/EDCR 240
- 3 World Geography/GEOG 201
- 3 Applied Statistics/MATH 213
- 3 History of Mathematics/MATH 260
- 3 Adolescent Dev./MLED 202 *

 16

Spring

- 3 Environmental Issues/BIOL 103 *or* General Chemistry 1/CHEM 111 *or* Issues in Science/Technology/CHEM 166 *or* Ecology of Yellowstone National Park/BIOL 384 *and* Special Topics in Biology/BIOL 492
- 3 Expressive Arts/EDCR 302
- 3 Philosophy of Ethical Responsibility/LPHI 237 *or* any LTHE 300 course
- 3 Linear Algebra/MATH 252
- 3 Applications of Math/MLED 303+
- 3 Program/Plan/Assessment/SPED 343*

 18

SENIOR

Fall

- 3 Archaeology Methods/Lab/
ARCH 202 *or* Intro to Organic/
Biochemistry/CHEM 102 *or*
Chemistry of Life 1/CHEM 103 *or*
Concepts in Physics/PHYS 101
- 3 Methods/Materials: ESL/ELL/
EDCR 420*
- 3 The Bible: An Introduction/LTHE 201
- 3 Geometry/MATH 226
- 3 Concepts of Natural Science/
MLED 302++

15*Spring*

- 3 Professional Seminar/EDCR 401
- 12 Student Teaching/EDFL 410

15**Total credits: 131*** *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*++ *Field experience embedded throughout the semester (30 hrs.)*

Middle Level Education 4-8

Concentration: Science Curriculum*(Numerals in front of courses indicate credits)*

FRESHMAN

Fall

- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104*
- 3 College Composition/LENG 111
- 3 Foundations of Theology/LTHE 101
- 3 College Algebra/MATH 111
- 3 Public Speaking/SPCH 111

15*Spring*

- 3 Psychology of Learning/Teaching/
EDCR 101
- 3 Critical Analysis/Composition/
LENG 112
- 3 History without Borders/LHST 111
- 3 Fundamentals of Mathematics/
MATH 105
- 3 Special Education Overview/SPED 101

15

SOPHOMORE

Fall

- 3 General Biology/BIOL 101 *or*
Ecosystem Biology/Evolution/
BIOL 126
- 3 Human Biology/BIOL 104 *or*
Essentials of Anatomy/Physiology/
BIOL 108
- 3 Instructional Design/Classroom
Management/EDCR 105+
- 3 Introduction to Philosophy/LPHI 131
- 3 Quantitative Literacy/MATH 103
- 3 Meet Needs Students Exceptionalities/
SPED 245*

18*Spring*

- 3 Environmental Issues/BIOL 103
- 3 Instructional Technology/EDCR 102
- 3 Child/Adolescent Literature/
EDCR 220+
- 1 Leadership Seminar/EDCR 240
- 3 The Bible: An Intro/LTHE 201
- 3 Adolescent Dev/MLED 202

16

JUNIOR

Fall

- 3 Archaeology Methods/Lab/
ARCH 202 *or*
Intro to Organic/Biochemistry/
CHEM 102 *or* Chemistry of Life 1/
CHEM 103 *or*
Concepts in Physics/PHYS 101
- 1 Methods/Materials Seminar/
EDCR 321*
- 3 Principles of Environmental Sci/
ENV 120 *or*
Principles of Energy/Climate
Change/ENV 121
- 3 Reading Dev, Strategies/
Assessments/MLED 301++
- 3 Applied Statistics/MATH 213 *or*
Psychological Statistics/PSYC 211
- 3 Data Driven Instruction/SPED 306*

16*Spring*

- 3 Issues in Science/Technology/
CHEM 166 *or*
Intro to Astronomy/PHYS 102 *or*
Ecology of Yellowstone National Park/
BIOL 384 and
Special Topics in Biology/BIOL 492
- 3 Expressive Arts/EDCR 302
- 3 World Geography/GEOG 201
- 3 Philosophy of Ethical Responsibility/
LPHI 237 *or* any LTHE 300 course
- 3 U.S. Government/Politics/POLI 111
- 3 Program/Plan Assessment Special
Education/SPED 343*

18

SENIOR

Fall

- 3 General Chemistry 1/CHEM 111
- 3 Methods/Materials: ESL/ELL/
EDCR 420*
- 3 Physical Geology/ENV 101 *or*
Historical Geology/ENV 104
- 1 Physical Geology Lab/ENV 102 *or*
Historical Geology Lab/ENV 105
- 3 Philosophy II Series/LPHI
- 3 Concepts of Natural Science/
MLED 302+

17*Spring*

- 3 Professional Seminar/EDCR 401
- 12 Student Teaching/EDFL 410

15**Total credits: 129*** *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*++ *Field experience embedded throughout the semester (30 hrs.)***Middle Level Education 4-8****Concentration: Social Studies Curriculum***(Numerals in front of courses indicate credits)*

FRESHMAN

Fall

- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104*
- 3 College Composition/LENG 111
- 3 History without Borders/LHST 111
- 3 College Algebra/MATH 111
- 3 Public Speaking/SPCH 111

15*Spring*

- 3 Psyc of Learning/Teaching/EDCR 101
- 3 Critical Analysis/Comp/LENG 112
- 3 Fund of Mathematics/MATH 105
- 3 U.S. Government/Politics/POLI 111
- 3 Special Educ. Overview/SPED 101

15

SOPHOMORE

Fall

- 3 General Biology/BIOL 101 *or*
Human Biology/BIOL 104
- 3 Instructional Design/Classroom
Management/EDCR105+
- 3 Introduction to Philosophy/LPHI 131
- 3 Foundations of Theology/LTHE 101
- 3 Quantitative Literacy/MATH 103
- 3 Meet Needs Students Exceptionalities/
SPED 245*

18*Spring*

- 3 Child/Adolescent Literature/
EDCR 220+
- 1 Leadership Seminar/EDCR 240
- 3 World Geography/GEOG 201
- 3 Adolescent Development/MLED 202
- 3 The Bible: An Intro/LTHE 201
- 3 Intro to International Relation/POLI 133

16

JUNIOR

Fall

- 3 Archeology Methods/Lab/
ARCH 202 *or*
Intro to Organic/Biochemistry/
CHEM 102 *or*
Chemistry of Life/CHEM 105 *or*
Concepts in Physics/PHYS 101
- 3 History of U.S. to 1865/HIST 221
- 3 Philosophy II Series/LPHI
- 3 Literacy Dev, Strategies/
Assessments/MLED 301++
- 3 Inquiry/Analysis in PA History/
Government/MLED 304+

15*Spring*

- 3 Environmental Issues/BIOL 103 *or*
General Chemistry I/CHEM 111 *or*
Issues in Science/Technology/
CHEM 166 *or*
Ecology of Yellowstone National Park/
BIOL 384 and Special Topics in Biology/
BIOL 492
- 3 Expressive Arts/EDCR 302
- 3 U.S. History 1865 to Present/HIST 222
- 3 LPHI 237 *or* any LTHE 300 course
- 3 Applied Statistics/MATH 213 *or*
Psychological Statistics I/PSYC 211
- 3 Program/Plan Assessment Special
Education/SPED 343 *

18

SENIOR

Fall

- 3 Prin of Microeconomics/BCOR 111 *or*
Prin of Macroeconomics/BCOR 112
- 1 Methods/Materials Seminar/EDR 321*
- 3 Methods/Materials: ESL/ELL/
EDCR 420*
- 3 Concepts of Natural Sci./MLED 302++
- 3 Cultural Anthropology/SOCI 292
- 3 Data Driven Instruction/SPED 306*

16*Spring*

- 3 Professional Seminar/EDCR 401
- 12 Student Teaching/EDFL 410

15**Total credits: 128*** *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*++ *Field experience embedded throughout the semester (30 hrs.)*

Middle Level Education 4-8 (Dual Concentrations)

Concentration: English/Language Arts and Reading & Mathematics Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104*
- 3 College Composition/LENG 111
- 3 Foundations of Theology/LTHE 101
- 3 College Algebra/MATH 111
- 3 Trigonometry/MATH 112

15

Spring

- 3 Psychology of Learning/
Teaching/EDCR 101
- 3 Critical Analysis/
Composition/LENG 112
- 3 Calculus 1/MATH 140
- 3 Public Speaking/SPCH 111
- 3 Special Educ Overview/SPED 101

15

SOPHOMORE

Fall

- 3 General Biology/BIOL 101 *or*
Human Biology/BIOL 104 *or*
Essentials of Anatomy/Physiology I/
BIOL 108
- 3 Instructional Design/Classroom Mgmt/
EDCR 105+
- 3 Intro to Literature/LENG 247
- 3 Introduction to Philosophy/LPHI 131
- 3 Discrete Math 1/MATH 222
- 3 Meet Needs Students Exceptionalities/
SPED 245*

18

Spring

- 3 Child/Adolescent Literature/
EDCR 220+
- 1 Leadership Seminar/EDCR 240
- 3 Calculus 2/MATH 141
- 3 Applied Statistics/MATH 213
- 3 The Bible: An Introduction/LTHE 201
- 3 Adolescent Development/MLED 202

16

JUNIOR

Fall

- 3 Archaeology Methods/Lab/ARCH 202
or Intro to Organic/Biochemistry/
CHEM 102 *or*
Chemistry of Life I/CHEM 103 *or*
Concepts in Physics/PHYS 101
- 3 Introduction to Linguistics/ENGL 217
- 3 Geometry/MATH 226
- 3 Literacy Dev, Strategies/Assessment/
MLED 301++
- 3 Philosophy of Ethical
Responsibility/LPHI 237 *or* any
LTHE 300 course
- 3 U.S. Government/Politics/POLI 111

18

Spring

- 3 Environmental Issues/BIOL 103 *or*
General Chemistry/CHEM 111 *or*
Issues in Science/Technology/
CHEM 166 *or*
Intro to Astronomy/PHYS 102 *or*
Ecology of Yellowstone National Park/
BIOL 384 and
Special Topics in Biology/BIOL 492
- 3 Expressive Arts/EDCR 302
- 3 World Geography/GEOG 201
- 3 Program Plan/Assessment Special
Education/SPED 343 *
- 3 Philosophy II Series/LPHI
- 3 Application of Mathematics/MLED 303+

18

SENIOR

Fall

| | |
|-----------|--|
| 1 | Methods/Materials Seminar/ EDCR 321* |
| 3 | Structure of English/EDCR 419 |
| 3 | Methods/Materials: ESL/ELL/ EDCR 420* |
| 3 | History without Borders/LHST 111 |
| 3 | Concepts Natural Science/MLED 302++ |
| 3 | Data Driven Instruction/SPED 306* |
| <u>16</u> | |

Spring

| | |
|-----------|-------------------------------|
| 3 | Professional Seminar/EDCR 401 |
| 12 | Student Teaching/EDFL 410 |
| <u>15</u> | |

Total credits: 131* *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*++ *Field experience embedded throughout the semester (30 hrs.)***Middle Level Education 4-8 (Dual Concentration)****Concentration: English/Language Arts and Reading & Science Curriculum***(Numerals in front of courses indicate credits)*

FRESHMAN

Fall

| | |
|-----------|----------------------------------|
| 1 | Foundations of Teaching/EDCR 103 |
| 2 | First-Year Seminar/EDCR 104* |
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | College Algebra/MATH 111 |
| 3 | Public Speaking/SPCH 111 |
| <u>15</u> | |

Spring

| | |
|-----------|--|
| 3 | Psychology of Learning/Teaching/ EDCR 101 |
| 3 | Critical Analysis/Composition/ LENG 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Fundamentals of Math/MATH 105 |
| 3 | Special Education Overview/SPED 101 |
| <u>15</u> | |

SOPHOMORE

Fall

| | |
|-----------|--|
| 3 | General Biology/BIOL 101 <i>or</i> Ecosystem Biology/Evolution/ BIOL 126 |
| 3 | Instructional Design/Class Mgmt/ EDCR 105+ |
| 3 | Intro to Literature/LENG 247 |
| 3 | History without Borders/LHST 111 |
| 3 | Philosophy II Series/LPHI |
| 3 | Quantitative Literacy/MATH 103 |
| <u>18</u> | |

Spring

| | |
|-----------|---|
| 3 | Instructional Technology/EDCR 102 |
| 3 | Child/Adolescent Literature/ EDCR 220+ |
| 1 | Leadership Seminar/EDCR 240 |
| 3 | World Geography/GEOG 201 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Adolescent Dev/MLED 202 |
| <u>16</u> | |

JUNIOR

Fall

- 3 Human Biology/BIOL 104 *or*
Essentials of Anatomy/Physiology I/
BIOL 108
- 3 Methods/Materials: ESL/ELL/
EDCR 420*
- 3 Introduction to Linguistics/ENGL217
- 3 Applied Statistics/MATH 213 *or*
Psychological Statistics I/PSYC 211
- 3 Literacy Dev, Strategies/
Assessment: 4-8/MLED 301++
- 3 Meet Needs Students
Exceptionalities/SPED 245*

18*Spring*

- 3 Environmental Issues/BIOL 103 *or*
General Chemistry I/CHEM 111 *or*
Issues in Science/Tech/CHEM 166 *or*
Intro to Astronomy/PHYS 102 *or*
Ecology of Yellowstone National Park/
BIOL 384 and
Special Topics in Biology/BIOL 492
- 3 Expressive Arts/EDCR 302
- 3 Philosophy of Ethical Responsibility/
LPHI 237 *or* any LTHE 300 course
- 3 U.S. Government/Politics/POLI 111
- 3 Program Plan/Assessment Special Ed/
SPED 343*

15

SENIOR

Fall

- 3 Archaeology Methods/Lab/
ARCH 202 *or*
Intro to Organic/Biochemistry/
CHEM 102 *or*
Chemistry of Life I/CHEM 103 *or*
Concepts in Physics/PHYS 101
- 1 Methods/Materials Seminar/EDCR 321*
- 3 Structure of English Language/
EDCR 419
- 3 Physical Geology/ENV 101 *or*
Historical Geology/ENV 104
- 1 Physical Geology Lab/ENV 102 *or*
Historical Geology Lab/ENV 105
- 3 Concepts of Natural Sci/MLED 302+
- 3 Data Driven Instruction/SPED 306*

17*Spring*

- 3 Professional Seminar/EDCR 401
- 12 Student Teaching/EDFL 410

15**Total credits: 129**

* Field experience embedded throughout the semester (6-15 hrs.)

+ Field experience embedded throughout the semester (60 hrs.)

++ Field experience embedded throughout the semester (30 hrs.)

Middle Level Education 4-8 (Dual Concentration)**Concentration: Mathematics and Science Curriculum***(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104 *
- 3 College Composition/LENG 111
- 3 History without Borders/LHST 111
- 3 College Algebra/MATH 111
- 3 Trigonometry/MATH 112

15*Spring*

- 3 Psychology of Learning/Teaching/
EDCR 101
- 3 Critical Analysis/
Composition/LENG 112
- 3 Foundations of Theology/LTHE 101
- 3 Calculus 1/MATH 140
- 3 Public Speaking/SPCH 111
- 3 Special Educ Overview/SPED 101

18**SOPHOMORE***Fall*

- 3 General Biology/BIOL 101 *or*
Ecosystem Biology/Evolution/BIOL 126
- 3 Instructional Design/Classroom
Management/EDCR 105+
- 3 Introduction to Philosophy/LPHI 131
- 3 Discrete Mathematics 1/MATH 222
- 3 U.S. Government/Politics/POLI 111
- 3 Meet Needs Students Exceptionalities/
SPED 245*

18*Spring*

- 3 Instructional Technology/EDCR 102
- 3 Child/Adolescent Literature/
EDCR 220+
- 1 Leadership Seminar/EDCR 240
- 3 Calculus 2/MATH 141
- 3 Applied Statistics/MATH 213
- 3 Adolescent Dev/MLED 202

16**JUNIOR***Fall*

- 3 3 General Chemistry I/CHEM 111 *or*
CHEM 166 Issues in Science/
Technology *or*
PHYS 102 Intro to Astronomy *or*
BIOL 384 Ecol/Yellowstone Natl and
BIOL 492 Sp Topics
- 1 Materials/Methods Seminar/
EDCR 321*
- 3 Physical Geology/ENV 101 *or*
Historical Geology/ENV 104
- 1 Physical Geology Lab/ENV 102 *or*
Historical Geology Lab/ENV 105
- 3 The Bible: An Introduction/LTHE 201
- 3 Geometry/MATH 226
- 3 Literacy Dev, Strategies/Assessments/
MLED 301++

17*Spring*

- 3 Expressive Arts/EDCR 302
- 3 Applications of Math/MLED 303+
- 3 World Geography/GEOG 201
- 3 Philosophy of Ethical Responsibility/
LPHI 237 *or* any LTHE 300 course
- 3 Program/Plan Assessment Special Ed/
SPED 343*

15

SENIOR

Fall

- 3 Archaeology Methods/Lab/
ARCH 202 *or*
Intro to Organic/Biochemistry/
CHEM 102 *or*
Chemistry of Life/CHEM 103 *or*
Concepts in Physics/PHYS 101
- 3 Human Biology/BIOL 104 *or*
Essentials of Anatomy/Physiology I/
BIOL 108
- 3 Methods/Materials: ESL/ELL/
EDCR 420*
- 3 Philosophy II Series/LPHI
- 3 Concepts Natural Science/MLED 302+
- 3 Data Driven Instruction/SPED 306*

18*Spring*

- 3 Professional Seminar/EDCR 401
- 12 Student Teaching/EDFL 410

15**Total credits: 132*** *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*++ *Field experience embedded throughout the semester (30 hrs.)***Middle Level Education 4-8 (Dual Concentration)****Concentration: Social Studies and Mathematics Curriculum***(Numerals in front of courses indicate credits)*

FRESHMAN

Fall

- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104*
- 3 College Composition/LENG 111
- 3 History without Borders/LHST 111
- 3 College Algebra/MATH 111
- 3 Trigonometry/MATH 112

15*Spring*

- 3 Psychology of Learning/
Teaching/EDCR 101
- 3 Critical Analysis/
Composition/LENG 112
- 3 Foundations of Theology/LTHE 101
- 3 Calculus 1/MATH 140
- 3 Public Speaking/SPCH 111
- 3 Special Educ Overview/SPED 101

18

SOPHOMORE

Fall

- 3 Archaeology Methods/Lab/
ARCH 202 *or*
Intro to Organic/Biochemistry/
CHEM 102 *or*
Chemistry of Life I/CHEM 103 *or*
Concepts in Physics/PHYS 101
- 3 Instructional Design/Classroom
Mgmt/EDCR 105+
- 3 Introduction to Philosophy/LPHI 131
- 3 Applied Statistics/MATH 213
- 3 Discrete Mathematics 1/MATH 222
- 3 Meet Needs Students
Exceptionalities/SPED 245*

18*Spring*

- 3 Child/Adolescent Literature/
EDCR 220+
- 1 Leadership Seminar/EDCR 240
- 3 The Bible: An Introduction/LTHE 201
- 3 World Geography/GEOG 201
- 3 Calculus 2/MATH 141
- 3 Adolescent Dev/MLED 202

16

JUNIOR

Fall

- 1 Methods/Materials Seminar/
EDCR 321*
- 3 History of U.S. to 1865/HIST 221
- 3 Geometry/MATH 226
- 3 Literacy Dev, Strategies/
Assessments/MLED 301++
- 3 U.S. Government/Politics/POLI 111
- 3 Data Driven Instruction/SPED 306*

16*Spring*

- 3 Environmental Issues/BIOL 103 *or*
General Chemistry/CHEM 111 *or*
Issues in Science/Technology/
CHEM 166 *or*
Intro to Astronomy/PHYS 102 *or*
Ecology of Yellowstone National
Park/BIOL 384 and
Special Topics in Biology/BIOL 492
- 3 Expressive Arts/EDCR 302
- 3 History of U.S. 1865 to Present/HIST 222
- 3 Philosophy II Series/LPHI
- 3 Applications of Math/MLED 303+
- 3 Program/Plan Assessment Special Ed/
SPED 343*

18

SENIOR

Fall

- 3 General Biology/BIOL 101 *or*
Human Biology/BIOL 104 *or*
Essentials of Anatomy/Physiology I/
BIOL 108
- 3 Methods/Materials:
ESL/ELL*/EDCR 420
- 3 Philosophy of Ethical Responsibility/
LPHI 237 *or* any LTHE 300 course
- 3 Concepts Natural Science/MLED 302++
- 3 Inquiry/Analysis in PA History/
Government/MLED 304+

15*Spring*

- 3 Professional Seminar/EDCR 401
- 12 Student Teaching/EDFL 410

15**Total credits: 131*** *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*++ *Field experience embedded throughout the semester (30 hrs.)*

Middle Level Education 4-8 (Dual Concentration)

Concentration: Social Studies and Science Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104*
- 3 College Composition/LENG 111
- 3 History without Borders/LHST 111
- 3 College Algebra/MATH 111
- 3 Public Speaking/SPCH 111

 15

Spring

- 3 Psychology of Learning/Teaching/EDCR 101
- 3 Foundations of Theology/Morality/LTHE 101
- 3 Critical Analysis/Composition/LENG 112
- 3 Fundamentals of Math/MATH 105
- 3 Special Ed Overview/SPED 101

 15

SOPHOMORE

Fall

- 3 General Biology/BIOL 101 *or* Ecosystem Biology/Evolution/BIOL 126
- 3 Instructional Design/Classroom Mgmt/EDCR 105+
- 3 Introduction to Philosophy/LPHI 131
- 3 World Geography/GEOG 201
- 3 Quantitative Literacy/MATH 103
- 3 Meet Needs Students
- 3 Exceptionalities/SPED 245 *

 18

Spring

- 3 Instructional Technology/EDCR 102
- 3 Child/Adolescent Literature/EDCR 220+
- 3 The Bible: An Intro/LTHE 201
- 3 Philosophy of Ethical Responsibility/LPHI 237 *or* any LTHE 300 course
- 3 Applied Statistics/MATH 213 *or* Psychological Statistics/PSYC 211
- 3 Adolescent Development/MLED 202

 18

JUNIOR

Fall

- 3 Archaeology Methods/Lab/ARCH 202 *or* Intro to Organic/Biochemistry/CHEM 102 *or* Chemistry of Life/CHEM 103 *or* Concepts in Physics/PHYS 101
- 3 Human Biology/BIOL 104 *or* Essentials of Anatomy/Physiology I/BIOL 108
- 1 Materials/Methods Seminar/EDCR 321
- 3 History of U.S. to 1865/HIST 221
- 3 Literacy Dev, Strategies/Assessments/MLED 301++
- 3 Inquiry/Analysis in PA History/Government/MLED 304+

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Spring

- 3 Environmental Issues/BIOL 103 *or* General Chemistry I/CHEM 111 *or* Issues in Science/Tech/CHEM 166 *or* Intro to Astronomy/PHYS 102 *or* Ecology of Yellowstone National Park/BIOL 384 and Special Topics in Biology/BIOL 492
- 1 Leadership Seminar/EDCR 240
- 3 Expressive Arts/EDCR 302
- 3 History of U.S. 1865 to Present/HIST 222
- 3 U.S. Government/Politics/POLI 111
- 3 Program Planning/Assessment/SPED 343*

 16

SENIOR

Fall

| | |
|-----------|--|
| 3 | Methods/Materials: ESL/ELL/ EDCR 420* |
| 3 | Physical Geology/ENV 101 <i>or</i> Historical Geology/ENV 104 |
| 1 | Physical Geology Lab/ENV 102 <i>or</i> Historical Geology Lab/ENV 105 |
| 3 | Philosophy II Series/LPHI |
| 3 | Concepts of Natural Science/ MLED 302+ |
| 3 | Data Driven Instruction/SPED 306* |
| <u>16</u> | |

Spring

| | |
|-----------|-------------------------------|
| 3 | Professional Seminar/EDCR 401 |
| 12 | Student Teaching/EDFL 410 |
| <u>15</u> | |

Total credits: 129* *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*++ *Field experience embedded throughout the semester (30 hrs.)***SECONDARY EDUCATION**

Mission of the Secondary Education Program: Gannon University's Secondary Education program prepares skilled professionals who improve the educational experiences of adolescents by designing and delivering multifaceted, integrative, challenging, and engaging curricula, instruction, and assessment.

Secondary teacher candidates receive a degree in their content area and are prepared for certification in the following areas:

| | |
|--------------|---------------------|
| Biology 7-12 | Mathematics 7-12 |
| English 7-12 | Social Studies 7-12 |

These programs prepare teacher candidates to work in content-specific, inclusive and diverse settings through a combination of required courses in Special Education and English as a Second Language as well as practical experiences in rural, urban and suburban classrooms.

Secondary majors have unique opportunities to develop content-area expertise through internships in summer programs, international travel, completing coursework in off-campus locations such as Yellowstone National Park, writing for the Gannon newspaper and literary magazine or working in the academic tutoring centers.

SECONDARY PROFESSIONAL EDUCATION CORE – 41 CREDITS

- 3 Psychology of Learning and Teaching/EDCR 101
- 1 Foundations of Teaching/EDCR 103
- 3 Instructional Design/Classroom Management/Field Experience/EDCR 105
- 1 Methods/Materials of Instruction Seminar/Field Experience/EDCR 321
- 3 Assessment and Evaluation/Field Experience/EDCR 330
- 3 Professional Seminar in Education/EDCR 401
- 3 Methods/Materials for ESL/ELL/Field Experience/EDCR 420
- 0 Secondary Education Field Experience/EDFL 101
- 0 Secondary Education Field Experience/EDFL 102
- 0 Secondary Education Field Experience/EDFL 103
- 12 Student Teaching/EDFL 410
- 3 Adolescent Development/MLED 202
- 3 Literacy Development, Strategies/Assessments/Field Experience/MLED 301
- 3 Special Education Overview/SPED 101
- 3 Meeting the Need of Students with Exceptionalities Grades 7-12/Field Experience/SPED 340

ENGLISH AS A SECOND LANGUAGE PROGRAM SPECIALIST PREK-12 Certificate Program

Mission Statement of the English as a Second Language Program: The mission of the English as a Second Language Program at Gannon University is to prepare teacher candidates with the knowledge of second language acquisition and cultural competencies necessary to provide standards-based instruction and assessment for English language learners so they may acquire the level of English proficiency needed to be successful in society.

The English as a Second Language Program Specialist Certificate is designed to prepare candidates to become leaders in second language acquisition. Candidates are prepared to support students and other teachers using their expert knowledge and skills gained through coursework and a total of 60 field experience hours. Those who complete the program gain an understanding and appreciation of various cultures as well as acquire a solid foundation in the theories and current research in second language acquisition.

This program requires the candidate to take 16 credits focused on preparation for the ESL Program Specialist Certificate. Each course has a corresponding 15-hour 1-credit field experience. Field experiences should be completed in the same semester as the courses with which they are paired. At least one placement must be in a PreK-12 classroom setting.

English as a Second Language PreK-12 Curriculum

(Numerals in front of courses indicate credits)

- 3 Assessment and Support for English Language Learners/EDCR 417
- 1 Assessment and Support for English Language Learners Field Experience 15 hours/EDCR 422
- 3 Educational Approaches in a Multicultural Society/EDCR 418
- 1 Educational Approaches in a Multicultural Society Field Experience 15 hours/EDCR 423
- 3 Structures of English/EDCR 419
- 1 Structures of English Field Experience 15 hours/EDCR 424
- 3 Methods and Materials for Teaching English Language Learners/EDCR 420
- 1 Methods and Materials for Teaching English Language Learners/Field Experience 15 hours/EDCR 425

AUTISM SPECTRUM DISORDER (ASD)

Endorsement

An Endorsement is a credential attained through an approved program. Gannon's ASD Endorsement consists of three 3-credit courses, each with an accompanying 1-credit field experience for a total of 12 credits. The Endorsement is intended to improve a teacher's skills in dealing with individuals on the spectrum who are in classroom settings. When completed, the ASD Endorsement may be added to an existing Level I or Level II certificate.

To be eligible for the endorsement, a grade of B or better is required for each online ASD course. Each field experience is paired with a specific ASD course and is to be taken in conjunction with that course. Field experiences are rated as Pass/Fail.

Autism Spectrum Disorder Curriculum

(Numerals in front of courses indicate credits)

- 3 Autism Spectrum Disorders: Theory and Practice/SPED 412
 - 1 Autism Spectrum Disorders: Field Experience 1/SPED 413
 - 3 Autism Spectrum Disorders: Applied Behavior Analysis and Intervention/SPED 426
 - 1 Autism Spectrum Disorders: Field Experience 2/SPED 427
 - 3 Autism Spectrum Disorders: Strategies for Social Competence/SPED 431
 - 1 Autism Spectrum Disorders: Field Experience 3/SPED 432
-
- 12

EARLY CHILDHOOD EDUCATION

Associate Degree

This 63-credit two-year program is designed to meet entry-level Pennsylvania requirements for assistant teachers in preschools and kindergartens, as well as childcare/learning centers and Head Start programs. A GPA of 2.0 is required for graduation with an Associate degree.

For those individuals who complete the Associate degree and decide to continue their education, all qualifying credits earned in the program within a seven-year time frame will transfer to the four-year baccalaureate degree in Early Childhood PreK-4.

Candidates who wish to earn teacher certification in Early Childhood PreK-4 will need to meet the Pennsylvania Department of Education requirements in effect at the time of application for certification.

Early Childhood Education Curriculum/Associate Degree

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 3 Psychology of Learning/
Teaching/EDCR 101
 - 1 Foundations of Teaching/EDCR 103
 - 2 First-Year Seminar/EDCR 104*
 - 3 College Composition/LENG 111
 - 3 Quantitative Literacy/MATH 103
 - 3 Public Speaking/SPCH 111
-
- 15

Spring

- 3 Early Childhood Overview/ECED 100*
 - 3 Child Development: Birth-Middle
Childhood/ECED 111
 - 3 Early Care and Education/ECED 221
 - 3 Instructional Design/Classroom Mgmt/
EDCR 105+
 - 3 Special Education Overview/SPED 101
-
- 15

SOPHOMORE

Fall

- 3 Early Language/Literacy
Development/ECED 200**
- 3 Concepts/Methods: Math/ECED 209*
- 3 Integrated Curriculum: PreK-4/
ECED 300+
- 3 Physical Well-Being of the Child/
ECED 310
- 3 Intro to Philosophy/LPHI 131
- 3 Meeting Learning Needs Students/
SPED 245*

18*Spring*

- 3 Concepts/Methods: Early Lit/
Reading PreK-1/ECED 202**
- 3 Child/Adolescent Literature/EDCR 220
- 3 Expressive Arts/EDCR 302
- 3 Foundations of Theology/LTHE 101
- 3 Collaboration/Partnerships w/Parents,
Schools/Community/SPED 220

15**Total credits: 63*** *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*** *Three-week field experience (90 hrs.)*

EARLY CHILDHOOD EDUCATION/EARLY INTERVENTION Associate Degree

This 69-credit two-year program is designed to meet entry-level Pennsylvania requirements for assistant teachers in preschools and kindergartens, as well as childcare/learning centers and Head Start programs. A GPA of 2.0 is required for graduation with an Associate degree.

For those individuals who complete the Associate degree and decide to continue their education, all qualifying credits earned in the program within a seven-year time frame will transfer to the four-year baccalaureate degree in Early Childhood PreK-4, Early Childhood PreK-4/Special Education PreK-12, or Special Education PreK-12.

Candidates who wish to earn teacher certification in Early Childhood PreK-4 or Early Child PreK-4/Special Education PreK-12 will need to meet the Pennsylvania Department of Education requirements in effect at the time of application for certification.

Early Childhood Education/Early Intervention Curriculum/Associate Degree

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 3 Psychology of Learning/Teaching/
EDCR 101
- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104*
- 3 College Composition/LENG 111
- 3 Quantitative Literacy/MATH 103
- 3 Public Speaking/SPCH 111

15*Spring*

- 3 Early Childhood Overview/ECED 100*
- 3 Child Development: Birth-Middle
Childhood/ECED 111
- 3 Early Care and Education/ECED 221
- 3 Instructional Design/Classroom Mgmt./
EDCR 105+
- 3 Critical Analysis/Composition/
LENG 112
- 3 Special Education Overview/SPED 101

18

SOPHOMORE

| <i>Fall</i> | <i>Spring</i> |
|--|--|
| 3 Early Language/Literacy Development/ ECED 200** | 3 Concepts/Methods: Early Lit/ Reading PreK-1/ECED 202** |
| 3 Concepts/Methods: MATH/ECED 209* | 3 Child/Adolescent Literature/EDCR 220 |
| 3 Integrated Curriculum/ECED 300** | 3 Expressive Arts/EDCR 302 |
| 3 Physical Well-Being of the Child/ ECED 310 | 3 Foundations of Theology/LTHE 101 |
| 3 Introduction to Philosophy/LPHI 131 | 3 Collaboration/Partnerships w/Parents, School/Community/SPED 220 |
| 3 Meeting Learning Needs Students/ SPED 245* | 3 Positive Behavior Supports/Interv/ SPED 322* |
| 18 | 18 |

Total credits: 69* *Field experience embedded throughout the semester (6-15 hrs.)*+ *Field experience embedded throughout the semester (60 hrs.)*** *Three-week field experience (90 hrs.)*

MINORS

The School of Education offers four education minors: The Education Minor, the Special Education and Diversity Minor, the Exceptional Child Minor and the Training and Development Minor. Each minor provides opportunities for students to study aspects of the field of education that are relevant to their personal interests or professional aspirations. Completing one of these minors may position students to pursue education related careers or graduate programs, as well as develop understanding of education processes and issues that will benefit them as informed citizens and potential parents.

Completing one of the Education minors does not result in eligibility for Pennsylvania teacher certification. Students may complete all or part of one of the minors and then decide to pursue teacher certification. In this case, all qualifying credits earned in the minor within a seven-year time frame may be applied to a teacher certification program at Gannon.

Students who declare one of the Education minors should work closely with the Director of the School of Education to receive assistance in planning course selections best suited to their interests or aspirations and to review field experience requirements.

Education Minor

This minor provides individuals with an overview of key elements of education. The information is useful for students who are thinking that they may want to pursue certification but are unsure, for students who may want to volunteer in youth programs or for students who want to be more informed about the American education process.

EDUCATION MINOR CURRICULUM**I. Required Courses (10 credits)***A. Foundations*

- 3 EDCR 101 Psychology of Learning and Teaching
- 1 EDCR 103 Foundations of Teaching

B. Development (one of the following)

- 3 ECED 111 Child Development: Birth-Middle Childhood
- 3 MLED 202 Adolescent Development

C. *Planning*

- 3 EDCR 105 Instructional Design/Classroom Management+

II. Elective Courses (6 credits)

Select from the following:

- 3 ECED 100 Early Childhood Overview*
- 3 EDCR 220 Child and Adolescent Literature
- 1 EDCR 321 Methods and Materials of Instruction Seminar
- 3 EDCR 330 Assessment and Evaluation
- 3 MLED 301 Literacy Development, Strategies, and Assessment
- 3 SPED 101 Special Education Overview

Additional courses may be elected with approval of the Director of the School of Education and the course instructor.

Field Experiences

- * Field experience embedded throughout the semester (6–15 hrs.)
- + Field experience embedded throughout the semester (60 hrs.)
- ** Field experience embedded throughout the semester (90 hrs.)

Special Education and Diversity Minor

This minor is available to any student who desires focused study in the field of special education, cognitive and behavioral disabilities, exceptionalities, and diversity. Students will develop a specialized understanding of the diverse learners in today's classrooms and communities that will make them competitive in the employment market.

SPECIAL EDUCATION AND DIVERSITY MINOR CURRICULUM

I. Required Courses (12 credits)

A. *Foundations*

- 3 EDCR 420 Methods and Materials for Teaching ESL/ELL
- 3 SPED 101 Overview of Special Education
- 3 SPED 322 Positive Behavioral Supports/Interventions

B. *Development (one of the following)*

- 3 SPED 245 Meeting the Needs of Students with Exceptionalities*
- 3 SPED 340 Meeting the Needs of Students with Exceptionalities: Grades 7–12*

II. Elective Courses (4-6 credits)

Select from the following:

- 3 EDCR 418 Educational Approaches in a Multicultural Society
- 1 LHES 240 Comparative Cultures: Living the Gannon Mission in Thailand
- 3 SCWK 230 Human Diversity
- 3 SOCI 292 Cultural Anthropology
- 3 SPED 220 Collaboration/Partnerships w/Families, Schools/Community
- 3 SPED 308 High Incidence Disabilities
- 3 SPED 320 Literacy for Students with Exceptionalities

Exceptional Child Minor

This 15-credit minor focuses on understanding the needs of children at both ends of the developmental spectrum from delayed to gifted. The minor is beneficial for students enrolled in any of the helping professions who want to have a greater understanding of children. Psychology majors will find the coursework to be an excellent stepping stone into graduate studies.

EXCEPTIONAL CHILD MINOR CURRICULUM

I. Required Courses (9 credits)

Exceptionalities Core

- 3 SPED 101 Overview of Special Education
- 3 SPED 322 Positive Behavioral Supports and Interventions
- 3 SPED 343 Program Planning and Assessment*

II. Electives Courses (6 credits)

Select from the following:

- 3 EDCR 420 Methods/Materials of Instruction for ESL/ELL*
- 3 SPED 220 Collaboration/Partnerships w/Families, Schools/Community
- 3 SPED 307 Low Incidence Disabilities**
- 3 SPED 308 High Incidence Disabilities
- 3 SPED 412 Autism Spectrum Disorders: Theory and Practice
- 3 SPED 431 Autism Spectrum Disorders: Strategies for Social Competence

Training and Development Minor

The Training and Development minor is intended for students who are not pursuing teacher certification yet have a desire to pursue a career in teaching and training where knowledge of subject matter as well as the ability to understand, teach and train others is required. The minor is open to all students in any major and provides foundational knowledge about learning, memory and educational techniques to support future careers in corporate training.

TRAINING AND DEVELOPMENT MINOR CURRICULUM

I. Required Courses (9 credits)

- 3 EDCR 101 Psychology of Learning and Teaching
- 3 EDCR 105 Instructional Design/Classroom Management+

Select one of the following:

- 3 ENGL 212 Business and Professional Communications
- 3 COMM 313 Intercultural Communication

II. Elective Courses (9 credits)

Select one of the following tracks and its associated courses:

Instructional Technology Concentration Track

- 3 EDCR 102 Instructional Technology
- 3 CIS 150 Business Technology I
- 3 CIS 245/246 Multimedia Production/Lab

Business Concentration Track Prerequisite BCOR 240, BCOR 250, Junior status

- 3 MGMT 220 Making Teams Work
- 3 MGMT 311 Organizational Innovation
- 3 MGMT 316 Organizational Behavior

Psychology Track Prerequisite PSYC 111 Introduction to Psychology

- 3 PSYC 292 Industrial Organization
- 3 PSYC 225 Social Psychology
- 3 PSYC 316 Human Factors Psychology

The Training and Development Minor is advantageous to business majors.

COURSE DESCRIPTIONS

ECED 100: Early Childhood Overview/Field Experience

This course examines the structure of early childhood education. Social and cultural foundations are addressed in the context of interpersonal relations among children, families, and communities. An introduction to curricular approaches, observation, and assessment of young children, play, and developmentally appropriate practice is provided. The field experience associated with this course is an Observation and Exploration (Stage 1) experience which is embedded throughout the course (6 hours). *3 credits, Spring*

ECED 111: Child Development: Birth-Middle Childhood

This course provides a broad study of child development theories and concepts from birth to middle childhood. Teacher candidates explore the physical, emotional, social, and cognitive development of typical and atypical children from early development to 4th grade, with a focus on developmental milestones that occur from birth to age 9. *3 credits, Spring*

ECED 200: Early Language and Literacy Development/Field Experience

This course focuses on how language develops and how this development can be enhanced and sustained. The teacher's role in supporting language development and the characteristics of a language-rich classroom is studied. The importance of emergent literacy, children's literature, and appropriate assessment are emphasized. The field experience associated with this course is an Observation and Exploration (Stage 2) experience which takes place for three weeks (90 hours).

Prerequisites: EDCR 105

3 credits, Fall

ECED 202: Concepts and Methods of Instruction: Early Literacy and Reading PreKindergarten through First Grade/Field Experience

This course focuses on developing effective instructional strategies for the teaching of reading and literacy in prekindergarten through first grade. Traditional and holistic approaches in reading instruction are studied. The importance of instructional reading strategies, writing assessment, and the National Reading Panel's research findings are emphasized as teacher candidates understand and learn how to facilitate children becoming independent readers. The field experience associated with this course is an Observation and Exploration (Stage 2) experience which takes place for three weeks (90 hours).

Prerequisites: ECED 200 and EDCR 105

3 credits, Spring

ECED 209: Concepts/Methods of Instruction: Mathematics

This course provides teacher candidates with the conceptual framework, appropriate strategies, and methods to teach mathematics to diverse learners in the elementary classroom (PreK-Grade 4). Using technology and a variety of materials, teacher candidates learn to assess children's needs and evaluate instruction with an emphasis on integrating mathematics across the curriculum. The field experience associated with this course is an Observation and Exploration (Stages 1 and 2) experience, which is embedded throughout the course (3 hours).

Prerequisite: EDCR 105

3 credits, Fall

ECED 221: Early Care and Education

This course emphasizes making appropriate choices to plan and implement a developmentally appropriate environment for infants and toddlers at home or in a child care center.

Cognitive and psychosocial learning theories are applied to the selection and adaptation of materials and strategies to meet the needs of very young children, including those who are at risk. *3 credits, as offered*

ECED 300: Integrated Curriculum PreKindergarten through Fourth Grade/Field Experience

This course provides the conceptual framework for developing and implementing appropriate curriculum for children prekindergarten through fourth grade. Instruction utilizing research-based approaches are focused upon while linking instruction, curriculum, and assessment to plan effectively. The integration of content is stressed as teacher candidates plan, adapt, and

analyze curriculum content, instructional materials, and strategies to enhance learning. The field experience associated with this course is a Pre-student Teaching (Stage 3) experience which takes place for three weeks (90 hours).

Prerequisite: EDCR 105

3 credits, Fall

**ECED 303: Concepts and Methods of Instruction: Literacy and Reading
Second through Fourth Grade**

This course takes an in depth look at the reading and writing processes across the content areas as they pertain to diverse learners in second through fourth grade. Instructional methodology and materials, appropriate assessments, and the use of technology are presented and modeled during this course.

Prerequisite: ECED 200 and ECED 202

3 credits, Fall

ECED 307: Concepts and Methods of Instruction: Social Studies

This course is designed to introduce teacher candidates to the various disciplines and approaches to teaching social studies for diverse learners in prekindergarten through fourth grade. Teacher candidates learn planning, resource selection, and developmentally appropriate methods and materials to enhance classroom instruction. Emphasis is on social studies as a powerful integrative force across the curriculum. Candidates are reintroduced to social studies content and concepts traditionally taught in a primary setting. Particular attention is paid to curriculum development and alignments with state and national standards.

Prerequisite: EDCR 105

3 credits, Spring

ECED 308: Concepts and Methods of Instruction: Science and Technology

This course provides prekindergarten through fourth grade teacher candidates with the conceptual framework, appropriate strategies, and methods used to teach inquiry-based science that supports standards across the curriculum. Using a variety of instructional models, teacher candidates will learn to design, implement, assess, modify, and evaluate science curriculum and lessons. This course is aligned with the National Research Council's National Science Education Standards as well as the Pennsylvania Academic Standards for Science and Technology and Environment and Ecology.

Prerequisite: EDCR 105

3 credits, Fall

ECED 309: Family Involvement in the Educational System

This course examines the complex relationship that exists between family and school. Specifically, this course focuses on the practical components of family involvement that teachers encounter: home and school communications; parent and teacher conferences; administrative issues; and obstacles or barriers to parent and family involvement in the educational system.

3 credits, Spring

ECED 310: Physical Well-being of the Child

This course prepares teacher candidates to promote physical well-being of children. Through active participation, the teacher candidates learn games, techniques, and strategies appropriate for prekindergarten through sixth grade school age children as well as students with special needs. Candidates learn to teach children how to become physically, emotionally, and socially healthy. Emphasis is given to important current issues affecting a healthy lifestyle for children.

Prerequisite: EDCR 105

3 credits, as offered

EDCR 101: Psychology of Learning and Teaching

Participants explore the nature of learning, theories of motivation, and cultural and individual differences found in the classroom which affect learning. Through an investigation of behaviorist, cognitivist, constructivist, and social psychology perspectives and approaches, teacher candidates begin to apply concepts and principles of psychology to educational settings in their field experiences.

3 credits, Fall, Spring

EDCR 102: Instructional Technology

Instructional Technology provides teacher candidates with laboratory-based experiences using various and emergent technologies. Teacher candidates demonstrate competency in the

integration of selected programs and examine the ethical ramifications of the instructional choices they make. Strategies and tools to cope with rapid changes are presented.

3 credits, as offered

EDCR 103: Foundations of Teaching

This course introduces teacher candidates to the philosophical and pedagogical aspects of the profession, including the structure of effective schools, lesson planning, and classroom management. As part of this course, reflective examination of the decision to pursue teaching as a career begins the building of professional portfolios.

1 credit, Fall

EDCR 104: First-Year Seminar

The First-Year Seminar is a discussion and experience-based course intended to orient the new student to Gannon University, to introduce the Liberal Studies Core and LIFE CORE, to assist in the transition from high school to University life, and to encourage development of academic, personal, and spiritual aspects of the student's life. Each seminar is unique, depending upon the instructor and/or program in which it is offered. The field experience associated with this course is an Observation and Exploration (Stage 1) experience which is embedded throughout the course (ten hours).

2 credits, Fall

EDCR 105: Instructional Design and Classroom Management

This course introduces teacher candidates to creating and managing instruction in the learning environment. Candidates develop standards-based lessons demonstrating connections among curriculum, instruction, and assessment that result in successful learning. As candidates develop an understanding of the scope and sequence of instructional planning, emphasis is placed on application of learning theories, research-based instructional practices, and effective feedback strategies. Candidates examine approaches for differentiated instruction to meet student needs. In addition, teacher candidates develop effective techniques and strategies for classroom organization and management, ensuring a safe, valued, and respectful environment for all learners. Effective interactions with instructional support staff, paraprofessionals, and parents are discussed throughout the course. The 60-hour field experience associated with this course is an Observation and Exploration (Stages 1 and 2)

3 credits, Fall, Spring

EDCR 220: Child and Adolescent Literature

This course helps teacher candidates to develop an appreciation, understanding, and evaluation of literature appropriate for children and young adolescents. Through the study of a variety of prose, drama, and poetry, teacher candidates can focus on the diverse characteristics and needs of children and adolescents, to examine the cultural differences, and to develop criteria for selection and use of literature across the curriculum. Strategies for instruction will be modeled and practiced. During this course, the participants will become familiar with the PA Academic Standards and Assessment Anchors and utilize them when planning instruction. The Observation and Exploration (Stages 1 and 2) field experience associated with this course is 90 hours for middle level majors. Early childhood and special education majors will complete 9 hours of service learning.

Prerequisites: EDCR 105

3 credits, Spring

EDCR 240: Leadership Seminar

The leadership seminar introduces participants to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in various communities to which they belong. In addition, the course helps participants explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic Social Justice Teaching serve as the basis for the participants' leadership development. Participants in this seminar engage in service learning, civic action, and problem solving as they are introduced to a six-step leadership training program. The training program focuses on a project-based learning approach known as Community Action and Problem Solving (CAPS). This course, while housed in the School of Education, is open to all University students.

1 credit, Spring

EDCR 302: Expressive Arts

This course emphasizes the importance of the arts in children's lives through the analysis and evaluation of works of art. Teacher candidates examine and explore how to help all children use art, music, dance, drama, and literature to express and communicate their developing ideas, experiences and feelings about themselves and the diverse world in which we live. Through active experiences with various media, strategies, technology, and resources, students create lesson plans to integrate the arts in the classroom.

Prerequisites: EDCR 105

3 credits, Spring

EDCR 321: Methods and Materials of Instruction Seminar

This course is designed for middle level, secondary, and special education PreK-12 majors. It emphasizes teaching methodologies, standards-based instruction, and integration of content areas. Candidates prepare effective lessons in specific content areas and select instructional methods and materials appropriate for adolescents. To provide an opportunity for candidates to work with a content expert in their field, a 60-hour Pre-student Teaching (Stage 3) field experience for 7-12 majors and 15 hours for all other Education programs accompanies the course.

1 credit, as offered

EDCR 330: Assessment and Evaluation/Field Experience

Teacher candidates investigate a variety of traditional and alternative assessments in the context of classroom instruction; meeting the needs of diverse learners; recognizing measurement principles; and national, state, and local standards. Teacher candidates construct and evaluate content specific classroom assessments. This course also gives teacher candidates an opportunity to develop an understanding of the need for and interpretation of the results of standardized tests.

3 credits, as offered

EDCR 343: Urban Education

The course is designed to help teacher candidates, current teachers, or interested individuals from other related fields to understand the key issues and challenges confronting urban education in PreK-12 classrooms, such as poverty, race, transience, a significant English Language Learner population, etc. Participants examine culturally responsive practices; effective curriculum, instructional, and management strategies; and the need for cultivating supportive relationships in the urban setting. Additionally, participants apply learned theories and knowledge from the course to teaching pedagogy in classrooms, in the teacher residency program, or in assigned field experiences.

3 credits online, as offered

EDCR 400: Critical Inquiry Seminar

This course provides teacher candidates with the opportunity to synthesize their work from both Liberal Studies and education courses in an inquiry-based participatory seminar. The course focuses on issues, reflection, and research relevant to education. Through extensive reading, independent research, writing, questioning, and discussion teacher candidates pursue areas of particular interest in depth. They share their work with each other, presenting the results of their inquiry in professional presentations.

3 credits, as offered

EDCR 401: Professional Seminar in Education

In this course, teacher candidates reflect upon the student teaching experience. Discussion focuses on current topics in education and the prediction and solution of issues in a variety of school situations. Teacher candidates prepare for employment through activities connected with the construction of their professional portfolios. This course is taken in conjunction with EDFL 410 Student Teaching.

3 credits, Fall, Spring

EDCR 414: Sociology of Education

Participants explore the nature of cultural and individual differences found in today's schools that affect educational processes and outcomes. Sociological research on the role of schools as institutions in modern industrial society is examined. Through an investigation of social psychology perspectives and approaches, participants begin to apply concepts and principles of psychology and sociology to educational settings.

3 credits, Fall

EDCR 417: Assessment and Support for English Language Learners

This is seven-week online course designed to expand candidates' knowledge of effective assessment practice and support services available for ELLs. Candidates explore purposes and uses of assessment, assessment models, assessment scaffolding, and formal/informal assessment tools. The availability of school support services to assist ELLs in language acquisition and content learning and ways to promote parental/family involvement with their children's educational program are examined. Candidates gain hands-on experience in test administration, interpretation, and reporting. Also, Individualized Education Plans for ELLs identified as special education candidates are reviewed. **Candidates in this course who are pursuing ESL certification must also register for EDCR 422. Those who are not pursuing ESL certification are not required to register for EDCR 422.** *3 credits, as offered*

EDCR 418: Educational Approaches in a Multicultural Society

This course explores critical multiculturalism, the ways in which schooling intersects with cultural identities, and how educators can be advocates for social justice. Candidates examine cross-cultural communication and the relationship between language and culture in educational contexts. **Candidates in this course who are pursuing ESL certification must also register for EDCR 423. Those who are not pursuing ESL certification are not required to register for EDCR 423.** *3 credits, as offered*

EDCR 419: Structures of English

This seven-week online course examines (American) English usage, fundamentals of linguistics, literacy development, and current theories in first and second language acquisition. Knowledge of English components (i.e., morphology, syntax, phonology) and understanding of the human context is essential for teachers. **Candidates in this course who are pursuing ESL certification must also register for EDCR 424. Those who are not pursuing ESL certification are not required to register for EDCR 424.** *3 credits, as offered*

EDCR 420: Methods and Materials for Teaching English Language Learners (ELLs)

This course provides candidates with a survey of current research and theory in English as a Second Language (ESL) and teaching English Language Learners (ELL). Fifteen hours of field experience are embedded throughout the course, providing candidates with an opportunity to observe in an ESL setting. The course is offered in both face-to-face and online modalities. **Candidates in this course who are pursuing ESL certification must also register for EDCR 425. Those who are not pursuing ESL certification are not required to register for EDCR 425.** *1 credit, Fall, Spring*

EDCR 422: Assessment and Support for English Language Learners (ELLs) Field Experience

This course is taken concurrently with EDCR 417 only by those pursuing ESL certification. The field experience is a 15-hour course that allows for the application of skills and knowledge learned in EDCR 417. During the field experience, candidates observe effective assessment practices and participate in implementing an assessment of an ELL. *1 credit, as offered*

EDCR 423: Educational Approaches in a Multicultural Society Field Experience

This 15-hour course is taken concurrently with EDCR 418 only by those pursuing ESL certification. During the field experience, candidates conduct a cultural assessment through observation and interaction with a group of ELL students and put into practice the concepts and skills learned in EDCR 418. *1 credit, as offered*

EDCR 424: Structures of English Field Experience

This 15-hour course is taken concurrently with EDCR 419 only by those pursuing ESL certification. During the field experience, candidates observe an ELL, apply those insights and knowledge to a classroom setting, and put into practice the concepts and skills learned in EDCR 419. *1 credit, as offered*

EDCR 425: Methods and Materials for Teaching English Language Learners (ELLs)**Field Experience**

This 15-hour course is taken concurrently with EDCR 420 only by those pursuing ESL certification. During the field experience, candidates apply instructional strategies and put into practice the concepts and skills learned in EDCR 420.

1 credit, Fall, Spring

EDFL 101: Secondary Education Field Experience I

This 60-hour experiential learning opportunity is an Observation and Exploration (Stages 1 and 2) experience in an educational setting assigned by the Coordinator of Clinical Experiences. The focus is on classroom interaction and student observation and is linked to EDCR 105.

0 credit, Fall, Spring, Summer

EDFL 102: Secondary Education Field Experience II

This 60-hour experiential learning opportunity is a Pre-student teaching (Stage 3) experience and takes place in an educational setting assigned by the Coordinator of Clinical Experiences. In addition to observation, this field experience offers candidates the opportunity to teach all or parts of several lessons and to complete tasks at the direction of the Cooperating Teacher.

0 credit, Fall, Spring, Summer

EDFL 103: Secondary Education Field Experience III

This 60-hour experiential learning opportunity is a Pre-student Teaching (Stage 3) experience and takes place in an educational setting assigned by the Coordinator of Clinical Experiences. The requirements of this field experience include teaching at least three lessons, planning a unit, and completing tasks at the direction of the Cooperating Teacher.

0 credit, Fall, Spring, Summer

EDFL 410: Student Teaching

This experience in the field encompasses one full semester of directed observation and supervised student teaching, with gradual assumption of total teaching responsibilities. This course is taken in conjunction with EDCR 401 Professional Seminar.

Prerequisite: School of Education Permission

12 credits, Fall, Spring

EDUC 355: Museum Internship

This internship introduces participants to the field of museum education which is object or art centered. Teacher candidates have an opportunity to examine museum education as an enrichment to their classroom teaching activities, and they design activities which integrate curriculum with the museum collection.

3 credits, as offered

EDUC 357: Adult Literacy

This course explores a variety of approaches and materials used for reading and numeracy instruction of the adult learner. Familiarity with the social and psychological characteristics of the adult learner is stressed. Participants will be expected to spend contact hours in direct tutoring of adult literacy students.

3 credits, Fall, Spring

EDUC 358: American Sign Language (ASL) I

This course teaches a basic vocabulary of 300-500 signs used in ASL in conversational settings by Deaf and hearing signers. Participants are introduced to important aspects of ASL grammar and ASL culture and are given a brief introduction to hearing loss and some practical issues in the education of Deaf culture.

3 credits, Fall, Spring

EDUC 359: American Sign Language (ASL) II

This course teaches more advanced vocabulary of signs used in ASL. It also analyzes conversational settings of various Deaf and hearing signers. Detailed aspects of ASL grammar and ASL culture are taught. A major emphasis is placed on expressive signing by course participants. Practical issues in Deaf culture and in Deaf education are discussed.

Prerequisite: EDUC 358

3 credits, Fall, Spring

EDUC 390-394: Special Topics in Education

1-6 credits, as offered

EDUC 395-399: Independent Study

Students choose a topic of study with faculty approval and supervision.

1-6 credits. By arrangement

MLED 202: Adolescent Development/Field Experience

This course provides a broad study of major concepts, principles, theories, and research related to middle childhood and adolescent development. Teacher candidates explore the physical, cognitive, behavioral, and social changes that take place during the middle level years as well as the events, circumstances, and strategies that influence and promote normal development. An examination of the middle school philosophy and how it supports adolescent development through the transitions from an early childhood school environment to the middle school environment and then to the high school environment.

3 credits, Spring

MLED 301: Literacy Development, Strategies, and Assessments/Field Experience

This course appraises teacher candidates of the literacy needs of middle level and secondary students and models methods of instruction, curriculum development, strategies, and assessments to meet those needs. There is a 30-hour Pre-student Teaching (Stage 3) field experience for 4-8 majors; 15-hour field experience for 7-12 majors.

Prerequisite: EDCR 105

3 credits, Fall

MLED 302: Concepts of Natural Science/Field Experience

This is a descriptive and conceptual course in natural sciences designed for education majors. Teacher candidates engage in the Earth Force Community Action and Problem-Solving approach to explore selected topics from life sciences, physical science, and earth/space sciences to develop a necessary scientific attitude and background for teaching in today's society. The field experience associated with this course is a Pre-student Teaching (Stage 3) 30-hour experience. Individuals with a science concentration complete 60 hours. Prerequisite: EDCR 105

3 credits, as offered

MLED 303: Applications of Mathematics/Field Experience

Teacher candidates develop, implement, assess, and modify middle level curriculum and lessons which build new mathematical knowledge through problem solving, mathematical representations, and technology; solve problems that arise in math and other discipline areas; and learn how to apply appropriate strategies to solve these problems. This course is taken by teacher candidates in the Special Education PreK-12 program and in the Middle Level 4-8 program with a concentration in mathematics. Mathematics 7-12 majors may also take this course. The field experience associated with the course is a Pre-student Teaching (Stage 3) 60-hour experience.

Prerequisite: EDCR 105

3 credits, Spring

MLED 304: Inquiry and Analysis in Pennsylvania History and Government/Field Experience

The course design helps teacher candidates identify and explain the political and cultural contributions of individuals and groups in Pennsylvania history; identify and explain primary documents, material artifacts, and historic sites important in Pennsylvania history; identify and explain how continuity and change have influenced the history of Pennsylvania. Curriculum development and alignment with state and national standards are emphasized. This course is taken by middle level teacher candidates with a social studies concentration and Secondary Social Studies majors. The field experience associated with this course is a Pre-student Teaching (Stage 3) 60-hour experience.

Prerequisites: EDCR 105

3 credits, as offered

SPED 101: Special Education Overview

This course provides candidates with a basic understanding of the federal mandates associated with special education. Candidates are introduced to the characteristics of various exceptionalities; pre-referral strategies and interventions; cultural diversity; curricular and behavioral modifications, adaptations, and instructional strategies; educational assessment; historical legislations and current legal issues in special education; and the collaboration of

regular education and special education teachers. Focus is on the special education process for evaluation, identification, eligibility determination, and placement of students with exceptionalities in special education.

3 credits, Fall, Spring

SPED 220: Collaboration and Partnerships with Parents, Schools, and the Community

This course examines the various human resources and support services available to build partnerships that meet the needs of diverse student populations, as well as the relationships that exist between family and school. Specifically, this course focuses on collaborative problem-solving, consultation, and co-teaching in education, as well as effective communication and involvement strategies to overcome barriers to family involvement. Attention is given to appropriate interpersonal and conflict resolution skills required for effective collaboration and partnerships in professional education environments.

3 credits

SPED 245: Meeting the Learning Needs of Students with Exceptionalities/Field Experience

This course examines the educational programming for children with delays or exceptionalities. In this course, teacher candidates are introduced to historical legislations and current legal issues in special education; the concept of early intervention; the Individual Family Service Plan (IFSP) and the Individual Education Plan (IEP); and the best practices in teaching, managing, and supporting children with exceptionalities in the educational environment. The field experience associated with this course is an Observation and Exploration (Stage 2) experience which is embedded throughout the course (9 hours).

Prerequisite: SPED 101

3 credits, Fall

SPED 306: Data-Driven Instruction: Special Education/Field Experience

This course focuses on how to choose an assessment tool and how to utilize data from formal, informal, and anecdotal assessments to improve the achievement of students with special needs. This course teaches participants how to ethically collect, analyze, and use various forms of data to drive instruction related to Individualized Education Plans (IEP) goals, inform program decisions, and improve instructional practices. Strong emphasis will be placed on state and local assessments as they relate to students with special needs. Nine hours of Pre-student Teaching (Stage 3) field experience are embedded throughout the course.

Prerequisite: SPED 101 and EDCR 105

3 credits, Fall

SPED 307: Low Incidence Disabilities/Field Experience

This course is designed to focus on specific issues related to a variety of significant disabilities that are included in the general category of low incidence. The following aspects of low incidence are included: pervasive development disorders; moderate to significant mental retardation; medically fragile; multiple disabilities; functional and sensory curriculum; instructional techniques and strategies; community-based instruction; assistive technology; and service and program options and coordination. Teacher candidates are exposed to a variety of instructional environments on the least restrictive environment (LRE) continuum that serve children with low incidence disabilities. The field experience associated with this course is a 90-hour Pre-student Teaching (Stage 3) experience in a special education setting.

Prerequisite: SPED 308

3 credits, Fall

SPED 308: High Incidence Disabilities/Field Experience

This course is designed to focus on specific issues related to high incidence disabilities in both special education and regular education environments. The following aspects of high incidence disabilities are included: communication disorders; specific learning disabilities; emotional disturbance; curricular adaptations and modifications; instructional techniques and strategies; and service and program options and coordination. Teacher candidates are exposed to a variety of instructional environments on the least restrictive environment continuum that serve children with high incidence disabilities. The field experience associated with this course is an Observation and Exploration (Stages 1 and 2) six-hour experience.

Prerequisite: SPED 101

3 credits, Fall

SPED 320: Literacy for Students with Exceptionalities/Field Experience

This course is designed to focus on specific corrective, remedial, and compensatory strategies for all aspects of language, reading, and writing development of children with exceptionalities. Specifically, this course addresses: utilization of assessment data to choose and plan instructional strategies for teaching reading and writing; the evidence-based connection between literacy and behavior; progress monitoring; use of explicit and systematic instruction; selection of research-based writing strategies and interventions; and the impact of language development and literacy. The field experience associated with this course is a Pre-student Teaching (Stage 3) experience which is embedded throughout the semester (30 hours).

Prerequisites: SPED 101

3 credits, Spring

SPED 322: Positive Behavioral Supports and Interventions/Field Experience

This course is designed to introduce teacher candidates to a variety of positive behavioral supports and interventions in order to create and maintain a classroom environment that is conducive to learning. Included in this course are the following areas: Response to Intervention (RTI); school-wide positive behavioral supports; classroom-based positive behavioral intervention approaches; selecting, instructional planning, and teaching social skills; identification of the causes and functions of behaviors; the assessment of behavioral issues; and the development and implementation of effective positive behavioral support plans. The teacher candidates complete a functional behavior assessment and develop, implement, and evaluate effective positive behavioral support plans using a variety of progress monitoring and data gathering techniques. The field experience associated with this course is an Observation (Stage 1) experience which is embedded throughout the semester (6 hours).

Prerequisites: SPED 101

3 credits, Spring

SPED 333: Transitions

This course is designed to focus on transitioning out of the public school setting and into adulthood for students with exceptionalities. Specifically, this course will address: (a) implementing transition systems, (b) creating a transition perspective of education, and (c) promoting movement to post-school environments. Pre-service teachers will research, select, assess, develop, and practice implementing transition plans, strategies, and techniques for students with exceptionalities. The field experience associated with this course is a Pre-student Teaching (Stage 3) experience embedded throughout the semester (15 hrs.).

2 credits, Fall

SPED 340: Meeting the Needs of Students with Exceptionalities:**Seventh through Twelfth Grade/Field Experience**

This course examines intervention strategies appropriate for the instruction and classroom management of students with exceptionalities in seventh through twelfth grades. Focus is given to planning, implementing, and evaluating strategies appropriate for maintaining an effective learning environment and for creating adaptations across all content areas, as well as developing and practicing authentic collaboration techniques. The field experience associated with this course is an Observation (Stage 1) experience which is embedded throughout the course (9 hours).

Prerequisites: SPED 101

3 credits, as offered

SPED 341: Contemporary Issues in Special Education

This course examines contemporary trends and issues in special education and the impact of those issues upon schools, teachers, students, and parents. Current research in the field of special education is reviewed through discussion of topics. Content also includes an overview of the various legal issues in special education, including the rights of students, parents, and educators.

3 credits, as offered

SPED 343: Program Planning and Assessment in Special Education/Field Experience

This course examines the purposes and kinds of assessment procedures used to identify, evaluate, place, and plan instruction for children and adolescents with special needs. For teacher candidates to take part in the writing of an Individualized Education Plan (IEP) and engage in a full range of progress monitoring strategies, this course addresses: the assessment process; formal and informal procedures; assessment of general performance areas; assessment

of academic areas; and using assessments to plan instruction. Focus is given to a variety of assessments, including authentic, screening, benchmark, diagnostic, formative and summative. Six hours of Pre-student Teaching (Stage 3) field experience are embedded throughout the course.

Prerequisites: SPED 101

3 credits, Spring

SPED 412: Autism Spectrum Disorders: Theory and Practice

This course is an introduction to the education and habilitation of children diagnosed with autism spectrum disorder (ASD). The course concentrates on historical development, identification, assessment, and characteristics, including communication and social skills, of ASD. Instructional interventions are also identified and examined. The course is a competency-based course which will be delivered in a seven-week online modality. *3 credits, as offered*

SPED 413: Autism Spectrum Disorders: Field Experience One

This course is a field experience taken concurrently or upon completion of SPED 412 Autism Spectrum Disorders: Theory and Practice. The experiential learning takes place in an educational or therapeutic setting for 30 hours. The candidate observes, serves as a teacher aide, and begins to practice skills. Online communications are required during this course. **SPED 413 is only required for those seeking ASD endorsement.** *1 credit, as offered*

SPED 426: Autism Spectrum Disorder: Applied Behavior Analysis and Intervention

This course is designed to identify the components of applied behavior analysis (ABA) and the development of effective behavioral interventions pertaining to children and adolescents diagnosed along the autism spectrum. Focus is given to identification of the causes and function of behaviors, the assessment and diagnosis of behavioral issues, and the development and implementation of effective behavior and therapeutic treatment plans. The course participants will be able to assess, develop, implement, and evaluate effective behavioral and therapeutic intervention plans using a variety of positive behavioral supports and management techniques. *3 credits, as offered*

SPED 427: Autism Spectrum Disorders: Field Experience Two

This course is a field experience taken concurrently or upon completion of SPED 426 Autism Spectrum Disorders: Applied Behavior Analysis and Interventions. The experiential learning takes place in an educational or therapeutic setting for 30 hours. The candidate observes, serves as a teacher aide, and begins to practice skills. Online communications are required during this course. **SPED 427 is required only for those seeking ASD Endorsement.** *1 credit, as offered*

SPED 431: Autism Spectrum Disorder: Strategies for Social Competence

This course is designed to identify the components of language and social skills and the development of those skills as they pertain to children and adolescents with ASD. Emphasis will be placed on information processing and the development of language, communication strategies, pragmatics, augmentative, and alternative communication systems. This course will also focus on social skills deficits and approaches for teaching social skills to students with ASD. *3 credits, as offered*

SPED 432: Autism Spectrum Disorders: Field Experience Three

This course is a field experience taken concurrently or upon completion of SPED 431 Autism Spectrum Disorders: Strategies for Social Competence. The experiential learning takes place in an educational or therapeutic setting for 30 hours. After approval from the Cooperating Teacher, the candidate is expected to take over most of the responsibilities of the day. Online communications are required. **SPED 432 is required only for those seeking ASD Endorsement.** *1 credit, as offered*

Please note: For ASD endorsement candidates who live in the Erie area, arrangements for the field experience will be done by the School of Education. For ASD endorsement candidates who live outside of the Erie area, special arrangements will need to be made. The candidate must contact the Program Coordinator prior to enrolling in SPED 413 to discuss field experience site arrangements.

ENGLISH

LAURA RUTLAND, Ph.D., *Chairperson*

FACULTY: *Professors:* Douglas King. *Associate Professors:* Ann Bomberger, Laura Rutland. *Assistant Professors:* Matthew Darling, Shreelina Ghosh, Kaustav Mukherjee. *Associate Teaching Professors:* Carol Hayes. *Assistant Teaching Professors:* Derek DiMatteo, Lauren Garskie. *Adjunct Faculty:* Elizabeth Kons, Emmett Lombard, Berwyn Moore, Patrick O'Connell, Penelope Smith, Mary Wagner, Lora Zill.

Mission Statement

The Gannon University English Department prepares students to be informed readers and skillful writers. Committed to students' personal and professional growth, the English Department exposes students to literary texts from a variety of cultural backgrounds and develops their writing skills in a variety of academic and community settings.

Vision Statement

Helping students to explore the writing of the past, to use writing to engage with the present, and to create a better future through the written word.

The department offers two majors

Outcomes for English Major

1. Students apply linguistic theory to analyze language structures and the relationships among language, culture and society.
2. Students use visual images and technology for various purposes and audiences.
3. Students read actively.
4. Students produce rhetorically effective writing in multiple genres appropriate for the context and audience.
5. Students write effectively in response to literary texts.
6. Students analyze print and nonprint media and the role of technology in communication.
7. Students conduct research of various kinds and report results effectively.

Program Description – English Major

The Department offers three curricular tracks to help students tailor the major to fit their interests and professional goals.

- **Secondary Education in English Track:** For students interested in teaching English at the high school level
- **Legal Career Track:** For students preparing to attend law school or wanting to pursue another law-related career (e.g., paralegal)
- **Literary Studies Track:** For students preparing for graduate school in English literature or a related discipline or seeking careers demanding strong liberal arts preparation. All tracks cultivate the student's ability to write in a variety of genres for different audiences and purposes.

Program Description – Writing Major

The English Department also offers a separate Writing Major, a highly flexible program of study which prepares students to work as writing professionals in business and non-profit settings or as creative writers. Major core requirements in the English Department will focus primarily on writing, while program electives may be completed with courses from several departments, including English, Communications, Legal Studies, Marketing, Education, Information Systems or Criminal Justice.

Writing Program Outcomes:

1. Demonstrate effective writing and speaking skills for various rhetorical situations.
 2. Apply various writing and designing technologies.
 3. Analyze and critically interpret writing for a multicultural audience.
 4. Produce collaboratively written projects.
- The Department also offers students a variety of internships, a 3+3 program in legal studies with Duquesne University and features student-run publications, including Totem (an award-winning literary magazine). Whether they seek careers in education, publishing, journalism, media, public relations, government, business, industry or law, Gannon English Majors acquire the scholarly focus, broad preparation and intellectual awareness that form the basis of an intensive liberal arts education. Students in all tracks are required to complete an internship as part of their academic program.

LENG 111 and LENG 112 are normally prerequisites for upper level literature and writing courses.

COURSE DESCRIPTIONS

LENG 111, 112, 241, 243, 245, 247, 249, 250, 251, and 252 are courses taught by the English Department. See the section on the Liberal Studies Core Curriculum for course description of these courses.

ENGL 100: First-Year Seminar

The First-Year Seminar is a discussion/experience-based course intended to orient the new student to Gannon University, to introduce the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life, and to encourage development of academic, personal and spiritual aspects of the student's life. Each seminar is unique, depending upon the instructor and/or program in which it is offered.

(Freshman are expected to complete the First-Year Seminar during the first semester at Gannon. If not, the student must complete the requirement prior to the sophomore year.) *2 credits*

ENGL 206: Pursuits of English

Pursuits of English introduces students to the dynamic, evolving field of English and prepares them for advanced course work. Students will explore ways to approach and understand literature, linguistics, composition, and career and graduate studies opportunities for English majors. LENG 112 should be taken either before or concurrently with Pursuits of English.

Prerequisite: LENG 111

3 credits

ENGL 210: Creative Writing

An introductory course providing instruction and practice in the techniques and principles of writing poetry and short fiction.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 211: Advanced Composition

A rhetorical approach to problems of written communication. Although primary stress will be on developing the student's writing ability, knowledge of rhetorical theory and of critical norms for prose will be required.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 212: Business and Professional Communication

A detailed study of the various methods of communication used in the professions, business, and industry, for audiences both within and outside the organization. Numerous written exercises.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 214: Writing for Print/News Media

This workshop course introduces new students to the basics of journalistic reporting and writing. Students receive practice in how to identify, gather, and write news; and make ethical judgments about news. The course should help students who want to work for newspapers and magazines as well as for broadcast and online media. This course is a prerequisite for ENGL 216 and ENGL 252. (This course is also listed as COMM 214).

Prerequisites: LENG 111, 112

3 credits

ENGL 215: Editing/Production of Print Media

The course introduces students to the production of printed material, whether for newspaper, magazines, advertising, in-house publications, brochures, books, or anything else on paper. (This course is also listed as COMM 215).

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 216: Advanced and Specialized Reporting

This workshop course focuses on specialized news beats including police, courts, government, education and the environment and introduces students to computer-assisted reporting and research techniques. (This course is also listed as COMM 216).

Prerequisites: ENGL 214/COMM 214

3 credits

ENGL 217: Introduction to Linguistics

An introduction to the basic concepts of linguistics with an emphasis on both theory and application of linguistic principles. Topics include origin, structure, morphology, syntax, dialects, oral, and written language.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 218: Feature Writing

This workshop course introduces students to various genres of feature writing for newspapers, magazines and online publications, including profiles, entertainment pieces and trend stories.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 225: Special Topics

Prerequisites: LENG 111, LENG 112

1 credit

ENGL 240: Leadership Seminar

The Leadership Seminar introduces students to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in the various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for students' leadership development as reflected both in this course and in the corequisite Theology or Philosophy III course.

(LTHE 227 or LTHE 237)

1 credit

ENGL 250: Introduction to Photography

Taking effective and well-composed photographs; using the 35mm camera, its lenses, filters, and flash; developing black and white film; printing artistic enlargements.

Corequisite: ENGL 251

3 credits

ENGL 251: Photography Lab

Corequisite: ENGL 250

0 credit

ENGL 252: Photojournalism

This course introduces students to the principles of photojournalism. Students study and practice photojournalism techniques, with consideration of the ethical issues involved with creating and using visual images. (This course is also listed as COMM 252).

Prerequisite: ENGL 214/COMM 214

3 credits

ENGL 301: Workshop: Special Topics in Writing

Specialized forms of writing in a workshop format for advanced writing.

Prerequisite: ENGL 210 or 211

3 credits

ENGL 312: Poetry Writing Workshop

An advanced seminar and workshop focusing on student's original poetic composition.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 313: Fiction Writing Workshop

An advanced seminar and workshop focusing on student's original composition of short fiction.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 316: Literature & Film

This course gives students skills in analyzing literary works and films adapted from or inspired by them. We'll explore the processes involved in adapting a narrative from a print and/or stage medium to the film medium. We'll study works from a variety of genres and from a variety of critical perspectives. Students interested in pedagogy may also study methods of teaching literature/film pairings.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 321: Literature For Young Adults

A study of distinguished literature for young adults and of the historical development and current trends in adolescent literature.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 322-326: Author Seminars

These seminars are opportunities for students to study and enjoy the work of a particular author, whose work is not usually studied in depth in other departmental courses.

Prerequisites: LENG 111, LENG 112

1 credit

ENGL 331: American Literature to 1865

The course covers American prose and poetry to 1865, focusing on the development of a national literature in the United States. There is an emphasis on canonical figures (such as Taylor, Edwards, Franklin, Douglass, Hawthorne, Melville, Emerson, and Thoreau), but attention will also be given to lesser known native, women, and minority writers.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 332: American Literature, 1865 to 1914

American prose and poetry from the Civil War to World War I. Major figures include Whitman, Twain, James, Dickinson, Crane, Dreiser.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 333: American Literature, 1915 to 1945

American prose, poetry and drama between the World Wars. Major figures include Frost, Hemingway, O'Neill, Faulkner.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 334: American Literature after 1945

The course covers American prose and poetry from WW II to the present, with emphasis on traditional and postmodern texts. In addition to canonical figures like Arthur Miller, Ralph Ellison, Sylvia Plath, Flannery O'Connor, Toni Morrison, and Thomas Pynchon, there is an emphasis on ethnic-American writers and contemporary poetry.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 341: British Literature: Medieval and Renaissance

The dramatic and non-dramatic literature of the Medieval Period and non-dramatic literature of the Renaissance, with emphasis on the works of Chaucer, More, Sidney, Spenser, Milton, Donne, and Jonson.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 342: British Literature: The Long Eighteenth Century: 1666-1830

This course explores British literature during the time often known as the long eighteenth century, from 1666-1830. The course looks at literature thematically, exploring how important social and aesthetic concerns shift and change across periods. Topics may include the growth of the British empire, slavery and abolitionism, gender roles, the industrial revolution, political revolution, rural and urban culture, religion, and/or aesthetics.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 343: British Literature: Victorian and Modern

This course covers writers of the Victorian and Modern periods, as well as modern Commonwealth writers. The course will vary in thematic focus, looking at issues like Industrialism, social class, gender, and the British Empire, and may include a wide variety of writers, among them, Dickens, Gaskell, Tennyson, the Brownings, Charlotte Bronte, Yeats, Joyce, Woolf, Rhys, Conrad, or Achebe.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 350: Drama of Shakespeare

The course explores Shakespeare's staggering achievement and evolution as a dramatist, Across the genres of comedy, history, tragedy, and romance. We examine the question of whether Shakespeare was "of an age" or "for all time" (or both). From a variety of critical perspectives, we explore Shakespeare's influence by and upon Renaissance England, as well as the universality and enduring appeal of his plays as seen through contemporary productions, films, and other cultural adaptations.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 352: Modern/Contemporary Drama

A critical approach to significant drama from Ibsen to the present and to the intellectual forces and assumptions that contribute to their development.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 354: African American Literature

This course examines literature written by African-Americans. Emphasis is on literary and cultural analyses, including issues of race, ethnicity, gender and social class.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 355: Contemporary World Literature

The course introduces students to works of literature from around the world that have been composed after 1980. Intellectually, the students will be able to see and hear the sights and sounds from different cultures and places and appreciate the various historical, literary, and human connections in literature from places outside the United States. Course themes may vary from semester to semester.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 356 Writing for Social Change

Writing for Social Change is a community-based/service-learning, advanced writing course through which students explore and engage in the act of writing for social change/justice. Students will analyze and compose texts, in a variety of genres/modalities, which function rhetorically to advance causes for social change and social justice.

3 credits

358: Writing in Digital Environments

This course focuses on the study and practice of textual and visual content development for web-based environments. Students will develop skills in social media strategizing, usability and accessibility optimization, promotional writing, and search engine optimization.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 362: History of the English Language

Phonological and morphological development of Modern English from the Indo-European period. Methodology of historical linguistics.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 363: The Structure of English

Rationale and application of transformational grammar to linguistic and stylistic analysis.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 365: Immigrant World Literature

Course on literature that is focused on the immigrant experience from around the world, post 1945.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 371: Mass Media and Popular Culture

This course covers the history, organization and management of mass media. It also covers the concepts and theories of popular culture and mass media, including advertising and public relations as well as news organizations. It examines critical approaches to newspapers, magazines and broadcast and online media as sources of information and entertainment. Among its focuses are the ethical and legal issues faced by news organizations.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 372: Public Relations

Strategies and communication tools of public relations as a link between an institution and its external and internal public. Cross-listed with COMM 372.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 375: English Internship

A semester-long internship providing field experience in areas related to the student's concentration. Students may use no more than 6 practicum credits toward graduation requirement.

Prerequisites: LENG 111, LENG 112

1-6 credits

ENGL 381: Literary Criticism

This course provides a historical and analytical study of critical theory with emphasis on contemporary critical methods. The course focuses on central critical problems and evaluates a range of critical and theoretical responses to these problems.

Prerequisites: LENG 111, LENG 112

3 credits

ENGL 389: Methods of Teaching English

Cross listed as EDCR 325, methods of teaching literature, writing, critical reading, and grammar in the classroom. Replaces EDCR 324 for English secondary education students only.

Prerequisites: EDCR 101, 103, LENG 111, 112

3 credits

ENGL 390-394: Special Topics

Prerequisites: LENG 111, LENG 112

1-3 credits

ENGL 395-398: Independent Study

Prerequisites: LENG 111, LENG 112

1-3 credits

ENGL 400: Senior Research Project and Oral Exam

Prerequisites: LENG 111, LENG 112

3 credits

English Major Curriculum

Literature Track

(Numerals in front of courses indicate credits)

FRESHMAN

Fall Semester

| | |
|-----------|-----------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | Global Language |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | LS social science |
| 3 | History without Borders/LHIST 111 |
| 2 | First-year Seminar |
| <u>17</u> | |

Spring Semester

| | |
|-----------|--|
| 3 | Critical Analysis and Composition/LENG 112 |
| 3 | Global Language |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Pursuits of English/ENGL 206 |
| 3 | LS Science |
| <u>15</u> | |

SOPHOMORE

Fall Semester

| | |
|-----------|-----------------------------|
| 3 | Linguistics/ENGL 217 |
| 3 | The Bible/LTHE 201 |
| 3 | LS speech |
| 3 | Upper-level literature/ENGL |
| 3 | Elective |
| <u>15</u> | |

Spring Semester

| | |
|-----------|-------------------------------|
| 3 | Upper-level American lit/ENGL |
| 3 | Philosophy II series/LPHI |
| 3 | Mathematics |
| 3 | Fine Arts series/LFIN |
| 3 | Elective |
| <u>15</u> | |

JUNIOR

Fall Semester

| | |
|-----------|---------------------------------|
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Upper-level British lit/ENGL |
| 3 | Upper-level writing/ENGL |
| 3 | Drama of Shakespeare/ENGL 350 |
| 3 | Elective |
| 1 | Leadership Seminar |
| <u>16</u> | |

Spring Semester

| | |
|-----------|------------------------------------|
| 3 | Upper-level international lit/ENGL |
| 3 | Upper-level writing/ENGL |
| 3 | English Internship/ENGL 375 |
| 3 | English elective/ENGL |
| 3 | Elective |
| 3 | Elective |
| <u>18</u> | |

SENIOR

Fall Semester

| | |
|-----------|---|
| 3 | Literary Criticism/ENGL 381 |
| 3 | Research Project and Oral Report/ENGL 400 |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |
| <u>15</u> | |

Spring Semester

| | |
|-----------|------------------------------|
| 3 | Integrating Seminar/LBST 383 |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |
| 2 | Elective |
| <u>17</u> | |

Legal Career Track*(Numerals in front of courses indicate credits)***FRESHMAN***Fall Semester*

| | |
|----------|----------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | Global Language |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | LS social science |
| 3 | History without Borders/LHST 111 |
| <u>2</u> | First-year Seminar |
| 17 | |

Spring Semester

| | |
|----------|---|
| 3 | Critical Analysis and Composition/LENG 112 |
| 3 | Global Language |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Pursuits of English/ENGL 206 |
| <u>3</u> | LS Science |
| 15 | |

SOPHOMORE*Fall Semester*

| | |
|-----------|--------------------------------------|
| 3 | Linguistics/ENGL 217 |
| 3 | Introduction to Law/LEGL 111 |
| 3 | The Bible/LTHE 201 |
| 3 | Liberal Studies speech/SPCH |
| 3 | Upper-level literature elective/ENGL |
| <u>15</u> | |

Spring Semester

| | |
|----------|--------------------------------------|
| 3 | Upper-level American literature/ENGL |
| 3 | Philosophy II series/LPHI |
| 3 | Mathematics |
| 3 | Fine Arts series/LFIN |
| 3 | Elective |
| <u>3</u> | Elective |
| 18 | |

JUNIOR*Fall Semester*

| | |
|----------|---------------------------------------|
| 3 | LPHI 237 or any LTHE 300 level course |
| 3 | Upper-level British lit/ENGL |
| 3 | Legal Research and Writing/LEGL 211 |
| 3 | Elective |
| 3 | Elective |
| <u>1</u> | Leadership Seminar |
| 16 | |

Spring Semester

| | |
|-----------|-------------------------------------|
| 3 | Business/Prof. Comm./ENGL 212 |
| 3 | English Internship/ENGL 375 |
| 3 | Legal and Research Writing/LEGL 212 |
| 3 | Upper-level literature/ENGL |
| 3 | Elective |
| <u>15</u> | |

SENIOR*Fall Semester*

| | |
|----------|--|
| 3 | Research Project and Oral Report/ENGL 400 |
| 3 | Upper-level international literature/ENGL |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |
| <u>2</u> | Elective |
| 17 | |

Spring Semester

| | |
|-----------|---|
| 3 | Trial Preparation and Procedure/LEGL 345 |
| 3 | Integrating Seminar (LBST 383) |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |
| <u>15</u> | |

English Curriculum with Secondary Education

Students majoring in English qualify for Teacher Certification in English/Secondary Education.

Aims and Objectives

The objectives of the program are: (1) to give the student an opportunity to become broadly educated in the areas of language, literature and writing, and (2) to provide a program of teacher education which promotes growth, development, professionalism and expertise for successful teaching.

Students who wish to prepare themselves as secondary English teachers must make formal application to the teacher education program through the School of Education. For a detailed explanation of all requirements refer to the catalog portion under Education.

English/Secondary Education Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 1 Foundations of Teaching/EDCR 103
- 2 First-year Seminar/EDCR 104*
- 3 Public Speaking/SPCH 111
- 3 College Composition/LENG 111
- 3 History without Borders/LHST 111
- 3 Introduction to Philosophy/LPHI 131
- 3 Global Language

18

Spring

- 3 Psychology of Learning and Teaching/EDCR 101
- 3 Pursuits of English/ENGL 206
- 3 Critical Analysis and Composition/LENG 112
- 3 Foundations of Theology/LTHE 101
- 3 Global Language

15

SOPHOMORE

Fall

- 3 Instr Design & Classroom Mgmt/EDCR 105+
- 0 Secondary/Education Field Exp 1+/EDFL 101
- 3 Advanced Composition/ENGL 211
- 3 Linguistics/ENGL 217
- 3 The Bible/LTHE 201
- 3 Math 103 or higher
- 3 Adolescent Development/MLED 202

18

Spring

- 3 Philosophy II Series/LPHI
- 3 Literature for Young Adults/ENGL 321
- 3 Fine Arts Series/LFIN
- 3 Math 105 or higher
- 3 Special Education Overview/SPED 101
- 1 Leadership Seminar

16

JUNIOR

Fall

- 3 Literacy Development, Strategies and Assessments/MLED 301*
- 1 Mat/Meth for Instr Sem/EDCR 321
- 0 Secondary/Education Field Exp II+/EDFL 102
- 3 Drama of Shakespeare/ENGL 350
- 3 Literary Criticism/ENGL 381
- 3 Upper-level writing/ENGL
- 3 LPHI 237 or any LTHE 300 course

16

Spring

- 3 Methods of Teaching English/ENGL 389
- 3 Meet Need Stu. Exceptionalities 7-12/SPED 340
- 3 Upper-level American lit/ENGL
- 3 Upper-level writing course/ENGL
- 3 LS Science series

15

SENIOR

| <i>Fall</i> | <i>Spring</i> |
|---|---------------------------------|
| 3 Assessment and Evaluation/EDCR 330 | 3 Professional Seminar/EDCR 401 |
| 3 Methods/Materials for ELL/EDCR 420* | 12 Student Teaching/EDFL 410 |
| 3 Research Project/Oral Report/ ENGL 400 | |
| 3 Upper-level international lit/ENGL | |
| 3 British literature/ENGL | |
| 0 Secondary Education Field Exp III+/ EDFL 103 | |
| 15 | 15 |

* *Field Experience embedded throughout semester*

All education courses require a grade of C or better.

All field experiences require a grade of pass (P).

LENG 111, LENG 112, Literature Series, and 6 credits of Math higher than 103 require a grade of C or higher.

A GPA of 3.0 or greater is required of all students seeking teacher certification.

Writing Major Curriculum

Major electives may include any of the following courses and should be selected in consultation with the advisor, based on program outcomes and students' professional interests and goals.

ENGL 210, ENGL 214/COMM 214, ENGL 217, ENGL 218, ENGL 301, ENGL 312, ENGL 313, ENGL 356, ENGL 363, ENGL 371, ENGL 372/ADVC 372, LENG 251, ENGL 225, LEGL 212, COMM 235, COMM 314, COMM 322, CRJS 261, ENGL 252/COMM 252, COMM 356, COMM 359, CIS 171, CIS 172, CIS 180, CIS 210, CIS 239, CIS 240, LENG 253, BCOR 240, CIS 239, EDCR 419

(Numerals in front of courses indicate credits)

FRESHMAN

| <i>Fall</i> | <i>Spring</i> |
|-----------------------------------|--|
| 3 College Composiiton/LENG 111 | 3 Critical Analysis and Composition/ LENG 112 |
| 3 Foundations of Theology/LTHE101 | 3 Global Language |
| 3 History without Borders/LHST111 | 3 Introduction to Philosophy/LPHI 131 |
| 2 First-year seminar | 3 Pursuits of English/ENGL 206 |
| 3 Foreign Language | 3 LS Natural Science |
| 3 Elective | |
| 17 | 15 |

SOPHOMORE

| <i>Fall</i> | <i>Spring</i> |
|---------------------------------|--|
| 3 The Bible/LTHE201 | 3 Phil II Series/LPHI |
| 3 Public Speaking/SPCH 111 | 3 Fine Arts Series/LFIN |
| 3 Advanced Composition/ENGL 211 | 3 300-Level Literature/ENGL |
| 3 LS Social Science | 3 Writing in Digital Environments/ ENGL 358 |
| 3 Major Elective | 3 English Internship/ENL 375 |
| | 3 Major Elective |
| 15 | 18 |

JUNIOR
Fall

| | |
|---|--------------------------------|
| 3 | LPPI 273 or any LTHE300 course |
| 1 | Leadership Seminar |
| 3 | Major Elective |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |

16*Spring*

| | |
|---|--|
| 3 | World Immigrant Literature/ENGL 365 or Intercultural Communication/ COMM 313 |
| 3 | Statistics/PSYC 211 |
| 3 | Major Elective |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |

18**SENIOR***Fall*

| | |
|---|---|
| 3 | Research Project and Oral Presentation/ ENGL 400 |
| 3 | Major Elective |
| 3 | Major Elective |
| 3 | Elective |
| 2 | Elective |

14*Spring*

| | |
|---|------------------------------|
| 3 | Integrative Seminar/LBST 383 |
| 3 | Major Elective |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |

15**ENGLISH MINOR**

The English minor will consist of 15 hours beyond LENG 111 and 112. One LENG 200-level course may be included in the 15 hours. The other courses must be English major courses (ENGL), including courses in the areas of literature, writing or linguistics.

The English minor is for students who want to develop their reading and writing skills. It is especially valuable for students who enjoy literature and whose professional goals require an understanding of human motivation and relationships. It is also suitable for creative writers or those interested in editing or publishing.

WRITING MINOR

The Writing Minor in the Department of English will consist of 15 hours in Writing courses beyond LENG 111 and 112. All writing minors must take ENGL 211 (Advanced Composition), ENGL 212 (Business and Professional Communication), ENGL 356 (Writing for Social Change), or ENGL 358 (Writing in Digital Environments). The other 12 hours may be taken from among any of the following courses:

ENGL 210 (Creative Writing), ENGL 211 (Advanced Composition), ENGL 212 (Business and Professional Communication), ENGL 214/COMM 214 (Writing for Print/News Media), ENGL 215/COMM 215 (Editing Production of Print Media), ENGL 216/COMM 216 (Advanced and Specialized Reporting), ENGL 218/COMM 218 (Feature Writing), ENGL 301 (Special Topics in Writing), ENGL 312 (Poetry Writing Workshop), ENGL 313 (Fiction Writing Workshop), ENGL 356 (Writing for Social Change), ENGL 358 (Writing in Digital Environments), or ENGL 375/COMM 372 (Public Relations).

Other special topics writing courses or writing courses offered in other programs, such as Legal Studies, may be included in the minor on a case by case basis.

The Writing Minor is for students who want to add a significant writing credential to their professional toolbox. This minor supports an interest in creative writing, professional writing or both.

THE NEXT STEP**Baccalaureate Degree Program for Graduates of Two Year Colleges****Prerequisite**

Six credits of composition equivalent to LENG 111 and LENG 112.

English

(Numerals in front of courses indicate credits)

PRE-SENIOR YEAR*Fall Semester*

| | |
|---|-------------------------------------|
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | ENGL 217 Linguistics |
| 3 | Global Language |
| 3 | American Lit |
| 3 | Fine Arts Series/LFIN electives |

 15
Spring Semester

| | |
|---|--|
| 3 | Pursuits of English/ENGL 206 |
| 3 | ENGL 200 <i>or</i> ENGL 300 level writing course |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Global Language |
| 3 | Upper-level English elective |

 15
SENIOR YEAR*Fall Semester*

| | |
|---|--|
| 3 | Shakespeare/ENGL 350 |
| 3 | Literacy Criticism/ENGL 381 |
| 3 | Internship |
| 3 | LPHI 237 <i>or</i> any LTHE 300 course |
| 3 | LBST 383 Senior Seminar |
| 1 | Leadership Seminar |

 16
Spring Semester

| | |
|---|-----------------------------------|
| 3 | British Lit |
| 3 | International Lit |
| 3 | ENGL 400 Senior Project |
| 3 | 200/300-level writing course/ENGL |
| 3 | Upper-level English elective/ENGL |
| 3 | Upper-level literature/ENGL |

 18

Students will be permitted to take other courses in substitution for any course listed above which they have satisfactorily completed prior to admission into the Next Step program. Students are required to complete 7-19 credits in the Liberal Studies Core Curriculum. Students may transfer courses equivalent to Foundations of Theology, Introduction to Philosophy, the Literature Series, and/or the Fine Arts Series. Students must take the Leadership Seminar, the Theology/Philosophy III Series, and the Senior Seminar or approved capstone at Gannon University.

All students graduating from the College of Humanities must have completed six credits of a Modern Global Language.

GERONTOLOGY

PARRIS J. BAKER, PhD, MSSA, *Program Director*

FACULTY: Audrey McLaughlin, Parris Baker, Assistant Professor

In the next several decades, care of our aging seniors will become one of our nation's most urgent social issues. The needs of older citizens require new interventions and have placed new and greater demands on current family and financial resources. Present and future caregiving responsibilities for the older adult challenge, and in some cases exhaust, individual, family and community social service resources. Greater attention must be directed toward the growing demands for our seniors. Students pursuing four year degree programs of study in all disciplines may expand their professional competencies and increase their employment opportunities by obtaining a minor in Gerontology.

Vision Statement

To be the regionally recognized leader in gerontology and geriatric education.

Mission Statement

To prepare students to become compassionate and competent health and human service professionals who respect and honor diverse cultural practices and processes of aging, affirm aging through celebration and contribute to the reduction of gerontophobia.

Core Values

1. Compassion
2. Competence
3. Community Collaboration
4. Service
5. Diversity and Inclusion
6. Interdisciplinary and holistic education

GERONTOLOGY MINOR

Students enrolled in other disciplines may obtain a minor in Gerontology upon completion of 18 credits in Gerontology.

- 3 Introduction to Gerontology/GERO or SCWK 211
 - 3 Bio-Medical Aspects of Aging/GERO 315 or SCWK 315
 - 3 Counseling Older Adults/GERO 316 or SCWK 316
 - 3 Mental Health & the Elderly/GERO 336 or SCWK 336
 - 3 Gerontology Internship/GERO 375
 - 3 Death, Dying, and Bereavement/GERO 400 or SCWK 220
-
- 18

COURSE DESCRIPTIONS

GERO 211: Introduction to Gerontology

An overview of the study of gerontology. Examines aging in America, stereotypes, theories on aging, adult development, work and living arrangements, and selected problems of the elderly. This course has a service learning component. 3 credits

GERO 315: Bio-Medical Aspects of Aging

This course is designed to familiarize students with the biological and medical changes occurring in people during the aging process. 3 credits

GERO 316: Counseling Older Adults

This course focuses on assessment, counseling interventions and techniques geared to enriching the worlds of mature adults and their families. 3 credits

GERO 336: Mental Health and the Elderly

Factors involved in successful aging and maintenance of healthy personality functioning are investigated. The most common psychological disorders of the elderly are considered from etiological, diagnostic, and therapeutic aspects. 3 credits

GERO 375: Gerontology Internship

Students are provided an opportunity to work with elderly in a field internship of 8 to 16 hours per week at a local agency serving the elderly. 3-6 credits

GERO 390-395: Special Topics in Gerontology

3-6 credits

GERO 400: Death, Dying, and Bereavement

This course explores dying, death, grief, and bereavement, a topic of interest to personnel in the health and human service and other related professions. Issues discussed are theories of dying, death, and bereavement of the aged and assessments and interventions with clients and their families. Socio-cultural differences in attitude and behavior toward death as well as ethical. Legal issues, resources and support services are explored.

Prerequisite: GERO 211

3 credits

GLOBAL LANGUAGES AND CULTURES

MARTHA KOSIR, Ph.D., *Program Director*

FACULTY: *Professor:* Martha Kosir. *Associate Professor:* Carlos Mamani Carolyn Baugh. *Adjunct Faculty:* Linda Brown, Fr. Michael Kesicki, Patrick O'Connell, Daniela Vassileva.

Mission

The Mission of the Global Languages and Cultures program is to provide students with a comprehensive educational experience that hones not only linguistic skills in the target language but also advances cultural competency, critical thinking, and information literacy skills. The Global Languages program plays a strategic role in the University's efforts to develop a worldview and transform students into responsible, well-rounded, and accomplished global citizens.

Vision

The Global Languages and Cultures program will cultivate effective 21st century communicators, who will understand that linguistic and cultural boundaries can be overcome through knowledge, mutual understanding, and respect.

Aims and Objectives

The Global Languages and Cultures program offers courses in language, literature and culture as well as specialized courses in terminology and practices in fields such as business, criminal justice, social services and health sciences.

The languages offered are German, Spanish, Arabic, French and Latin with majors offered in Spanish and Global Cultures.

The Global Cultures major aims at strategically connecting language and culture skills with fields that warrant good employment prospects – business, public service, communications and more. It provides a comprehensive educational experience for students interested in learning about a world that is increasingly diverse, international and inherently interdependent. In addition to intercultural and multilingual competency, students develop critical knowledge about global history, politics, intercultural communication, cross-cultural psychology and fundamentals of business practices. Linguistic and cultural competency, in addition to critical thinking, information literacy and experiential learning skills, will prepare graduates for success in the global and domestic job market.

In addition to target language courses, the Global Languages and Cultures program offers a series of *Global Culture/Literature* courses (GLOBL). These courses are taught in English and are open to all Gannon students, regardless of their major. They also fulfill certain requirements for the Global Cultures and Spanish majors in addition to offering some flexibility to language minors. GLOBL courses are designed to foster advanced cross-cultural understanding by exploring diverse global cultures and their productions, such as music, art, film and literature.

Students in the Global Languages and Cultures program enjoy remarkable flexibility when it comes to pursuing a degree in a global language alone (Spanish), a degree in Global Cultures, or in combining their major with another degree, be it in humanities, social sciences, or business. The possibilities are truly endless.

Some suggestions for double majors (or minors) include combining language with:

- 1) International Business
- 2) Marketing
- 3) Political Science
- 4) Public Service & Global Affairs
- 5) History
- 6) Communications
- 7) Advertising
- 8) Psychology
- 9) Health Sciences
- 10) Engineering

Combining language with virtually any degree will give students an extra edge in the highly competitive 21st century job market.

Gannon University maintains diverse affiliations with programs for study abroad and encourages all students to spend a summer or a semester at a university in Europe, Latin America, French Canada or worldwide. Students also enjoy numerous opportunities to complete internships at both the international and local levels.

Global language instruction is given in modern classrooms, all equipped with a digital dais. Instructional and informative technology is an integral part of global language and culture education at Gannon University.

CAREER OPPORTUNITIES: Employment here in the U.S. and abroad with governmental and private agencies, multinational businesses; in tourism and travel industry; in communication and translation services; and in bilingual/bicultural agencies. Excellent preparation for graduate studies in languages; international business, law, international relations and global studies.

Spanish Major Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- | | |
|-------|----------------------------------|
| 2 | First-Year Seminar |
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Spanish |
| 1 | Elective |
| <hr/> | |
| 15 | |

Spring

- | | |
|-------|-------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Intro to Philosophy/LPHI 131 |
| 3 | Spanish |
| 6 | Electives |
| <hr/> | |
| 15 | |

SOPHOMORE

Fall

- 3 Public Speaking/SPCH 111
- 3 Philosophy II Series/LPHI
- 6 Electives
- 3 Spanish

15

Spring

- 3 The Bible: An Intro/LTHE 201
- 3 Electives
- 3 Science
- 3 Spanish
- 3 GLOBL course

15

JUNIOR

Fall

- 3 PHIL/THEO III Series
- 1 Leadership Seminar
- 6 Electives
- 6 Spanish

16

Spring

- 3 Fine Art Series/LFIN
- 12 Electives
- 3 Spanish

18

SENIOR

Fall

- 1 Senior Oral
- 3 Electives
- 3 Lit Series/LENG
- 6 Spanish
- 3 GLOBL course

16

Spring

- 3 Senior Seminar/LBST 383
- 6 Spanish
- 6 Electives
- 3 Mathematics

18

Total credits: 128

Global Cultures Major Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First-Year Seminar
- 3 College Composition/LENG 111
- 3 History Without Borders/LHST 111
- 3 Foundations of Theology/LTHE 101
- 3 Global Language/FL 111

14

Spring

- 3 Crit Analysis & Comp/LENG 112
- 3 Intro to Philosophy/LPHI 131
- 3 Global Language/FL 112
- 3 Cognates
- 3 GLOBL Course

15

SOPHOMORE

Fall

- 3 Public Speaking/SPCH 111
- 3 Philosophy II Series/LPHI
- 3 Electives
- 3 Cognates
- 3 Global Language/FL 210

15

Spring

- 3 The Bible: An Intro/LTHE 201
- 3 Fine Arts Series/LFIN
- 3 Electives
- 3 Cognates
- 3 Global Language/FL 211
- 3 GLOBL course

18

JUNIOR*Fall*

| | |
|-----------|----------------------------|
| 3 | PHIL/THEO III Series |
| 1 | Leadership Seminar |
| 6 | Electives |
| 3 | Cognates |
| 3 | 2nd Global Language course |
| <u>16</u> | |

Spring

| | |
|-----------|----------------------------|
| 3 | Senior Seminar/LBST 383 |
| 3 | 2nd Global Language course |
| 3 | Cognates |
| 6 | Electives |
| 3 | Mathematics |
| <u>18</u> | |

SENIOR*Fall*

| | |
|-----------|-------------------------------------|
| 3 | Cognates |
| 6 | Electives |
| 3 | Literature Series/LENG |
| 3 | GLOBL or 2nd Global Language course |
| <u>15</u> | |

Spring

| | |
|-----------|-------------------------------------|
| 3 | GLOBL or 2nd Global Language course |
| 3 | Study Abroad or Internship |
| 6 | Electives |
| 3 | Natural Science |
| 3 | GLOBL 390: Senior oral |
| <u>18</u> | |

Total credits: 128

Global Language Minor

The program grants a minor in Spanish, French or Arabic to qualified seniors upon graduation. Seniors who major in fields other than global languages but who have successfully fulfilled the requirements listed below qualify for the minor. Students interested in a minor should consult with the Global Languages and Cultures program director early in their academic career for advice on the sequence of courses to take and must complete an application form for a minor in the Dean's office.

SPANISH Language and Culture Minor

Seniors who have successfully passed SPAN 210 and SPAN 211 and four upper-level language courses in Spanish/Hispanic studies qualify for the minor (3 upper-level credits may also be earned through a GLOBL course with a focus on the Spanish-speaking world). Students entering with a level higher than 211, will be able to waive 3 credits for SPAN 210 and pursue only 15 credits in the target language to earn the minor.

FRENCH Language and Culture Minor

Seniors who have successfully passed FREN 210 and FREN 211 and four upper-level courses in France/Francophone studies, qualify for the minor (3 upper-level credits may also be earned through a GLOBL course with a focus on France and the Francophone world). Students entering with a level higher than 211, will be able to waive 3 credits for FREN 210 and pursue only 15 credits in the target language to earn the minor.

ARABIC Studies Minor

Seniors who have successfully passed ARABI 111, ARABI 112, ARABI 210 and ARABI 211, and either two GLOBL, political science, history, archeology, women studies or literature courses, with a focus on the Arabic-speaking world, qualify for the minor. The total of credits necessary for a minor in Arabic Studies is 18. Students entering with the intermediate level (210) will be able to waive 3 credits for introductory language (ARABI 112) and pursue only 15 credits to earn the minor (6 of those credits may be completed in English). Students entering at the advanced level will be able to waive 3 credits of language (ARABI 211) and pursue only 15 credits to earn the minor (6 of those credits may be completed in English).

GUIDELINES FOR PLACEMENT IN GLOBAL LANGUAGE COURSES

Advisors, please follow these guidelines or consult the Language Program.

All students who have studied a global language for a year or less in high school should take SPAN 111, ARABI 111, GRMN 111, FREN 111 or LATN 111. Those who have studied 2 years should begin with 112. Students who have taken 3 or 4 years in high school and wish to continue with the same language, should begin at the intermediate level. Students with more than 4 years should start at the Reading level.

Native speakers cannot fulfill their global language requirement with Introductory (111, 112), Intermediate (210, 211) or Conversation (314) courses in their native language. They must substitute their language requirement with a different global language course.

PLEASE NOTE THAT STUDENTS SHOULD FULFILL THEIR LANGUAGE REQUIREMENT NO LATER THAN THE JUNIOR YEAR.

COURSE DESCRIPTIONS

GLOBAL LANGUAGES PROGRAM

Arabic Language

ARABI 111: Arabic Language and Culture I

Acquisition of basic skills in listening, speaking, reading, writing, and cultural competency in Arabic. For students with no background in Arabic or only one year of high school Arabic.

Prerequisite: Director's permission

3 credits

ARABI 112: Arabic Language and Culture II

Acquisition of basic skills in listening, speaking, reading, writing, and cultural competency in Arabic. For students with one semester of university level Arabic or equivalent.

Prerequisite: ARABI 111 or equivalent or Director's permission

3 credits

ARABI 210: Arabic Language and Culture III

Continuation of all skills acquisition with continued emphasis on cultural competency.

Prerequisite: ARABI 112 or equivalent or Director's permission

3 credits

ARABI 211: Arabic Language and Culture IV

Review of language skills and further study of intermediate Arabic grammar and culture.

3 credits

ARABI 390-395 Special Topics

Prerequisite: ARABI 211

1-3 credits

Chinese Language (Currently on hiatus)

CHIN 111: Chinese Language and Culture I

Acquisition of basic skills in listening, speaking, reading, and writing Chinese. For students with no background in Chinese or only one year of high school Chinese.

3 credits

CHIN 112: Chinese Language and Culture II

Acquisition of basic skills in listening, speaking, reading, and writing Chinese. For students with one semester of university level Chinese or equivalent.

Prerequisite: CHIN 111

3 credits

CHIN 210: Chinese Language and Culture III

Continuation of all skills acquisition with emphasis on spoken Chinese.

Prerequisite: CHIN 112 or equivalent or Director's permission.

3 credits

CHIN 211: Chinese Language and Culture IV

Review of language skills and further study of intermediate Chinese grammar.

Prerequisite: CHIN 210 or equivalent or Director's permission.

3 credits

CHIN 390-395: Special Topics

Prerequisites: CHIN 210, CHIN 211

1-3 credits

French Language**FREN 111: French Language and Culture I**

Acquisition of basic skills in listening, speaking, reading, writing, and cultural competency in French. For students with no background in French or only one year of high school French.

Prerequisite: Directors permission.

3 credits, Fall

FREN 112: French Language and Culture II

Acquisition of basic skills in listening, speaking, reading, writing and cultural Competency in French.

Prerequisite: FREN 111 or equivalent or Directors permission.

3 credits, Spring

FREN 210: French Language and Culture III

Continuation of all skills acquisition, with continued emphasis on cultural competency.

Prerequisites: FREN 112 or equivalent or Directors permission.

3 credits

FREN 211: French Language and Culture IV

Review of the language skills and further study of intermediate French grammar and culture.

Prerequisite: FREN 210 or equivalent or Director's permission.

3 credits

FREN 232: Reading French

Preparation for more advanced reading in French.

Prerequisite: FREN 211 or equivalent.

3 credits

FREN 312: French Civilization I

French civilization from beginning to French Revolution.

Prerequisites: FREN 211, FREN 232 or equivalent

3 credits

FREN 313: French Civilization II

Contemporary society in France.

Prerequisites: FREN 211, FREN 232 or equivalent

3 credits

FREN 314: French Conversation

Increased fluency, idiomatic and cultural authenticity are emphasized.

Prerequisites: FREN 211 or equivalent, not open to native speakers

3 credits

FREN 315: Advanced French Grammar

Further training in correct grammar, speech, and composition. Required for majors.

Prerequisites: FREN 211 or equivalent

3 credits

FREN 316: French Composition

Advanced training in composition and stylistics.

Prerequisites: FREN 211, 315 or equivalent

3 credits

FREN 317: French for Business I

Introduction to general business vocabulary to cover the organization of French businesses, banking, transport, international business, stock market, insurance, looking for a job, business letters.

Prerequisite: FREN 211 or Director's permission.

3 credits

FREN 318: French for Business II

A continuation of FREN 317 with further development of French business culture, case studies of businesses, study of overall French economy, and its links in the global economy.

Prerequisite: FREN 317 or equivalent.

3 credits

French Literature

FREN 320: Popular French Fiction

Study of the popular short story and novel in post-war France.

Prerequisite: FREN 211, FREN 232 or equivalent

3 credits

FREN 331: Survey of French Literature, Part I

Major movements and figures. Reading of representative works from the beginnings to 1800.

Prerequisites: FREN 211, FREN 232 or equivalent

3 credits

FREN 332: Survey of French Literature, Part II

Major movements and figures. Reading of representative works.

Prerequisites: FREN 211, FREN 232 or equivalent

3 credits

FREN 335-338: Readings in French Literature and Culture

Topics for this advanced course will vary from semester to semester by genre and literary period.

Prerequisites: 3 upper-level French courses or Director's permission

3 credits

FREN 390-395: Special Topics

Prerequisite: FREN 211

1-3 credits

FREN 396-397: Study Abroad

Credit awarded for participation in classes and activities taught in French and arranged abroad by the University, either for a semester or in the summer.

Prerequisite: Permission of the Department.

12-18 credits, Fall and Spring,
6-12 credits, Summer

Global Cultures/Literatures

This series explores diverse world cultures and their productions—including music, art, film, and literature.

GLOBL 280: The Cultures of Mesoamerica

This course is a survey of the Indigenous cultures of Mesoamerica—México and Central America—before and after the Encounter. It aims to show the continuity of Indian cultures, their cultural and political struggles and it will also focus on the worldviews shared by many of the native groups and their contributions.

3 credits

GLOBL 281: Literatures of the Native Americas 1: Pre-Colombian and Colonial

This course is a survey of the "literatures" and oral traditions of the Native Cultures of the Americas from before the arrival of the Europeans to the colonial periods.

3 credits

GLOBL 282: Literatures of the Native Americas 2: Postcolonial to the Present

This is an overview of the cultural productions of the Indigenous Cultures in the context of their relationship with the new national governments following the collapse of the European domination in the Americas. We will examine how that relationship is represented in different types of "texts."

3 credits

GLOBL 283: France and the Francophone world

This course provides an overview of contemporary cultural, political, and social climate in France and the Francophone world. Using a multidisciplinary approach, the course explores topics such as the media, the role of women in those cultures, religious, ethnic and racial diversity. This course explores the search for identity in the Francophone world, given the challenges of the colonialism and acculturation.

3 credits

GLOBL: 284 German Culture through Film

The course introduces student to the history of German cinema from the classical to the contemporary era. It uses film to explore and discuss German identity and culture, and while doing so, it introduces students to the fundamental aesthetics needed for understanding and analyzing film as art.

3 credits

GLOBL 285: Musics of Latin America

This course is a survey and a study of the rich cultural and musical heritages of Latin America. It examines representative works of the diverse music genres of Latin America and in doing so explores the European, African, and Amerindian contributions to Latin American culture in general and to music in particular. This course uses an interdisciplinary approach and examines the impact of globalization on Latin American culture and music. *3 credits*

GLOBL 290-295: Special Topics in English

Taught in English. No global language credit. These courses can only be used as free electives. *1-3 credits*

GLOBL 308: Women in Middle East History

This course explores Middle Eastern History through the prism of women's experiences. Through primary sources in translation as well as fiction and non-fiction, film, and scholarly articles, we will view how women have participated in the building of a vast and varied civilization. We will explore the historical roots of contested issues particular to Middle Eastern women, and gain general knowledge of Middle East history that we can apply to understanding modern developments. *3 credits*

GLOBL 390-395: Special Topics in English

Taught in English. No global language credit. These courses can only be used as free electives. *1-3 credits*

German Language

At present the Department offers only the first year (GRMN 111 and GRMN 112) courses regularly. The other courses are offered on an as needed basis.

GRMN 111: German Language and Culture I

Acquisition of basic skills in listening, speaking, reading, writing, and cultural competency in German. For students with no background in German or only one year of high school German. Prerequisite: Director's permission. *3 credits, Fall*

GRMN 112: German Language and Culture II

Acquisition of basic skills in listening, speaking, reading, writing, and cultural competency in German. Prerequisite: GRMN 111 or equivalent or Director's permission. *3 credits, Spring*

GRMN 210: German Language and Culture III

Continuation of all skills acquisition with continued emphasis on cultural competency. Prerequisites: GRMN 112 or equivalent or Director's permission. *3 credits*

GRMN 211: German Language and Culture IV

Review of language skills and further study of intermediate German grammar and culture. Prerequisite: GRMN 210 or equivalent or Director's permission. *3 credits*

GRMN 232: Reading German

Preparation for more advanced reading in German. Prerequisite: GRMN 211 or equivalent. *3 credits*

GRMN 314: German Conversation

Increased fluency, idiomatic and cultural authenticity are emphasized. Prerequisites: GRMN 211 or equivalent, not open to native speakers *3 credits*

GRMN 315: Advanced German Grammar

Further training in correct grammar, composition and speech. Prerequisite: GRMN 211 or Director's permission or equivalent *3 credits*

GRMN 316: German Composition

Advanced training in composition and stylistics. Prerequisites: GRMN 211, 315 *3 credits*

GRMN 390-395: Special Topics

Prerequisite: GRMN 211

*1-3 credits***GRMN 396-397: Study Abroad**

Credit awarded for participation in classes and activities taught in German and arranged abroad by the University, either for a semester or in the summer.

Prerequisite: Permission of the Department.

*12-18 credits, Fall or Spring
6-12 credits, Summer*

Latin Language**LATN 111: Introductory Latin I**

Acquisition of the morphology and syntax.

*3 credits, Fall***LATN 112: Introductory Latin II**

Language and Civilization of Ancient Rome, selected readings.

Prerequisite: LATN 111

*3 credits, Spring***LATN 121: Intermediate Latin I**

Prerequisite: LATN 112 or equivalent

*3 credits, Fall***LATN 122: Intermediate Latin II**

Review of grammar with selected readings.

Prerequisite: LATN 121 or equivalent

*3 credits, Spring***LATN 391: Special Topics***1-3 credits***Spanish Language****SPAN 111: Spanish Language and Culture I**

Acquisition of basic skills in listening, speaking, reading, writing, and cultural competency in Spanish For students with no background in Spanish or only one year of high school Spanish.

Prerequisite: Director's permission.

*3 credits***SPAN 112: Spanish Language and Culture II**

Acquisition of basic skills in listening, speaking, reading, writing, and cultural competency in Spanish.

Prerequisite: SPAN 111 or equivalent or Director's permission.

*3 credits***SPAN 210: Spanish Language and Culture III**

Continuation of all skills acquisition with continued emphasis on cultural competency.

Prerequisite: SPAN 112 or equivalent or Director's permission.

*3 credits***SPAN 211: Spanish Language and Culture IV**

Review of language skills and further study of intermediate Spanish grammar and culture.

Prerequisite: SPAN 210 or equivalent or Director's permission.

*3 credits***SPAN 232: Reading Spanish**

Preparation for more advanced reading in Spanish.

Prerequisite: SPAN 211 or equivalent

*3 credits***SPAN 235: Spanish for Medical Personnel**

Acquisition of skills necessary for effective medical communication with Spanish-speaking clientele.

Prerequisite: Director's permission. Not intended for native speakers of Spanish.

*3 credits***SPAN 236: Spanish for Social Work and Mental Health Majors**

This course is designed for majors in social work and health sciences.

It stresses job related vocabulary and conversational patterns in simulated career situations.

Prerequisites: SPAN 112 or Director's permission.

Non-credit course for Spanish majors.

3 credits

SPAN 237: Spanish for Law Enforcement Careers

For Criminal Justice majors and law enforcement personnel.

Job related Spanish in simulated career situations.

Prerequisites: SPAN 112 or Director's permission.

Non-credit course for Spanish majors.

3 credits

SPAN 238/GMLTD 538: Spanish for Medical Personnel (trip)

Acquisition of skills necessary for effective medical communication with Spanish-speaking clientele. The course has an integral 10-day travel component to a Spanish-speaking country, which takes place in May following the end of the spring semester.

Prerequisite: Director's permission. Not intended for native speakers of Spanish

3 credits

SPAN 312: Latin-American Civilization

Historic and contemporary society of Latin American countries.

Prerequisites: SPAN 211 or equivalent

3 credits

SPAN 313: Spanish Civilization

Historic and contemporary society in Spain.

Prerequisites: SPAN 211 or equivalent

3 credits

SPAN 314: Spanish Conversation

Increased fluency, idiomatic and cultural authenticity are emphasized.

Prerequisites: SPAN 211 or equivalent, not open to native speakers

3 credits

SPAN 315: Advanced Spanish Grammar

Further training in correct grammar, composition, and speech.

Prerequisite: SPAN 211 or Director's permission.

3 credits

SPAN 316: Spanish Composition

Advanced training in composition and stylistics.

Prerequisites: SPAN 211, or Director's permission.

3 credits

SPAN 317: Spanish for Business I

Introduction to general business vocabulary to cover the organization of Spanish businesses, banking, transport, international business, stock market, insurance, looking for a job, business letters.

Prerequisite: SPAN 211, SPAN 315 or Director's permission.

3 credits

SPAN 318: Spanish for Business II

A continuation of SPAN 317 with further development of Spanish business culture, case studies of businesses, study of overall Spanish economy, and its links in the global economy.

Prerequisite: SPAN 317 or Director's permission

3 credits

SPAN 333: Mexican Civilization

Historic and contemporary society in Mexico.

Prerequisites: SPAN 211, SPAN 232 or equivalent

3 credits

Spanish and Latin American Literature**SPAN 331: Survey of Spanish Literature, Part I**

Major works and their historic context.

Prerequisites: SPAN 211, SPAN 232 or equivalent

3 credits

SPAN 332: Survey of Spanish Literature, Part II

Major works and their historic context.

Prerequisites: SPAN 211, SPAN 232 or equivalent

3 credits

SPAN 335: Survey of Latin American Literature I

Representative works from the pre-Columbian era through the 18th Century.

Prerequisites: SPAN 211, SPAN 232 or equivalent

3 credits

SPAN 336: Survey of Latin American Literature II

Representative literary works from the 19th Century to the present.

Prerequisites: SPAN 211, SPAN 232 or equivalent

3 credits

SPAN 337: Golden Age of Spanish Literature

Novel and Theater. Principal emphasis on Cervantes and Lope de Vega.

Prerequisites: SPAN 211, SPAN 232 or equivalent

3 credits

SPAN 340: Spanish American Novel

Major movements and representative works.

Prerequisites: SPAN 211, SPAN 232 or equivalent

3 credits

SPAN 351: Internship

The Internship course gives students an opportunity to gain important experience beyond the classroom through work at a variety of organizations, profit or non-profit, where global language skills are required. The course can be taken in the spring or fall semester, as well as during the summer term, for academic credit ranging from 3-6 credit hours. Three credit hours may count toward the requirements for the major. All additional credits will count as general electives. The internship can be completed domestically or abroad.

3-6 credits

SPAN 390-395: Special Topics

Prerequisite: SPAN 211

1-3 credits

SPAN 396-397: Study Abroad

Credit awarded for participation in classes and activities taught in Spanish and arranged abroad by the University, either for a semester or in the summer.

Prerequisite: Permission of the Department.

12-18 credits, Fall or Spring
3-9 credits, Summer

SPAN 399: Senior Oral

Required of all Spanish language majors, in the semester immediately prior to graduation.

Independent study/research on a topic approved by the department, resulting in a paper written and defended in Spanish during the oral examination.

1 credit

HISTORY AND ARCHAEOLOGY

JOHN M. VOHLIDKA, Ph.D., *Program Director*

FACULTY: *Professor:* Suzanne Richard. Jeffrey H. Bloodworth. *Associate Professors:* Carolyn Baugh, John M. Vohlidka. *Assistant Professor:* Alexandra Holbrook. *Lecturer:* Peter Agresti.

Mission Statement

Historians treat the past as a foreign place that can unlock the mysteries of the present and the future. Thinking like a historian will help you understand how attention to change, context, and contingency is critical to understanding the ethical and political dilemmas of the past, present, and future. These skills provide a foundation for careers in law, medicine, education, business, and public policy. The Gannon University department of history & archaeology seeks to inculcate its students with this "historical thinking" and a global vision that equips students with skills for a diverse and increasingly interconnected world.

Vision Statement

Our vision is to become an integral part of Gannon University's humanities division that is known regionally for providing excellent classroom instruction, innovative programs, and producing cutting edge historical research. We strive to accomplish our vision by embracing rigorous academic inquiry with a constant awareness that a focus on students is vital to our program's success.

Aims and Objectives

We must probe the past if we are to understand the problems of the present as well as the identity of humankind. Without history, we have no knowledge of who we are or how we came to be; we are like victims of collective amnesia groping in the dark for our identity.

The history major is designed to enable the student to acquire a skilled and sustained sense of historical perspective as well as informed insight into historical method. But beyond this it seeks to develop those skills and attitudes of mind that distinguish the educated person: the habits of skepticism and criticism; of thinking with perspective and objectivity; of judging the good and bad and the in-between. It is hoped, in short, that the history major will lead the student to the attainment of life's greatest value: wisdom. To this end, the specific aims are to acquaint the student with the basic tools and methods of research and expression—both written and oral; and to develop in him/her the skills of analysis and synthesis for the evaluation of historical evidence with particular stress on sound writing and reading skills.

The Department of History offers courses covering the remote and recent periods of history and stressing American, European and non-Western history. Thirty-three hours of credits, twenty-one in the upper level courses, are required of majors. The History Seminar integrates the student's previous concentration in either American or European History, and is required for all majors. A minor in history may be obtained by completing fifteen credits, including LHST 111, HIST 221, 222 and six additional upper division history credits.

Career Opportunities

Because of its breadth, its concern with people and their institutions and its essential connection with language, the study of history prepares a person for a considerable number of occupations and professions to which these qualities are essential. Thus, a concentration in history is an excellent, generally well recognized and often ideal way to prepare one for many vocations besides teaching. Moreover, those who wish to prepare for graduate or professional school will find that an undergraduate concentration in history, coupled with a sequence of courses dictated by special interests, is one of the most flexible preparatory programs for future study in many fields. Law schools in particular look upon a major in history as one of the best means to prepare for training in that profession.

Specific career opportunities exist in the areas of teaching (at all levels), public historian and archivist, library work, educational and public administration, museum work, social service occupations and urban planning. History is also an excellent preparation for most positions in the federal, state and local governments. Specifically, government intelligence work and the foreign service demand preparation in history. Other areas include politics, public relations, advertising, banking, journalism, editing, fund-raising and related fields.

Alternative History Concentrations and Majors

The Gannon University – Duquesne School of Law, 3+3 Early Admissions Program

This program has been designed for qualified students to earn an undergraduate and a law degree in six years rather than seven. Under the early admissions program students may receive a *Bachelors Degree in History after three years of undergraduate work and the successful completion of the first year of full time study at the Duquesne School of Law*. The student would then receive their Law Degree after successful completion of the second year at Duquesne School of Law. Qualified students may wish to pursue this option.

Students, who qualify for the Pre-Law 3+3 Early Admission Program in collaboration with the Duquesne School of Law, may choose to major in history and complete the B.A. requirements in three years. Refer to the Admissions section for a description of and qualifications for the Pre-Law 3+3 Early Admissions Program. This course of study offers 33 hours of upper division historical studies, an excellent preparation for law school.

Archaeology and Public History Track

This track is for students who would like to include a concentration or focused area of study as part of their history major. This track enhances career-path and professional opportunities for history majors, including the areas of museum studies, archival and library work and other public history vocations; it also prepares students for graduate work in those fields. A number of cross-listings between history and archaeology make this concentration quite attractive, with such resources as The Archaeology Museum Gallery at Gannon, the Collins Institute for Archaeological Research and the Khirbat Iskandar Excavations, Jordan. The history program offers opportunities for internships and field work within the public and private museums, archives, libraries and government agencies which incorporate an appropriate program of "hands-on" experiences. Ample opportunities are also available in study-abroad programs, on a summer or semester basis, whereby the student can study and experience history through a variety of opportunities and forums.

COURSE DESCRIPTIONS

Liberal Studies/LHST 111: History Without Borders

This course chronicles the West's interaction with the world from the fifteenth century to the present. Particular attention will be paid to the West's interaction with the non-Western world. In the course of understanding the process of globalization, students will encounter Asian, Latin American, African, and Western perspectives. *3 credits*

HIST 100: First-Year Seminar: Outliers: Hidden Stories of Human Greatness

This course is a First Year Seminar in the Liberal Studies core curriculum, which will provide an introduction to the field of History. This seminar will introduce students to a more sophisticated understanding of history and humanity. Why do some people transcend their situation and achieve greatness while others plod along and remain mired in their surroundings? Using Malcolm Gladwell's work *Outliers: The Story of Success* as a common reading and a model, this Seminar will develop students' understanding of and appreciation for historical processes, causation, and the ultimate mystery of human greatness. Through integrating the readings, discussion, and experiential learning, Seminar students will research, write, and present their own "Hidden Story of Human Greatness," at the conclusion of the semester.

In addition to information literacy, service learning, writing, and analytical skills, in the seminar students will develop an understanding of the complex relationship between culture and human greatness. The History & Archaeology Department and its faculty believe that it is essential for students to understand how their studies can be applied to ameliorating the world's ills. The course will also investigate career options so that the student can plan their academic courses accordingly. *2 credits*

History 105: Experiential Education

In this course students will "learn by doing." Through an internship or study abroad students will engage in an intensive experiential education program, reflect upon their experience, and employ their new knowledge in the classroom and beyond. All study abroad and/or internships are subject to their advisors' approval. *1-3 credits*

HIST 110: Foundations of Western Heritage

The most important ideas, issues, problems, and developments that mark the changing fortunes of the West from the Ancient World to the end of the Wars of the Reformation (ca.1648). *3 credits*

HIST 210: Ancient History

An analysis of intellectual, social, economic, and political developments of the Ancient World. Prerequisite: LHST 111 *3 credits*

HIST 220: Medieval History

An examination of the intellectual, social, economic and political ethos of the Middle Ages with emphasis on the period 1000-1350. Prerequisite: LHST 111 *3 credits*

HIST 226: The Contemporary Middle East

This is an inter-disciplinary course focusing on the history, culture, and languages of the Contemporary Middle East. As such, course instruction will include rudimentary Hebrew and Arabic language training, the diplomatic and political history of the Middle East, and an examination of Jewish, Arabic, Persian and Kurdish culture. *3 credits*

HIST 230, The History of Human Rights

This course is a history of the Western project of conceiving and imposing a system of moral entitlements and obligations that are termed human rights.
Prerequisite: LHST 111 *3 credits*

HIST 241: English History to Elizabeth I

Celtic and Roman Britain, Christianity and the Norman Conquest, the role of medieval institutions, the Wars of the Roses, consolidation of a dynastic state. Nationalism and the Reformation provide the focus in the Tudor period.
Prerequisite: LHST 111 *3 credits*

HIST 242: British History 1600 to Present

The history of the British state and the British people from the Restoration of the Stuart Monarchy to the present.
Prerequisite: LHST 111 *3 credits*

HIST 245: Tudor and Stuart England

A study of sixteenth and seventeenth century England beginning from the reign of Henry VII to the Glorious Revolution.
Prerequisite: LHST 111 *3 credits*

HIST 263: Ancient Greek History: Citizens, Soldiers, and Poets

This course explores the rise and development of ancient Greece from its early origins and wide Mediterranean context, to the conquest of Alexander the Great and the Hellenistic period that followed. Students will read and analyze works of ancient epic, historiography, philosophy, and drama, and will develop and express their understanding of the history and culture of ancient Greece through class discussions and writing assignments. *3 credits*

HIST 286, Introduction to the Middle East

This course explores Middle Eastern History from the rise of Islam to the Arab Spring, with some reference to current events. We will look at some primary sources in translation as well as film and media (both Middle Eastern and Western). In considering the many varied cultures that comprise the Middle East we will attempt to give nuance to monolithic notions of a Middle Eastern Other. We will explore the historical roots of contested issues particular to the region, while gaining knowledge of religious, intellectual, cultural, and linguistic traditions. This knowledge should help shape our understanding of modern developments and help students critically analyze the most common sources of their information. *3 credits*

HIST 287: The History of Science and Technology

The development of science and technology from antiquity to the beginning of the 21st century. The methodology, uses and aims of science. The scientific revolution and its greatest figures from Copernicus to Newton.
Prerequisite: LHST 111 *3 credits*

HIST 288, Plague & Panic: Pandemics in World History

Students will study the demographic, social, economic, political, and cultural impact of pandemic diseases throughout history from ancient times to the present. Students will consider the roles of historiography and bio-archaeology in identifying ancient and medieval plagues and will analyze primary sources for contemporary political, cultural, and economic responses. The class will examine how plagues affected the growth of empires and nations, particularly where they coincided with large-scale warfare. Students will become familiar with the historical dynamics of trans-oceanic disease exchange, the plagues of the modern era, and worldwide initiatives to combat them.
Prerequisite: LHST 111 *3 credits*

HIST 290: Comics & Culture

The purpose of this course is to examine a particular form of popular media known generally as 'comics' (this pertains to both comic books and comic strips but will not include animation although some animation will be shown) in their intellectual, social, political and cultural context. The course is designed to provide students with a foundation of knowledge as well as to encourage them to develop a capacity for historical analysis. 3 credits

HIST 301: East Asia, From Confucius to Revolution

This course involves a study of East Asian Civilization from its ancient origins through the contemporary period. The course emphasizes the dominant ideas, institutions, and individuals shaping East Asian history. 3 credits

HIST 302: Becoming Human—Becoming the World: World History I

This course intends to study culture continuity and change by concentrating on the most important turning points and developments in Asia, Europe, Africa, and the Americas, covering the time span from Human Origins to the edge of the Renaissance. The orientation is global, the themes integrative, the overall goal being to show interconnections in the development of civilization(s), along with divergence across cultural and societal boundaries. The course stresses the archaeological and textual evidence. Some of the over-arching themes that express both culture and cultural diversity in antiquity include: becoming human, first states, nomadic movements, empires, and universal religions. 3 credits

HIST 303: Global Connections: World History II

This course examines world history from the early modern period to the present. Its goal is to develop understanding of global processes by examining changes within and across world regions, by comparing and contrasting political, social, and economic systems and values, and by examining the connections between various regions, including circulations of people, goods, and ideologies. 3 credits

HIST 304: Introduction to Museum Studies

This course intends to survey the field of museum studies and introduce the student to the world of museums/historical societies and to various facets of exhibit research, design, and implementation. There will be a "hands-on" component as well as a theoretical underpinning to museum best practices. The course will cover methods adopted by curators and educators in the care and preservation of artifacts, and issues currently debated in the field. Topics include: collection, acquisition, cataloging, and inventorying. There will be a class project in museum exhibit design, utilizing archaeological resources in the Archaeology Museum Gallery at Gannon. 3 credits

LENG 307/HIST 307 History through Arabic Literature

Literature is a key cultural element throughout Arabic history, from pre-Islamic poetry slams to brilliant court poets to jailed dissidents "then and now." This course aims to give a general survey of literary works written in Arabic from the 6th century until the present and their links to historical developments vital to understanding Arabic and Middle Eastern/North African history. It adopts a chronological format appropriate to such a historical survey, examining from the outset the important role of the Qur'an in the literary heritage and the poetic milieu into which it emerged. We will explore the earliest prose tradition, popular literature such as the Arabian Nights, and the renaissance (*nahda*) in the 19th century as well as the emergence of a modern tradition of Arabic literature, with special attention to the novel. The course is literary-historical, investigating the myriad political, religious and social influences upon literature, while analyzing the texts using various forms of criticism ranging from formalism to archetypal to Marxist, feminist, cultural, and reader-response. 3 credits

HIST 308: Women in Middle East History

This course explores Middle Eastern History through the prism of women's experiences. Through primary sources in translation as well as fiction and non-fiction, film, and scholarly articles, we will view how women have participated in the building of a vast and varied civilization. We will explore the historical roots of contested issues particular to Middle

Eastern women, and gain general knowledge of Middle East history that we can apply to understanding modern developments. *3 credits*

HIST 310: The Renaissance and Reformation

The development of humanism and the great intellectual, artistic and cultural achievements of the Renaissance in Italy and subsequently in northern Europe. The religious, social, political and economic factors underlying the division of Christianity, the great Protestant reformers, their life and work.

Prerequisite: LHST 111 *3 credits*

HIST 311: The Global Sixties

This course will examine the 1960s as a global phenomenon. Through thematic sections centered on events in the Soviet Union, China, France, West Germany, Algeria, Japan, Palestine, America, and Mexico, students will learn world history through the prism of a tumultuous era. Our primary goal is in fact to evaluate the topic of the course: "the 60s." Is there something, or some set of characteristics, that coherently links these events together (other than the fact that they occur in the same decade)? Are there shared problems, or approaches, that link the various political and cultural phenomena? *3 credits*

HIST 312: The Baroque and Enlightenment Era: Europe 1648-1780

The major features of European cultural and political history from the Peace of Westphalia to the beginning of the French Revolution.

Prerequisite: LHST 111 *3 credits*

HIST 313: Enlightenment and Revolution

This course will explore relationship between the social and intellectual history of the Enlightenment with the political revolutions of the late eighteenth century.

Prerequisite: LHST 111 *3 credits*

HIST 315: Modern Egypt

This course explores the history of modern Egypt, from the 1919 Revolution against British occupation to the 1952 Revolution against the monarchy through the 2011 and 2013 Revolutions, with special attention to people—with widely varying experiences—as architects of that country. We will encounter Egyptian history through autobiography, film, political and digital history, literature, and even graffiti. *3 credits*

HIST 420: History of the Contemporary World

A review of Western history from the Congress of Vienna to the present.

Prerequisite: LHST 111 *3 credits*

American

HIST 221: History of the United States to 1865

The foundation of the English settlements, the American Revolution, the Early National Period, Jacksonian Democracy, Abolitionism, Expansion to the Pacific, the Civil War. Immigration and the role of minorities are emphasized. *3 credits*

HIST 222: The United States in the World: 1865 to Present

Reconstruction, the development of the Industrial Revolution, Immigration and the role of Minorities, the Progressive movement, World War I, the Great Depression, the New Deal, World War II, the Korean War, the Civil Rights Movement and the post Cold War era.

Prerequisite: LHST 111 *3 credits*

HIST 225: Diplomatic History of the United States

(Cross-listed with POLI 343)

The growth of American foreign policy from its colonial origins to the breakthrough in the world arena and twentieth century world leadership and problems.

Prerequisites: HIST 221, 222 *3 credits*

HIST 231: American Colonial and Early Republic Era to 1828

An analysis of the main political, social, economic, and cultural developments from the Colonial Era through the Early Republic and Early National eras.

Prerequisite: HIST 221

3 credits

HIST 232: Nineteenth Century America: 1828-1896

The United States during the period of nation making through the Gilded Age. Emphasis is placed on Sectionalism, Civil War and Reconstruction, and the Gilded Age.

Prerequisites: HIST 221, 222

3 credits

HIST 236: The History of Women in the United States

This course will examine the history of women in the United States from the pre-colonial period to the twentieth century. It will cover the experiences of Native American, European, African American, Latin American and Asian American women, women in the paid work force, race and class relations, war-time experiences, and changes in norms of gender and sexuality.

3 credits

HIST 237: American Social-Intellectual History

(Cross-listed with POLI 351)

Social and intellectual developments from the Colonial Era to contemporary times. Special focus on religious history, education, reform movements, literary trends, and progress in science and technology.

Prerequisites: HIST 221, 222

3 credits

HIST 239: The Black Experience in America

This course provides an analysis of Black American History from the sixteenth century to the present, with special emphasis on the African background, the slave trade and slavery during the Antebellum Period, Black Americans' fight for freedom against segregation and discrimination, and Black American contributions to the political, social, economic, educational and cultural growth of the American nation.

Prerequisite: HIST 221

3 credits

HIST 273: The American Civil War

The most important ideas, issues, problems, battles, and developments that mark the American Civil War. The focus will be on overarching themes, significant individuals, and the dominant ideas that shaped the course of the War itself, and the United States afterward. American society, culture, politics, and the institution of slavery will be covered.

3 credits

HIST 282: American Military History

The development of the American military experience as it changed from the limited warfare of the 18th century to the total war of the 20th Century, and the global terrorism of the 21st Century.

Prerequisite: LHST 111

3 credits

HIST 284: The Great War WW1

The most important ideas, issues, problems, battles, and developments that mark World War 1. There will be a focus on themes, significant individuals, and the overarching ideas that shaped the course of the war. Additionally, this class will expose students to how the entire globe was changed forever as a direct result of the War through class lecture, readings, and in-class exercises. International society, culture, and politics will be analyzed and discussed, with spotlights on the most active nations involved.

3 credits

HIST 299: Leadership Seminar

The Leadership Seminar introduces students to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in the various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for students' leadership development as reflected both in this course and in the corequisite Theology or Philosophy Series III course. This section will focus

particularly on leadership development for Humanities majors through building their career and post-graduate life & leadership skills. *3 credits*

HIST 325: Contemporary American History

Analysis of the major political, social, economic, and cultural trends in American history from World War II to the present. Special emphasis will be focused on national politics, international relations, and social economic trends from the Harry S. Truman to the George W. Bush administrations.

Prerequisite: LHST 111, HIST 221, HIST 222 *3 credits*

HIST 351: Global History I

The purpose of this course is to help students develop their understanding of the major political, economic, social, institutional, intellectual, and cultural changes that shaped world civilizations from early human history up to 1500 CE. *3 credits*

HIST 352: Global History II

The goal of this course is to examine the movements of World History from a variety of perspectives including artistic, political, religious, social, economic and military from 1500 CE until the present day. The course is designed not only to provide students with a foundation of knowledge but also to develop a capacity for historical analysis. *3 credits*

HIST 379: Internship with the Pennsylvania Historical and Museum Commission

To be served at one of the more than 50 museums and historic sites operated by the Commission. The focus of each internship will be determined on the basis of the interests of the student and the resources of the Museum. Internships are for a minimum of ten weeks or longer. They coincide with the fall, spring or summer semesters. Six to 12 credits depending on the length and type of internship will be awarded. Housing may be available at some of the sites, but ordinarily students will be expected to make their own arrangements.

Prerequisites: Open only to Junior, Senior or Graduate students.
(Anthropology/SOCI 292; HIST 221, 222, LHST 111 are required) *6-12 credits*

HIST 390-392: Special Topics

Selected topics in History. *1-6 credits*
Prerequisite: LHST 111

HIST 395-399: Independent Study

Prerequisite: LHST 111 *1-6 credits*

HIST 400: Senior History Seminar

Selected research topics in history. Emphasis is placed on historiography, methodology and the utilization of primary sources and archival materials. *3 credits*

GEOG 201: World Geography

A presentation of the basic facts and ideas about world regions, focusing on individual countries and areas, including physical and cultural material. *3 credits*

GEOG 211: Geography of U.S. and Canada

A presentation of the basic facts and ideas about regions in the United States and Canada, including physical and cultural material. *3 credits*

GEOG 221-241: Regional Geography/Special Topics

Specialized geography courses focusing on various nations and regions of the world. *3 credits*

History Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|-----------|-------------------------------------|
| 2 | First-Year Seminar |
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Global Language |
| <u>17</u> | |

Spring

| | |
|-----------|---|
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | The Bible: An intro/LTHE 201 |
| 3 | Global Language |
| 3 | History of United States to 1865/ HIST 221 |
| 3 | Science (ARCH 202) |
| <u>15</u> | |

SOPHOMORE

Fall

| | |
|-----------|--------------------------|
| 3 | Public Speaking/SPCH 111 |
| 3 | Math |
| 3 | Fine Art Series/LFIN |
| 3 | History Elective |
| 3 | Cognate |
| 3 | Global Language |
| <u>18</u> | |

Spring

| | |
|-----------|--|
| 3 | Philosophy II Series/LPHI |
| 3 | Becoming Human, Becoming the World HIST 302 |
| 3 | History of United States 1865 to Present/HIST 222 |
| 3 | Global Language |
| 3 | Cognate |
| <u>18</u> | |

JUNIOR

Fall

| | |
|-----------|--|
| 6 | Electives |
| 3 | LPHI 237 <i>or</i> LTHE 300 course level |
| 6 | History Electives |
| 1 | Leadership Seminar |
| <u>16</u> | |

Spring

| | |
|-----------|------------------|
| 6 | Cognates |
| 3 | History Elective |
| 9 | Electives |
| <u>18</u> | |

SENIOR

Fall

| | |
|-----------|-------------------------|
| 6 | Electives |
| 3 | Senior Seminar/HIST 400 |
| 3 | History Elective |
| <u>12</u> | |

Spring

| | |
|-----------|-------------------------|
| 3 | Senior Seminar/LBST 383 |
| 3 | Literature Series/LENG |
| 8 | Elective |
| 3 | History Elective |
| <u>17</u> | |

Total credits: 128

* *History majors must take at least 9 credit hours of global language. If, however, majors begin at the introductory level the total credit requirements are 12.*

Archaeology and Public History Track: Required and Recommended Courses
(see catalog descriptions under Archaeology and Culture Minor).

Required courses

- ARCH 201/HIST 110: Archaeology and History of Ancient Near East/
Foundations Western Heritage
- ARCH 304: Introduction to Museum Studies
- ARCH 202: Archaeology Methods and Lab (required for History majors)
- ARCH 302: World Archaeology I/World History I (required for History majors)

Electives

The following Archaeology Electives are strongly recommended for those wishing to concentrate in the Archaeology and Public History Track

ARCH 396: Study Abroad

ARCH 395: Archaeological Laboratory Internship

ARCH 390: Introduction to Archival Studies

ARCH/HIST 390: Internship to Museum Studies/ Archival Studies

ARCH/HIST 390: Special Topics

HISTORY MINOR

Completion of the following courses (18 credits) will satisfy the requirements for the minor in History.

3 History Without Borders/LHST 111

6 History of the U.S./HIST 221, 222

3 World History I/HIST 302

6 Two upper level courses in History

18

ARCHAEOLOGY AND CULTURE MINOR

For a description see The Archaeology and Culture section in this catalog.

HISTORY/SOCIAL STUDIES CERTIFICATION

JOHN M. VOHLIDKA, Ph.D., *Program Director*

Students majoring in History/Social Studies qualify for Teacher Certification in Social Studies/Secondary Education; and Plan B: a B.A. in Social Science without education courses. Students selecting Plan B need not take courses in Education. Students study broadly in the fields of history, political science, geography, economics, sociology, anthropology and psychology.

Aims and Objectives

The objectives of the program are: (1) to give the students an opportunity to become broadly educated in the fields of history, political science, geography and economics; and (2) to provide a program of teacher education which promotes growth, development, professionalism and expertise for successful teaching.

Students who wish to prepare themselves as secondary social studies teachers must make formal application for admission to the teacher education program through the School of Education. For a detailed explanation of all requirements refer to the catalog portion under Education.

Social Studies/Secondary Education Curriculum*(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

- 1 Foundations of Teaching/EDCR 103
- 2 First-Year Seminar/EDCR 104*
- 3 Foundations of Western Heritage/
HIST 110
- 3 College Composition/LENG 111
- 3 Foundations of Theology/Morality/
LTHE 101
- 3 Global Language
- 3 MATH 103 or higher

18*Spring*

- 3 Psychology of Learning/Teaching/
EDCR 101
- 3 Critical Analysis Composition/
LENG 112
- 3 History without Borders/LHST 111
- 3 Global Language
- 3 Statistics/MATH 213 or PSYC 211
- 3 Special Education Overview/SPED 101

18**SOPHOMORE***Fall*

- 3 Microeconomics/BCOR 111
- 3 Instructional Design/Classrm Mgmt/
EDCR 105
- 0 Sec Educ Field Experience I/EDFL 101+
- 3 History of U.S. to 1865/HIST 221
- 3 Literature (Am, British or Intro)/LENG
- 3 Introduction to Philosophy/LPHI 131
- 3 Public Speaking/SPCH 111

18*Spring*

- 3 History of U.S. 1865 to Present/HIST 222
- 3 Philosophy II Series/LPHI
- 3 Adolescent Development/MLED 202
- 3 U.S. Government/Politics/POLI 111
- 3 Science Series
- 3 Basic Sociology/SOCI 110

18**JUNIOR***Fall*

- 3 Literacy Dev, Strategies, Assess/
MLED 301*
- 3 Inq/Analysis in PA Hist/Govt/
MLED 304
- 0 Sec Educ Field Experience II/EDFL 102+
- 3 Global History I/HIST 351
- 3 Introduction to International Relations/
POLI 133
- 3 Introduction to Psychology/PSYC 111
- 3 Cultural Anthropology/SOCI 292

18*Spring*

- 3 World Geography/GEOG 201
- 3 Fine Arts Series/LFIN
- 3 Global History II/HIST 352
- 3 The Bible: An Introduction/LTHE 201
- 3 Comparative Government/POLI 220
- 3 Meet Lrn Need Stud Exceptionalities
7-12/SPED 340*

18**SENIOR***Fall*

- 3 Meth/Materials Teach: ESL/ELL/
EDCR 420*
- 1 Methods/Materials Seminar/EDCR 321
- 0 Sec Educ Field Experience III/EDFL 103+
- 3 Assessment and Evaluation/EDCR 330
- 3 Upper Level Elective/HIST
- 3 Senior History Seminar/HIST 400**
- 1 Leadership Seminar/LHES 240
- 3 LPHI 237 or any LTHE 300 course

17*Spring*

- 3 Professional Seminar/EDCR 401
- 12 Student Teaching/EDFL 410

15**Total credits: 140**

* *Field experience embedded throughout semester (6-15 hours)*

** *All History courses with the exception of the elective must be completed before registering for HIST 400.*

+ *Field experience embedded throughout semester (60 hours)*

Field experiences require a grade of P (pass)

INTERDISCIPLINARY STUDIES

REV. T. SHANE MATHEW, *Program Director*

Individualized Studies Program

This interdisciplinary studies program allows students to design their own curriculum based on personal preferences and career goals. It leads to a Bachelor of Arts degree. With Program Director approval, students can select courses from two (Option A) or three (Option B) separate disciplines from the programs listed below.

This program provides the flexibility to explore historical, social and cultural perspectives while also considering the problems and issues of contemporary society. Career preparation comes from choosing appropriate courses that foster administrative skills (e.g. researching, critical thinking, organizing, planning, creating, decision-making and communicating clearly orally and in writing). The program's capstone course can be from any of the selected disciplines or it can be designed by the student in consultation with the Program Director and the appropriate Dean.

Students always work in close consultation with the Program Director.

Career opportunities can include communication, media advertising, professional writing, government service, law school, banking, insurance, science, language and a host of other specializations depending on the chosen discipline.

Students will meet with the Program Director and draft a tentative course of study. From the electives available, students are strongly encouraged to earn a minor to complement their major discipline. The Program Director will coordinate each student's program with faculty chosen from the fields of concentration.

1. The course work in the area of concentration is to be distributed in accordance with one of the following options:

Option A:

Thirty-nine *upper level credits* in two of the following fields; distributed as follows: 24 in a major area and 15 in a secondary area.

| | | | |
|----------------------------------|------------------|-------------------|-------------|
| Business | English | History | Psychology |
| Communication | Fine Arts | Legal Studies | Social Work |
| Criminal Justice | Global Languages | Philosophy | Sociology |
| Theatre and Com/Art Education | & Culture | Political Science | Theology |

Option B:

Option B requires 42 upper level credits. Thirty of them will be from two of the fields listed above (18 credits in one; 12 from another). The final 12 credits can be completed in any program or department in the University. Students are encouraged to use this option to earn a minor related to their career.

2. *Liberal Studies Core*: All courses taken in fulfillment of either option are in addition to the requirements of the core as specified for the Bachelor of Arts degree.
3. Speech (3 credits), Math (3 credits) and Global Language (6 credits) are required.

Outcomes

1. Majors will demonstrate knowledge of the primary historical, philosophical, literary and theological themes of the humanities.
2. Majors will demonstrate knowledge of the primary theories, methods and practices of the social sciences.
3. Majors will read, write and speak with clarity, originality and persuasiveness across a variety of contexts.
4. Majors will apply aesthetic, quantitative and scientific reasoning in their academic work.
5. Majors will analyze and evaluate principles of ethics and social justice.

Interdisciplinary Studies Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|----------------------------|----------------------------------|
| 2 | First-Year Seminar |
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Global Language |
| <hr style="width: 100%;"/> | |
| 17 | |

Spring

| | |
|----------------------------|-------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Intro to Philosophy/LPHI 131 |
| 3 | Global Language |
| 3 | Elective in Concentration |
| 3 | Elective |
| <hr style="width: 100%;"/> | |
| 15 | |

SOPHOMORE

Fall

| | |
|----------------------------|---|
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Literature Series/LENG |
| 3 | Elective in Concentration |
| 3 | Elective |
| 3 | Elective in Secondary Concentration/ Minor |
| <hr style="width: 100%;"/> | |
| 15 | |

Spring

| | |
|----------------------------|---|
| 3 | Philosophy II Series/LPHI |
| 3 | Social Science |
| 6 | Elective in Concentration |
| 3 | Elective in Secondary Concentration/ Minor |
| 3 | Elective |
| <hr style="width: 100%;"/> | |
| 18 | |

JUNIOR

Fall

| | |
|----------------------------|--|
| 3 | Fine Art Series/LFIN |
| 3 | Natural Science |
| 3 | Elective |
| 3 | Elective in Secondary Concentration/Minor |
| 6 | Elective in Concentration |
| <hr style="width: 100%;"/> | |
| 18 | |

Spring

| | |
|----------------------------|--|
| 3 | LPHI 237 <i>or</i> any LTHE 300 course |
| 1 | Leadership Seminar |
| 3 | Math |
| 3 | Elective in Concentration |
| 3 | Elective in Secondary Concentration/Minor |
| 3 | Elective |
| <hr style="width: 100%;"/> | |
| 16 | |

SENIOR

Fall

| | |
|----------------------------|---|
| 3 | Elective in Concentration |
| 3 | Elective in Secondary Concentration/ Minor |
| 8 | Elective |
| <hr style="width: 100%;"/> | |
| 14 | |

Spring

| | |
|----------------------------|---------------------------|
| 3 | Senior Seminar/LBST 383 |
| 3 | Elective in Concentration |
| 9 | Elective |
| <hr style="width: 100%;"/> | |
| 15 | |

Total credits: 128

INTERDISCIPLINARY STUDIES ASSOCIATE

REV. T. SHANE MATHEW, *Program Director*

The Associate Degree in interdisciplinary studies provides students with a general education consisting of courses in English language and literature, philosophy, theology, fine arts, and the social and the natural sciences. This curriculum includes courses that help students to acquire the habits and skills needed for the pursuit of knowledge, to learn the methods of research, to understand ideas, to think critically, to interpret and evaluate judgments and to communicate with others. The degree also provides a strong foundation for students to continue their studies at the bachelor's level.

Interdisciplinary Studies Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

| | |
|-------|-------------------------------------|
| 2 | First-Year Seminar |
| 3 | English Composition/LENG 111 |
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | LS Science |
| 6 | Electives |
| 3 | Psychology/PSYC 111 |
| 3 | Sociology/SOCI 110 |
| 3 | History Without Borders/LHST 111 |
| 3 | Public Speaking/SPCH 111 |
| <hr/> | |
| 35 | |

SOPHOMORE

| | |
|-------|---------------------------------------|
| 3 | Literature Series/LENG |
| 3 | Fine Art Series/LFIN |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Philosophy II Series/LPHI |
| 3 | LPHI 237 or any LTHE 300 level course |
| 3 | Social Science Series |
| 3 | MATH 125 or any other math |
| 9 | Electives |
| <hr/> | |
| 30 | |

LEGAL STUDIES/PARALEGAL

PETER AGRESTI, JD *Program Director*

FACULTY: Peter Agresti, JD, Bernadette Agresti, *Paralegal*. *Adjunct faculty*: Hon. Stephanie Domitrovich, *Atty.* Brian Krowicki, *Atty.* Joseph Martone, *Atty.* Grant Yochim, *Atty.* Michael Graml, *Atty.* Thomas Minarcik, *Hon.* John Trucilla, *Atty.* David Agresti.

The Legal Studies Program mission, at Gannon University, is to provide consistency with the University mission that includes preparing students to enter the legal field with the knowledge, skills and competency to be valued and respected members of the legal profession.

The most important goal of the legal studies program is to prepare students to enter careers in the legal field, in law firms, courts and in public and private settings with the skills important to employers, which includes a strong exposure in what is considered ethical behavior, and with the understanding that without a law degree and bar admission, they will only work under the supervision of an attorney. Other goals include the ability to work on a team and expand their knowledge through continuing legal education.

The objectives of the program are:

- Understand the structure of the State and Federal court system.
- Understand the differences between civil and criminal practice.
- Analyze (by briefing) reported legal opinions.
- Research legal problems using primary and secondary resources.
- Write clear, effective legal memoranda, using proper citation form, and to write with good grammar and spelling skills.

- Conduct effective interviews with clients and witnesses.
- Understand the procedure in a civil suit and draft appropriate pleadings.
- Be familiar with basic concepts of business organizations and contract law.
- Recognize the ethical standards of the paralegal profession.

A paralegal must follow the guidelines regarding the unauthorized practice of law of the state in which he/she is performing legal services.

Legal Assistants/Paralegals provide professional services in a variety of legal, business settings and corporations, usually, but not exclusively under the supervision of a lawyer. These services can include: interviewing, investigation, legal research, preparation of legal documents, review of transcripts and participation in adversary and regulatory proceedings. One of the fastest growing professions nationally, legal assistants/paralegals are employed by individual attorneys, law firms, courts and government legal offices. They are also in growing demand by corporations, government agencies, financial institutions, insurance companies and real estate firms. Program graduates are advised not to confine their search for employment to the Erie market. Employment should be sought throughout the United States and beyond.

Gannon University's program offers three options: a four-year baccalaureate degree, a two-year associate degree and a certificate option. Students pursuing other majors may double major or complete a certificate while completing their chosen four-year degree program, with the permission of the program director and the Dean of the College where the program lies.

Transfer students may use legal specialty coursework completed at another institution, as a substitute for required legal specialty courses, with Director permission.

The Bachelor Degree Program

The Baccalaureate Degree Program is designed to prepare students for advanced positions in the legal assistant/paralegal profession that increasingly require a four year degree in legal studies or another major with a legal studies/paralegal certificate. Among the 128 credits required for the degree are 39 credits in Liberal Studies, 34 credits of Legal Studies courses, 21 credits in supplementary requirements, and 34 credits in unspecified cognates and electives. Students are encouraged to take a strong minor or even a double major in a related field.

The Associate Degree Program

The two year, Associate Degree Program is for the student who is not ready to commit to a four year program. It is attractive to non-traditional students or students who are working while pursuing a degree. Requirements are 20 credits in Liberal Studies, 28 credits in Professional Studies including an internship, 7 credits of supplementary work, and 12 credits of unspecified cognate classes. All work taken may be applied toward a four year degree.

Legal Studies Certificate

The Legal Studies Certificate may be earned as a post-Associate degree or the equivalent thereof, or a post-Bachelor degree. It may also be taken in conjunction with any four year degree program, if the Program Director of the student's major accepts the required 18-25 credits as cognates and/or electives. The Program Director may waive up to 7 credits to earn the certificate, based on a student's background in the legal field.

Legal Studies Certificate

(Numerals in front of courses indicate credits)

- 1 Orientation/Paralegalism/LEGL 105
- 3 Intro to Law/LEGL 111
- 3 Legal Research & Writing I/LEGL 211
- 3 Legal Research & Writing II/LEGL 212
- 3 Computers in Law/LEGL 343
- 3 Trial Preparation & Procedure/LEGL 345
- 3 Legal Services Internship/LEGL 495
- 6 Legal Services Electives

COURSE DESCRIPTIONS

LEGL 100: First-Year Seminar: Fairness in Law

This course is not considered a legal specialty course. The First-Year Seminar is a discussion/experience-based course intended to orient the new student to Gannon University, to introduce the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life, and to encourage development of academic, personal and spiritual aspects of the student's life.

This Section of First-Year Seminar, LEGL100, Fairness in Law, offers a new student an introduction to Gannon University through a unique and challenging learning experience. This section of the First-Year Seminar focuses on the legal system in America and abroad and the differences of opinion in how legal matters are handled by the courts. The course will attempt to integrate spiritual aspects of student's lives and the tenets of Catholic social teaching.

2 credits

LEGL 105: Orientation/Paralegalism

An introduction to the role of lawyers and legal assistants/paralegals in the legal process. This course is not considered a legal specialty course.

1 credit

LEGL 111: Introduction to Law

Introduction to the principles of substantive law essential to the prospective paraprofessional. Included are the areas of tort, contract, criminal and property law. Introduction to the structure of the judicial system and the mechanics of the legal process.

3 credits

LEGL 211: Legal Research and Writing I

An orientation to the law library and to legal research. Introduction to the sources of law and to techniques for finding statutory, regulatory and judge made laws as well as legal commentaries. Exercises in legal research and writing.

3 credits

LEGL 212: Legal Research and Writing II

Advanced work in legal research and legal writing. Introduction to legal analysis, focusing on practical assignments which examine in detail the components of court opinions. The course emphasizes case analysis, and the preparation of both informal and formal legal memorandums.

Prerequisites: LEGL 111, LEGL 211

3 credits

LEGL 227: Contract Law

A course to provide an understanding of contracts as developed under common law and legislative directives. Students will evaluate the formation, enforceability, and defenses to contracts.

3 credits

LEGL 311: Family Law

A course covering the substantive and procedural law concerning divorce, adoption, child custody disputes and visitation rights, duties of support.

Prerequisites: LEGL 111, LEGL 211

3 credits

LEGL 313: Wills and Estate Administration

A course covering the preparation of wills and trusts, the administration of estates and trusts, and tax consequences.

Prerequisites: LEGL 111, LEGL 211

3 credits

LEGL 331: Business Organizations

A course providing an overview of the formation and operation of business enterprises including sole proprietorships, partnerships and corporations.

Prerequisites: LEGL 111, LEGL 211

3 credits

LEGL 333: Real Estate Law

This course covers the acquisition, ownership, regulation and disposition of real property. Financing of real estate is also covered. 3 credits

LEGL 334: Public Records Research and Title Abstracts

Theory and practice of completing courthouse civil and criminal records research and real estate title abstracts.

Prerequisites: LEGL 111, LEGL 211 or instructor permission 3 credits

LEGL 335: Bankruptcy

A course emphasizing the substantive law of bankruptcy including the rights of debtors, creditors and other interested parties and the legal assistant's role in bankruptcy proceedings.

Prerequisites: LEGL 111, LEGL 211 3 credits

LEGL 336: Immigration Law

A course that is designed to introduce the American immigration process and the paralegal and attorneys role in representation of clients. 1-3 credits

LEGL 337: Juvenile Justice, Delinquency, and Dependency

A course designed to introduce the American juvenile justice system and the paralegal and attorney roles in representing juveniles. 1-3 credits

LEGL 343: Computers in the Law

A course designed to introduce legal assistants and other legal professionals to the use of computers in the legal field, preparing them to use computer skills in the legal environment. 3 credits

LEGL 345: Trial Preparation and Procedure

An overview of the litigation process including pleadings, third-party practice, discovery, the presentation of evidence at trial and the rules of evidence, and post-trial practice.

Prerequisites: LEGL 111, LEGL 211 3 credits

LEGL 390-394: Special Topics in Legal Studies

Prerequisites: LEGL 111, LEGL 211 1-3 credits

LEGL 495: Legal Studies Internship

Placement in a law office, legal department, public legal institution, financial, institution, or insurance company. Students may take 2 internships.

Prerequisites: LEGL 111, LEGL 211, LEGL 212, Director Permission 1-6 credits

NOTE: Interns should have substantially completed their studies. A grade point average of 2.25 in all paralegal courses or permission of the Program Director is required for enrollment.

LEGAL STUDIES/PARALEGAL**Four Year Curriculum**

(Numerals in front of courses indicate credits)

FIRST YEAR*First Semester*

| | |
|-----------|------------------------------|
| 3 | College Composition/LENG 111 |
| 1 | Legal Studies/LEGL 105 |
| 3 | Legal Studies/LEGL 111 |
| 3 | Global Language |
| 3 | Legal Studies/LEGL 211 |
| 2 | First-Year Seminar/LEGL 100 |
| <u>15</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations/Morality/LTHE 101 |
| 3 | Elective |
| 3 | Global Language |
| 3 | Legal Studies/LEGL 212 |
| 3 | History Without Borders/LHST 111 |
| <u>18</u> | |

SECOND YEAR

First Semester

- 3 Literature Series/LENG
- 3 The Bible: An Intro/LTHE 201
- 3 Public Speaking/SPCH 111
- 3 Math/MATH 110, 111, 114 or 125
- 3 Cognate Elective

 15
Second Semester

- 3 Fine Art Series/LFIN
- 3 Introduction to Philosophy/LPHI 131
- 3 Legal Studies/LEGL 343
- 3 Poli Sci/POLI 122
- 3 Cognate/Elective
- 3 Legal Studies/LEGL 345

 18

THIRD YEAR

First Semester

- 3 Philosophy II Series/LPHI
- 3 Legal Studies/Elective
- 9 Cognate Elective

 15
Second Semester

- 3 LS Science
- 3 Legal Studies Elective
- 3 Cognate/Elective
- 1 Leadership Seminar
- 3 LPHI 237 or any LTHE 300 course
- 3 Bus & Prof Comm/ENGL 212

 16

FOURTH YEAR

First Semester

- 6 Legal Studies Elective
- 10 Cognates/Electives

 16
Second Semester

- 3 Senior Seminar/LBST 383
- 3 Legal Studies/LEGL 495
- 3 Legal Studies Elective
- 3 Cognate/Elective
- 3 Sociology/SOCI 110

 15

Two and four year students should take LEGL 111 & 211 in the same semester and as prerequisites to many legal specialty courses.

*** Cognate electives may include additional legal studies courses and such other courses as approved by the program advisor.*

LEGAL STUDIES/PARALEGAL**Two Year Curriculum**

(Numerals in front of courses indicate credits)

FIRST YEAR

First Semester

- 3 College Composition/LENG 111
- 3 Foundations of Theology/LTHE 101
- 2 First-Year Seminar/LEGL 100
- 3 Legal Studies/LEGL 111
- 3 Legal Studies/LEGL 211
- 3 Political Science/POLI 111

 17
Second Semester

- 3 Crit Analysis & Comp/LENG 112
- 3 History Without Borders/LHST 111
- 3 Legal Studies/LEGL 212
- 3 Legal Studies/Elective
- 3 Cognate/Elective
- 1 Legal Studies/LEGL 105
- 1 Speech

 17

SECOND YEAR
First Semester

- 3 Introduction to Philosophy/LPHI 131
 6 Legal Studies/Electives or LPHI 237
 9 Cognates

 18
Second Semester

- 3 LPHI 237 or any LTHE 300 course
 3 Legal Studies/LEGL 495
 3 Legal Studies/LEGL 343
 3 Legal Studies/LEGL 345
 3 Cognates

 15

* *Cognates may include additional legal studies courses and such others as approved by a program advisor.*

LIBRARY

FACULTY: *Professor:* Emmett Lombard. *Associate Professor:* Deborah West. *Assistant Professor:* Lori Grossholz. *Instructor:* Elizabeth Garloch, Jessica Mando.

The Library offers credit courses and other instructional programs as well as one-on-one support for students and faculty. Using a variety of resources and pedagogical approaches, the library promotes information literacy throughout the curricula.

COURSE DESCRIPTIONS

LIBR 112: Information Literacy – Locate

This is a one-credit course focusing on finding information. It teaches skills necessary to determine what information is needed along with search strategies. *1 credit*

LIBR 113: Information Literacy – Evaluate

This is a one-credit course focusing on information evaluation. It teaches skills necessary to determine what information is needed along with source quality criteria. *1 credit*

LIBR 114: Information Literacy – Use

This is a one-credit course focusing on understanding and utilizing a variety of information sources and formats. It teaches skills necessary to determine what information is needed along with effective and ethical usage. *1 credit*

MILITARY SCIENCE

MICHAEL P. BENTLEY, Lieutenant Colonel, U.S. Army, MBA, *Chairperson*

FACULTY: *Instructors:* MSG Trevor Woods, SFC Guadalupe Trevino, SFC Jon Baxley.

General Information:

The Military Science Program is open to both male and female students. Freshman and sophomores incur NO OBLIGATION to the U.S. Army by enrolling in the Reserve Officers' Training Corps (ROTC) program Basic Course. Additionally, military science courses are free of charge to all full-time students (minimum of 12 credits, excluding military science courses) and earn academic credits which may apply towards graduation requirements. Those who desire to earn a commission as a Second Lieutenant in the United States Army, Army Reserve or Army National Guard must sign a contract no later than the second semester of their junior year in the program. All students who graduate with their undergraduate degree and fulfill all commissioning requirements are eligible to earn the Leadership Studies Minor on top of their respective academic major.

Aims and Objectives:

The primary purpose of the Department of Military Science is to develop the future officer leadership of the United States Army and to motivate young people to become better citizens. Students enrolled in the ROTC Program receive instruction in the fundamentals of leadership with emphasis on loyalty, duty, respect, selfless service, honor, integrity and personal courage.

Army ROTC is one of the best leadership courses in the country. During classes, leadership labs, physical training and field training exercises, students learn firsthand what it takes to lead others, motivate groups and conduct missions as an Officer in the United States Army.

The program objectives focus on the overall development of a student to lead Soldiers and organizations in the 21st century.

1. Students develop into leaders of tomorrow as Commissioned Officers in the United States Army, Army Reserve or Army National Guard.
2. Students are introduced to the fundamentals of leadership with emphasis on loyalty, duty, respect, selfless service, honor, integrity, personal courage and ethics.
3. Students assess the personal challenges and competencies that are critical for effective leadership within teams, groups, and organizations through direction, problem solving, listening and effective communications.
4. Students are challenged to explore the dimensions of creative and innovative tactical leadership strategies and styles within team dynamics through leadership attributes and competencies in relation to military operations.
5. Students practice, study and evaluate adaptive leadership skills as they are presented with challenging scenarios related to squad and platoon tactical operations receiving feedback on their leadership attributes and actions.
6. Students transition from an academic student focus to a military student focus by holding leadership positions with the Cadet Battalion training, organizing, mentoring and evaluating underclass students within the Military Science Program.

Program of Instruction:

The Department of Military Science offers both a four-year and two-year program of instruction. Students begin the Military Science program during their freshman year, but may enter as late as their junior year.

- a. **Four-Year Program.** This program consists of the Basic Course (freshman and sophomore years) and the Advanced Course (junior and senior years). During the Basic Course, students must complete four courses (two credit hours each) and four labs (one credit hour each). The Basic Course provides a general knowledge of the U.S. Army (to include career opportunities), development of selected leadership traits, such as poise and self-confidence, and instruction on basic military skills.
- b. Entry into the Advanced Course requires completion of the Basic Course. During the Advanced Course, students qualify for a U.S. Army commission, by completing four courses (two credit hours each) and four labs (one credit hour each), and attending the Cadet Leadership Course (CLC) at Fort Knox, Kentucky between their junior and senior academic years. During the school year, contracted students receive a non-taxable subsistence allowance of \$450 per month.
- c. **Two-Year Program.** This program allows direct entry into the Advanced Course via these methods:
 - (1) Compress the two year Basic Course into a single year.
 - (2) Attend the Cadet Initial Entry Training Course (CIET) (a four week program completed during the summer at Fort Knox, Kentucky).

- (3) Complete Basic Training through one of the Armed Forces.
- (4) Being a participant in a 4-year JROTC Program.
- c. **Professional Military Education.** Whether the student chooses the four-year or two-year program, all ROTC students must pass a military history course prior to commissioning as a second lieutenant.

Financial Assistance

ROTC merit based scholarships are available that pay full tuition and fees, a \$1,200 annual book allowance, plus \$420 per month non-taxable subsistence allowance for ten months each school year. Scholarship recipients may also qualify to receive a room and board incentive. Scholarships are available on a competitive basis to include grade point average, physical fitness, medical condition and legal record. Advancing freshman and sophomores may compete for three and two-year scholarships, respectively, regardless of current ROTC participation. There are also multiple scholarship and financial assistance opportunities through the United States Army Reserves and the Army National Guard specifically for ROTC cadets.

Military Science Student Activities

Military Science cadre and staff encourage students to participate in college and civic activities. The Ranger Challenge Team is equivalent to a varsity sport and is one of the most challenging activities offered through the Military Science Department. The 10 person team competes in various activities to include a physical fitness test, a 10 kilometer ruck march, the one-rope-bridge, a hand-grenade assault course and an orienteering competition. The color guard is a student run organization that presents the national and state colors in uniform at freshman commencement, graduations, sporting events and other special functions.

A suggested Military Science Curriculum

FRESHMAN

Fall Semester

- MLTS 101
MLTS 103**

Spring Semester

- MLTS 102
MLTS 104**

SOPHOMORE

Fall Semester

- MLTS 201
MLTS 203**

Spring Semester

- MLTS 202
MLTS 204**

JUNIOR

Fall Semester

- MLTS 301
MLTS 303**

Spring Semester

- MLTS 302
MLTS 304**

SENIOR

Fall Semester

- MLTS 401
MLTS 403**

Spring Semester

- MLTS 402
MLTS 404

** *Leadership Lab counts as 1 credit and should be taken each semester. All graduating ROTC students who earn their commission will earn the Leadership Studies Minor along with their academic degree major.*

Cadets may also declare the Leadership Studies minor through the completion of the following Military Science coursework. The Leadership studies minor is designed to address the needs of students majoring in a wide variety of social science disciplines at Gannon University, including:

- Business Administration
- Criminal Justice
- Gerontology
- Political Science
- Psychology
- Social Work

MLTS Core Courses

(18 credit hours – required)

- 2 Introduction to Tactical Leadership/MLTS 102
- 1 Leadership Lab/MLTS 103

- 2 Innovative Team Leadership/MLTS 201
- 1 Leadership Lab/MLTS 203

- 2 Foundations of Tactical Leadership/MLTS 202

- 2 Adaptive Team Leadership/MLTS 301
- 1 Leadership Lab/MLTS 303

- 2 Applied Team Leadership/MLTS 302

- 2 Adaptive Leadership/MLTS 401

- 2 Leadership in a Complex World/MLTS 402
- 1 Leadership Lab/MLTS 403

COURSE DESCRIPTIONS

MLTS 101: Introduction to the Army

This course introduces students to the personal challenges and competencies that are critical for effective leadership. Students learn how the personal development of life skills such as critical thinking, goal setting, time management, physical fitness, and stress management relate to leadership, and the Army profession. The focus is on developing basic knowledge and comprehension of Army leadership dimensions while gaining a big picture understanding of the ROTC program, its purpose in the Army, and its advantages for the student.

Corequisite: MLTS 103

2 credits, Fall

MLTS 102: Foundations of Agile and Adaptive Leadership

This course overviews leadership fundamentals such as setting direction, problem-solving, listening, presenting briefs, providing feedback, and using effective writing skills. Students explore dimensions of leadership attributes and core leader competencies in the context of practical, hands-on, and interactive exercises. Cadre role models and the building of stronger relationships among the students through common experience and practical interaction are critical aspects of the MLTS 102 experience.

Corequisite: MLTS 104

2 credits, Spring

MLTS 103 & MLTS 104: Leadership Labs

Courses supplement instruction in MLTS 101 and MLTS 102. Students participate as a member of a team analyzing leadership styles and provides hands-on practical application of lessons learned in a variety of situations.

Corequisite for MLTS 103: MLTS 101

Corequisite for MLTS 104: MLTS 102

1 credit, Fall, Spring

MLTS 201: Leadership and Decision Making

This course explores the dimensions of creative and innovative tactical leadership strategies and styles by examining the team dynamics and two historical leadership theories that form the basis of the Army leadership framework (trait and behavior theories). Students practice aspects of personal motivation and team building in the context of planning, executing, and assessing team exercises and participating in leadership labs. Focus is on continued development of the knowledge of leadership attributes and core leader competencies through an understanding of Army rank, structure, duties and basic aspects of land navigation and squad tactics. Case studies provide tangible context for learning the Soldier's Creed and Warrior Ethos as they apply in the contemporary operation environment (COE).

Corequisite: MLTS 203

2 credits, Fall

MLTS 202: Army Doctrine and Team Development

This course examines the challenges of leading tactical teams in the complex contemporary operating environment (COE). The course highlights dimensions of terrain analysis, patrolling, and operation orders. Further study of the theoretical basis of the Army Leadership Requirements Model explores the dynamics of adaptive leadership in the context of the military operations. MLTS 202 provides a smooth transition in MLTS 301. Students develop greater self-awareness as they assess their own leadership styles and practice communication and team building skills. COE case studies give insight into the importance and practice of teamwork and tactics in real-world scenarios.

Corequisite: MLTS 204

2 credits, Spring

MLTS 203 & MLTS 204: Leadership Labs

Courses supplement instruction in MLTS 201 and MLTS 202. Students will apply the leadership and management skills learned during classroom instruction in order to develop individual competence and confidence in their own leadership abilities. Students participate as a member of a team analyzing leadership styles and provides hands-on practical application of lessons learned in a variety of situations.

Corequisite for MLTS 203: MLTS 201

Corequisite for MLTS 204: MLTS 202

1 credit, Fall, Spring

MLTS 205: Cadet Initial Entry Training Course (CIET-C)

This is a four-week summer leadership course for students who have not previously taken the required ROTC courses during their freshman and sophomore years and who wish to enter the ROTC program at the start of their junior year. The course focuses on leadership fundamentals, basic soldier skills, squad tactics, and evaluations on leadership attributes and competencies. Students attending this course must be a junior at the start of the fall semester after the course. Students are required to visit the ROTC Department prior to signing up for the course.

3-6 credits, Summer

Advanced Course

Entrance into the advanced course is required by the completion of one of the following:

1) Army ROTC Basic Course (MLTS 101-MLTS 204), 2) Basic Training, 3) MLTS 205, 4) JROTC.

MLTS 301: Training Management and the War Fighting Function

This course challenges Cadets to study, practice, and evaluate adaptive leadership skills as they are presented with challenging scenarios related to squad tactical operations. Cadets receive systematic and specific feedback on their leadership attributes and actions. Based on such feedback, as well as their own self-evaluations, Cadets continue to develop their leadership and

critical thinking abilities. The focus is developing Cadet's tactical leadership abilities to enable them to succeed at ROTC's summer Cadet Leadership Course (CLC) at Fort Knox, Kentucky.

Corequisite: MLTS 303

2 credits, Fall

MLTS 302: Applied Leadership in Small Unit Operations

This course uses increasingly intense situations while applying team leadership challenges to build Cadet awareness and skills in leading tactical operations at the small unit level. Cadets review aspects of full spectrum operations. They also conduct military briefings and develop proficiency in the operation orders process. The focus is on exploring, evaluating, and developing skills in decision-making, persuading, and motivating team members in the contemporary operation environment (COE). MSL 302 Cadets are evaluated on what they know and do as leaders as they prepare for ROTC's summer Cadet Leadership Course (CLC) at Fort Knox, Kentucky.

Prerequisite: MLTS 301

Corequisite: MLTS 304

2 credits, Spring

MLTS 303 & MLTS 304: Leadership Labs

The student implements the plans and orders created as part of Advanced Leadership Management I & II. The student will be evaluated on how he or she handles the changing situations, personalities and environments encountered during the labs. Students participate as a member of a team analyzing leadership styles and provides hands-on practical application of lessons learned in a variety of situations.

Corequisite for MLTS 303: MLTS 301

Corequisite for MLTS 304: MLTS 302

1 credit, Fall, Spring

MLTS 401: The Army Officer

This course was designed to be student-centric with the ownership of learning on the student, but facilitated by the instructor. Army Officers are expected to be life-long learners who take responsibility and personal initiative for their learning. You must properly conduct your pre-class assignments in order to come to class with a foundation of knowledge on the subject to be taught by your instructor. Doing so will allow us to spend the majority of the class time on specific areas that are least understood from the pre-class assignment rather than having to teach the subject from scratch. Do your homework so you can spend more time sharing personal knowledge and experiences with the class. Class will be conducted in an interactive manner with ample opportunities for small group discussions and practical exercises. Everyone will be responsible for contributing to the success of the learning experience.

2 credits, Fall

MLTS 402: Company Grade Leadership

The outcome of this lesson is to have Cadets receive and understand essential information on their last semester of their ROTC career. Understanding the expectations for their last ROTC semester will set the conditions for Cadets to continue to develop their military knowledge and skills; stay focused on their responsibilities as the ROTC battalion leadership and staff; continue to effectively lead their fellow Cadets and prepare them for future success; and last successfully graduate as a commissioned officer in the United States Army.

Prerequisite: MLTS 401

Corequisite: MLTS 404

2 credits, Spring

MLTS 403 & MLTS 404: Leadership Labs

Cadets plan and execute special training activities throughout the academic year. These courses are taken concurrently with MLTS 401 and 402.

Prerequisites: Enrollment in MLTS 401 and 402

1 credit, Fall, Spring

MORTUARY SCIENCE

PARRIS J. BAKER, Ph.D., MSSA, *Program Director*

Of all human experiences, none is more overwhelming in its implications than death. Presently, the number of openings for funeral directors, embalmers and other funeral personnel exceeds the number of graduates in the mortuary science field, thereby providing a wealth of employment opportunities. The study of death and how individuals and our larger society prepare for this life event is filled with questions that are rooted at the center of our human experience.

This journey of professional and personal discovery is multidisciplinary. Gannon University's mortuary science curriculum is taught by a variety of professors from biology, business, psychology, sociology, social work and health sciences. As a BS student in the Gannon University Mortuary Science Program you will receive excellent instruction, completing the first three years of your education at Gannon University and your fourth year at Pittsburgh Institute of Mortuary Science or another licensed institution of your choice.

Vision Statement

Preparing funeral service practitioners who touch people; offering dignity to the deceased and consolation to the survivors.

Mission Statement

To produce compassionate and competent funeral service practitioners who respect diverse cultural practices related to illness, dying, death, and care of the deceased and who know and practice the laws and ethics of the mortuary science profession.

The ultimate mission of the program is to produce leaders in the field of mortuary science across the United States and abroad.

Motto

Death does not end relationships.

COURSE DESCRIPTIONS

MORT 211: Introduction to Gerontology

An overview of the study of gerontology. Examines aging in America, stereotypes, theories on aging, adult development, work and living environments, and selected problems of the elderly. This course has a service-learning component. *3 credits, Fall*

MORT 221: Human Behavior and the Social Environment I

This is the introductory course to understanding human behavior from a multidimensional, biopsychosocial approach. Here we focus on the social environment and apply theoretical frameworks in order to put human behavior into perspective. In this course, students begin to study the person from a biological perspective, looking at the major systems of the human body. We also examine the psychological and sociological theories and knowledge by looking at cognition, emotion, the self as well as stress and coping. This course examines the impact of culture, spirituality, the physical environment and social institutions in shaping human behavior. Finally, this course addresses different sized social systems from formal organizations, communities, groups and the family. Students begin to see how social systems promote or defer health and well being. *3 credits*

MORT 316: Counseling Older Adults

This course will identify various areas impacting lives of the "young" old, "middle" old, and the "old" old. Misconceptions, stereotypes, and biases toward the aging process will be explored. The course focuses on assessment, counseling interventions, and techniques designed to enrich the world of the mature adult and their families. *3 credits*

MORT 360: Interviewing Skills

This course introduces students to the basic interpersonal helping skills using a problem solving model. Students are expected to demonstrate understanding of the relationship of interpersonal skills to social work practice and to demonstrate initial mastery of the helping skills.

3 credits

MORT 390: Professional Lecture Series

Selected topics presented by professionals in the field.

3 credits

Mortuary Science Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN*Fall*

| | |
|-----------|-------------------------------------|
| 3 | College Composition/LENG 111 |
| 4 | Anat. & Phys. I & Lab/BIOL 108/109 |
| 3 | Intro to Psyc/PSYC 111 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Human Behavior/MORT 221 |
| 2 | First-Year Seminar |
| <u>18</u> | |

Spring

| | |
|-----------|-------------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 4 | Anat. & Phys. II & Lab/BIOL 110/111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Foundations of Theology/LTHE 101 |
| <u>16</u> | |

SOPHOMORE*Fall*

| | |
|-----------|---------------------------------|
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Foundations of Bus Ant/BCOR 105 |
| 3 | Management Theory/BCOR 240 |
| 3 | Philosophy II Series/LPHI |
| 3 | Intro to Gerontology/GERO 211 |
| 3 | Global Language |
| <u>18</u> | |

Spring

| | |
|-----------|---------------------------------|
| 3 | Principles of Acct I/BCOR 214 |
| 3 | Bus/Prof Comm/ENGL 212 |
| 3 | Global Language |
| 3 | Managerial Acct/BCOR 202 |
| 3 | LPHI 257 or any LTHE 300 course |
| 1 | Leadership Seminar |
| <u>16</u> | |

JUNIOR*Fall*

| | |
|-----------|-----------------------------------|
| 3 | Literature Series/LENG |
| 3 | Fine Art Series/LFIN |
| 3 | Interviewing Skills/SCWK 360 |
| 3 | Mental Health of Elderly/GERO 336 |
| 3 | Math |
| <u>15</u> | |

Spring

| | |
|-----------|--|
| 3 | Death & Dying & Bereavement, Capstone/GERO 400 |
| 3 | Adulthood & Aging/PSYC 314 |
| 3 | Prof Lecture Series/MORT 390 |
| 3 | Business Tech/CIS 150 |
| 3 | Social Work Families or Groups/SCWK 362 |
| <u>15</u> | |

* Gannon will grant 30 credits for successful completion of technical studies in a licensed mortuary school.
 98 credits – Gannon
 30 credits – Mortuary School
 128 credits – Total

PHILOSOPHY

AARON K. KERR, PH.D., *Chairperson*

FACULTY: *Associate Professors:* William Haggerty, Aaron Kerr, Michael Latzer. *Assistant Professors:* David Nordquest, Fr. Jason Mitchell, Ph.D. *Assistant Teaching Professors:* Stephanie Barnhizer, Dominic Prianti. *Adjunct Faculty:* Bryan Prior.

Aims and Objectives

Philosophy is the love and pursuit of wisdom. An essential part of a person's education should be the serious and personal exploration of the "ultimate questions"—issues of human nature and human destiny, of how we should live, of the nature of the world around us and of the being and nature of God on whom we are dependent for our existence.

Human beings cannot be satisfied with merely knowing the "what" of things happening around them; they want to understand the "why" of the human condition. In studying philosophy students not only experience major philosophers at work on these important human issues, but they also participate in this activity by developing their own skills for creative thinking, rational argument and responsible judgment.

Philosophy is studied for its own intrinsic value, since, as Socrates said, "the unexamined life is not worth living." Nevertheless, the study of philosophy can also lead to successful careers as well. It is very suitable preparation for careers in law, journalism, government, politics, teaching, religion and counseling.

Students who are majoring in philosophy are obliged to take a minimum of ten upper level courses (30 credits). The following nine courses are obligatory: (a) the entire history of philosophy cycle – PHIL 271: Ancient Philosophy; PHIL 273: Medieval Philosophy; PHIL 280: Modern Philosophy; PHIL 286: Contemporary Philosophy; (b) PHIL 210/212: Logic; (c) LPHI 131: Introduction to Philosophy; (d) PHIL 233: Philosophy of God; (e) PHIL 237: Philosophy of Ethical Responsibility; (f) PHIL 400: Honors Seminar. The tenth required course may be chosen with the advice of the department among the other upper level philosophy courses. Those majoring in philosophy are encouraged to take more than the minimum ten courses, especially if they are intending to continue to work in philosophy in graduate school.

Those who are majoring in philosophy, of course, must take the requirements of the Liberal Studies Core Program. Thus if they take LPHI 233, 235, 237, 239, they are fulfilling what above was designated as the required courses: PHIL 233, 235, 237, and 239 respectively.

A major in philosophy at Gannon University is obliged to take eight prescribed cognates (24 credits).

Students may have to take beginning and/or intermediate language courses depending on their background. Students will also be encouraged to take a course in a classical language.

COURSE DESCRIPTIONS

LPHI 131: Introduction to Philosophy is a prerequisite for all Philosophy Courses.

LPHI 131: Introduction to Philosophy

An introduction to the study of philosophy. Beginning with the dawn of philosophical awareness among the ancient Greek philosophers, the course surveys both traditional and modern approaches to the philosophical understanding of the human condition. 3 credits

PHIL 210: Logic

An introduction to the theory and practice of good reasoning. Students learn practical techniques for constructing and evaluating arguments, based on both traditional Aristotelian logic and modern formal logic. 3 credits

PHIL 212: Contemporary Symbolic Logic

An introductory course in deductive reasoning using the methods of symbolic formal logic.

3 credits

PHIL/COMM 225: Philosophy of Communication

An analysis of the epistemological foundations underlying all forms of communicative processes from individual gestures to the electronic world-wide media.

3 credits

PHIL 233/LPHI 233: Philosophy of God

An introduction to the philosophical study of God, based largely on the tradition of Christian philosophy.

3 credits

PHIL 235/LPHI 235: Philosophy of Knowledge, Certitude and Truth

A study of the possibility and validity of human knowledge, together with the criteria of truth.

3 credits

PHIL 237/LPHI 237: Philosophy of Ethical Responsibility

The subject matter of ethics is "the good life and how to live it." Students will examine a variety of influential approaches to ethics, and will gain skill in applying ethical theory both to practical ethical issues in daily life, and to some of the urgent ethical issues in contemporary society.

3 credits

PHIL 238: Business Ethics

Business dealings are subject to the same norms and criteria which govern other human activities. This course analyzes the ethical dimensions of business transactions and consumerism, addressing itself to such problems as profits, advertising, free enterprise, discrimination, trade secrets, unions, and bribery.

Prerequisites: LPHI 131 and PHIL 237

3 credits

PHIL 239/LPHI 239: Philosophy of Science

A philosophical survey of the various understandings of science and scientific method. Students will examine the role philosophy has played in formulating and critiquing models of scientific investigation, and will pay attention to the impact science has had on religion, society, and views of human nature.

3 credits

PHIL 240: Philosophy of Education

A critical examination of the goals and methods of education, especially as they relate to ethics and politics. Readings will be drawn from historical philosophers, such as Plato, Aristotle, Rousseau and Dewey as well as contemporary philosophical analysis of educational institutions.

3 credits

LPHI 246: Philosophy of Mind and Emerging Artificial Intelligence

An introduction to the study of key theories of mind as related to the brain, the body, self, and emerging artificial intelligence. The course explores key concepts like consciousness, self-awareness, intentionality, thought, and the meaning of creating sentient robots.

Prerequisite: LPHI 131

3 credits

PHIL 248: Women in Western Philosophy

This course is an introduction to, and a critical examination of, women philosophers who are contemporaries of key male Western philosophers. Traditional philosophical issues will be examined in light of both the traditional viewpoints, and of the significant contributions made by these women.

3 credits

PHIL 250: Comparative World Philosophy

An introduction to the classics of world philosophy. Students will have a survey of some of the greatest contributions of both Western and Non-Western approaches to the major questions concerning issues like the good life, the self, theories of knowledge, reality versus appearance, and philosophical theology. Students will also compare and contrast the answers of these major questions, using a unified standard of critical thought and a unified goal of seeking

insight into answers to these major philosophical issues. This course fulfills the Philosophy II Series requirement.

Prerequisite: LPHI 131

3 credits

LPHI 255: Travel Course Philosophy of Place

An overview of the philosophy of place which examines the topological and constructed development of environments. Philosophical categories of space, time, ontology, value theory, ethics and a sense of the global in relation to the local will be explored. Particular attention will be paid to the Catholic Social Teaching tradition's emphasis on private property and the universal destination of goods. This is a GIFT course (Gannon Inspired Faculty Led Travel) and travel is required for completion of course.

3 credits

PHIL 271: History of Ancient Philosophy

A critical presentation of the rise of Western Philosophy in Greece in the seventh century before Christ and its development in the fourth century B.C. up to the third century of the Christian era.

3 credits

PHIL 273: History of Medieval Philosophy

A study of Augustine and the great synthesis of Thomas Aquinas, analyzed in the context of the philosophic-theological intellectual atmosphere of the thirteenth century. Non-Thomistic syntheses of Bacon, Bonaventure, and Duns Scotus are evaluated. Then the decline of scholasticism is studied with emphasis on Ockham, Suarez and the Electives.

3 credits

PHIL 280: History of Modern Philosophy

A critical presentation of philosophers and philosophical trends from the Italian Renaissance of the XV century to the early XIX century.

3 credits

PHIL 286: History of Contemporary Philosophy

A survey of some of the most important philosophical movements and thinkers of the late nineteenth and twentieth centuries, both in the Anglo-American and the Continental traditions.

3 credits

PHIL 290: Philosophy & Law

A discussion of the philosophical foundations of law and an investigation into the scope of legal philosophy. Questions such as: what is law? what is a legal system in a society? do the criteria for the existence of law include a moral element? how shall legal obligations be understood? will be discussed. In addition, the relationship between law and morality, and the common good must be reviewed.

3 credits

LPHI 310: Environmental Ethics

An overview of ethical approaches to conservation and preservation in their historical, cultural and social contexts. Philosophies of nature, culture and economics will inform a contemporary analysis of the common goods of air, soil and water. Case studies in public health will be examined with particular attention paid to individual and collective aspects of the stewardship of the earth in a global perspective.

3 credits

LPHI 320: Bioethics

Bioethics examines and applies ethical principles relating to human life: its beginning, its continuation, and its end.

3 credits

LPHI 325: Healthcare Ethics

An introduction to the study of key ethical values and frameworks as the bases for application to moral concerns, and the decisions that must be made in the various health care fields, such as nursing, physician assistant, and occupational and physical therapy.

3 credits

LPHI 330: Critical Thinking

This course focuses on the logical skills needed for building, identifying, analyzing, and evaluating arguments. Topics include: identifying conclusions and premises, deductive and inductive reasoning, identifying assumptions, informal fallacies. These skills will be applied toward making rational and ethically responsible decisions in the health care fields.

3 credits

PHIL 345: Philosophy of History

Critical examination of the philosophers of history and their concern with the nature of history and the meaning of historical knowledge. 3 credits

PHIL 350: Introduction to Metaphysics

The nature of metaphysics as the study of being is examined in the philosophy of Aristotle and Thomas Aquinas. The study of essence and existence, potency and act, substance and accident, matter and form, is developed systematically. 3 credits

PHIL 365: Modern Existentialism

“Existentialism” refers to those modern philosophies concerned with the meaning of human existence, the experience of anxiety and absurdity, and the problem of personal responsibility. Typical philosophies and literary works studied in the course include those of Kierkegaard, Nietzsche, Camus, Sartre, Marcel and Heidegger. 3 credits

PHIL 375: Internship

An internship option will give students the opportunity to appreciate the broad applications of logic, analysis, the good, human nature, and information fluency in their practical aspect. Critical, creative and constructive reason will be applied to various contexts, thus demonstrating the indispensable role of philosophy in life and work. 3-6 credits

PHIL 383: American Philosophy

An investigation of the contributions made by American thinkers to traditional philosophical problems and the interrelationship of American ideas and American life. 3 credits

PHIL 390-394: Special Topics in Philosophy1-3 credits**PHIL 395-399: Independent Study in Philosophy**1-3 credits**PHIL 400: Honors Seminar in Philosophy**

Every other spring semester, a member of the philosophy department conducts a special seminar on an individual philosopher or philosophic trend or theme in depth, using primary sources and allowing time for deeper discussion and analysis that enhances an intellectual insight. The specific topics are announced prior to registration for the coming semester. 3 credits, Spring

PHILOSOPHY MINOR

Completion of the following courses (15 credits) will satisfy the requirement for a minor in Philosophy.

- 3 Introduction to Philosophy/LPHI 131
 - 3 Philosophy of God, Knowledge, Ethics, Science, Comparative World Philosophy or Philosophy of Place/PHIL 233, 235, 237, 239, 250, or 255
 - 9 May be taken in any Philosophy courses 200 level or above
-
- 15

HEALTH CARE ETHICS MINOR

A minor in philosophy with a concentration in healthcare ethics, a student will take the two required courses in philosophy, one additional one in the Philosophy II series – and three courses of the following for a total of 18 credits.

- 3 Introduction to Philosophy/LPHI 131
- 3 Any Philosophy II Series Course
- 3 Philosophy of Communication, God or Ethical Theory/LPHI 225, 233, or 237
- 9 Any three of the following four courses:
 - Environmental Ethics/LPHI 310
 - Bioethics/LPHI 320
 - Healthcare Ethics/LPHI 325
 - Critical Thinking/LPHI 330

This health care ethics philosophy minor will focus on promoting critical reflection and applying ethical discernment in the healthcare professions. Successful students must be technically proficient and also understand the “why” behind the ethical decisions they make in their profession. To this end, a fundamental role of philosophy is to teach students how to identify the pressing moral issues in the various healthcare fields, and be able to make responsible ethical decisions.

Philosophy Curriculum (128 credits)

(Numerals in front of courses indicate credits)

1st Semester – Freshman

| | |
|-----------|-------------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Introduction to Psychology/PSYC 111 |
| 2 | First-Year Seminar |
| <u>17</u> | |

2nd Semester – Freshman

| | |
|-----------|-----------------------------------|
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | History Without Borders/LHST 111 |
| 3 | Natural Science |
| 6 | Elective |
| <u>15</u> | |

1st Semester – Sophomore

| | |
|-----------|------------------------------------|
| 3 | Philosophy of God/LPHI 233 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Psyc of Human Development/PSYC 222 |
| 3 | Advanced Composition/ENGL 211 |
| 6 | Elective |
| <u>18</u> | |

2nd Semester – Sophomore

| | |
|-----------|--|
| 3 | Philosophy of Knowledge/LPHI 235 |
| 3 | Philosophy of Science/LPHI 239 |
| 3 | Literature Series/LENG |
| 3 | Cultural Anthropology/SOCI 292 or Political Theory I/POLI 360 |
| 3 | Math |
| <u>15</u> | |

1st Semester – Junior

| | |
|-----------|--|
| 3 | Philosophy of Ethical Responsibility/LPHI 237 |
| 3 | Logic/PHIL 210 |
| 3 | Ancient Philosophy/PHIL 271 |
| 3 | Global Language/FREN 211 or GRMN 211 |
| 3 | Fine Art Series/LFIN |
| 1 | Leadership Seminar |
| <u>16</u> | |

2nd Semester – Junior

| | |
|-----------|---|
| 3 | Medieval Philosophy/PHIL 273 |
| 3 | Modern Philosophy/PHIL 280 |
| 3 | Global Language/FREN 216 or GRMN 216 |
| 6 | Elective |
| <u>15</u> | |

1st Semester – Senior

| | |
|-----------|---|
| 3 | Senior Seminar/LBST 383 |
| 11 | Elective |
| 3 | History of Contemporary Phil/ PHIL 286 |
| <u>17</u> | |

2nd Semester – Senior

| | |
|-----------|------------------------------------|
| 3 | Philosophy Honors Seminar/PHIL 400 |
| 12 | Elective |
| <u>15</u> | |

10 Upper Level Philosophy Courses 30 hrs.

POLITICAL SCIENCE

ANJALI SAHAY, Ph.D., *Program Director*

FACULTY: *Professors:* Mark A. Jubulis. *Associate Professor:* Anjali Sahay. *Adjunct Faculty:* Jay A. Breneman, Diane E. Chido.

Vision Statement

The Political Science program seeks to attract talented students who are intellectually curious about political life and global affairs. As a dedicated community of teaching and learning, we strive to promote awareness and understanding of the key perennial questions concerning the nature of politics. Our efforts will draw strength from Gannon's Catholic Identity and emphasis on Liberal Learning, and contribute to the enhancement of the intellectual life of the University.

Mission Statement

The Political Science program is dedicated to providing our students with the necessary perspectives to critically and normatively evaluate the wide variety of political regimes that have existed in different time periods and different parts of the world. Our students will develop an understanding of the purpose of politics as the effort to structure a community dedicated to the promotion of justice and the common good. This understanding is developed by making connections across the various academic disciplines, applying moral reasoning to public affairs, and cultivating the virtue of prudence.

Objectives

The Political Science program offers an undergraduate curriculum leading to the Bachelor of Arts degree. It also provides the opportunity for students to pursue a dual major or acquire one or two minors. The program covers the four major subfields of political science: American Politics, Political Theory, Comparative Government and International Relations. The curriculum provides students with the necessary knowledge and skills to succeed in either graduate school or law school, or directly pursue a career in the public, private or not for profit sectors.

Career Opportunities

Individuals with a Bachelor's Degree in Political Science may qualify for administrative and management trainee positions in such fields as legislative and policy research, public relations, personnel work, budget analysis, security investigation, etc. Employment opportunities also include such professional careers as college and university teaching, law, city management, urban planning, public administration, policy research and analysis, foreign service and many other careers with local, national and international organizations both public and private.

COURSE DESCRIPTIONS

POLI 101: Orientation

A required orientation program for freshman Political Science and Pre-Law concentrators.

NC/Fall

POLI 111: U.S. Government and Politics

Constitutional foundations of U.S. Government; structure and functions of Congress, the Presidency, the judiciary; administrative institutions and processes, interest groups and political parties; political behavior, and the electoral process.

3 credits, Fall/Spring

POLI 122: Public Policy Analysis

Principles and practices of policy analysis; emphasis on current national policy issues.

3 credits, Fall/Spring

POLI 133: Introduction to International Relations

Introduction to the nature of international relations, focusing on the role of the state and international institutions; the role of ideology and culture in international affairs; and the nature of the world economy and the process of globalization. *3 credits*

POLI 210: Bureaucracy and Public Administration

Principles and practices of public administration in modern society with a special attention to the administration of the American Federal government. *3 credits*

POLI 220: Comparative Government

Principles of comparative political analysis; principles and features of selected European and other non-Western governmental systems. *3 credits*

POLI 260: Introduction to Law in Society

Introduction to legal institutions and processes; evolution of the American legal system; major substantive areas of law; legal reasoning and the adversarial process; and, the role of attorneys and courts in American society.

Cross listed with PLAW 111

3 credits

POLI 311: State and Local Government

Institutions and processes of state and local government with special focus upon Pennsylvania.

3 credits

POLI 312: Parties and Political Behavior

The electoral and governmental functions of American political parties, with consideration given to party systems at national and local levels, and the study of campaigns and elections.

3 credits

POLI 315: Congress and Legislative Process

The structure, functions and the role of Congress in both the policy process and the nation's political life.

3 credits

POLI 317: The American Presidency

Institution, politics, personality, and policies of the president.

3 credits

POLI 322-325: Regional Studies

Political structures and regional features of a select area of the world, such as Russia and Eastern Europe, the European Union, Latin America, Africa, or Asia.

3 credits

POLI 326: Asian Politics and Culture

This course examines the political, historical, cultural, socio-economic, and geographic traits that distinguish this region and shapes its domestic political processes, interstate, and international relations.

3 credits

POLI 331: Urban Politics and Public Policy

The American urban political process and public policy. Community structure and the distribution and use of power.

3 credits

POLI 332: Comprehensive Urban Planning

Consideration of the economic, political and social determinants of comprehensive urban land use planning.

3 credits

POLI 340: Theories of International Relations

Analysis of major theoretical approaches to study of international relations and evaluation of competing paradigms which claim to explain the nature of post-ColdWar international relations.

Prerequisite: POLI 133

3 credits

POLI 341: International Law and World Order

This course addresses contemporary issues in international law and world order. Course will enhance students' comprehension of topics such as human rights, genocide, non-proliferation, terrorism, international criminal court and other conflicts.

3 credits

POLI 342: United Nations Practicum

This course covers the history, goals, principles, rules, procedures, and other institutions of the United Nations organization. Gannon's Model U.N. for High School students provides opportunities for experiential learning. Participation in Gannon Model UN is required. *3 credits*

POLI 343: U.S. Foreign Policy

Historical and intellectual foundations of contemporary U.S. foreign policy. *3 credits*

POLI 345: Globalization and World Politics

Course will explore the global contours of economic, political, technological, security, cultural, migratory, linguistic, and environmental aspects of globalization. *3 credits*

POLI 350: Constitutional Law and the Judicial Process

Processes of constitutional development and interpretation; the Judicial system; judicial review; the federal system; Presidency: office and powers; powers of Congress. *3 credits, Fall*

POLI 351: Civil Liberties and Civil Rights

Constitutional basis of civil liberties; freedom of speech and press; freedom of association, religious liberty and the separation of church and state; federal and state procedural due process; substantive due process; equal protection of the laws. *3 credits, Spring*

POLI 357: Legal Analysis and Persuasion

Legal analysis and persuasion will introduce the student to the fundamentals of legal thinking; including the critical examination of case law and other written materials. Applying this legal analysis, students will learn to persuade a targeted audience in both written and oral forms. Classroom exercises include briefs, mock appellate arguments and/or mock trial.

Cross listed with PLAW 357

3 credits

POLI 360: Political Theory

The Classical and Christian tradition of political theory and philosophy. Reading and discussion of select works of Plato, Aristotle, St. Augustine, St. Thomas Aquinas and Machiavelli. Modern Political Theory and philosophy. Reading and discussion of select works, including writings of Hobbes, Locke, Rousseau, John Stuart Mill, and Marx. *3 credits*

POLI 390-394: Special Topics

Such as Political Rhetoric & Leadership, Presidential Campaigns and Elections, Nationalism and Ethnic Conflict, and Totalitarianism. *1-3 credits*

POLI 395-399: Independent Study

1-3 credits

POLI 400: Political Analysis Senior Coordinating Seminar

The Coordinating Seminar is designed to enhance and integrate the student's comprehension of politics; and to develop further, critical and analytical skills in reading, writing and research. *3 credits*

POLI 490: Fieldwork and Internships I

Qualified individuals will be placed in internship positions with public officials, political organizations and governmental agencies particularly, not exclusively, in the local community. Students may also design, in consultation with the program director, an appropriate program of field research.

Prerequisite: Permission of Department.

3 credits, Fall

POLI 491: Fieldwork and Internships II

Prerequisite: Permission of Department.

3 credits, Spring

Semester or summer internships in Washington, DC are available to all majors for academic credit through Gannon's affiliation with the Washington Center.

Political Science Curriculum

Liberal Studies Core Requirements: 39 credit hours

Program Requirements: Concentrators should successfully complete 36 credit hours in Political Science and 43 credit hours in cognate and elective subjects, including the following courses:

Freshman Orientation: POLI 101 (NC)

Introduction: POLI 111, 122, 133, 220

Upper Level Core:

POLI 360; 400, one of the following: POLI 321, 322, 340, 341 343 and one of the following: POLI 210, 260, 312, 315, 317, 350, 357.

Experiential Learning Component:

One of the following:

POLI 342, 490, or 491 – 3 credits.

Program Electives: 9 credits of upper level courses or

Internship Fieldwork, Independent Study of Intersession Courses.

Cognate Requirements: 9 credit hours including:

Social Science Cognates: 6 credit hours from Economics/BCOR 111 or BCOR 112 or Sociology/SOCI 110 or Psychology/PSYC 111 or HIST 221/222.

Statistics: 3 credits

Required: Language: 6 credit hours in Language

Electives: 32 credits

Legal Studies: Law and Politics

Students pursuing this track will take most of the required courses in the Political Science major, but will substitute two legal courses, Introduction to Law & Society and Legal Analysis & Persuasion, for two upper level Political Science courses.

Students who intend to go on to law school are encouraged to complete the Legal Studies Certificate. The certificate can be completed within the four year program by using those courses as the allowable cognates and electives offered in the Political Science Program. If the pre law school student does not want to complete the certificate, they are encouraged to take some of the Legal Studies courses so that they can learn skills that could enable them to find summer employment and/or part-time employment in legal settings. Some helpful courses would include Legal Research & Writing I and II, Public Records Research, and Computers in Law.

Political Science Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|---|----------------------------------|
| 2 | First Year Seminar |
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Intro to Philosophy/LPHI 131 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Intro to US Government/POLI 111 |
| 0 | Orientation/POLI 101 |

17

Spring

| | |
|---|---|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Public Policy Analysis/POLI 122 |
| 3 | Introduction to Psychology/PSYC 111, <i>or</i> Macroeconomics/BCOR 112 <i>or</i> HIST 222 |
| 3 | Elective |
| 3 | Intro to International Relations/POLI 133 |

15

SOPHOMORE

Fall

- 3 Public Speaking/SPCH 111
- 3 The Bible: An Intro/LTHE 201
- 3 Philosophy II Series/LPHI
- 3 Global Language
- 3 Math
- 3 History of US to 1865/HIST 221/
Microeconomics BCOR 111/
Basic Sociology/SOC 110

18*Spring*

- 3 Global Language
- 3 Literature Series/LENG
- 3 Comparative Government/POLI 220
- 3 Elective
- 3 Upper Level Political Science

15

JUNIOR

Fall

- 3 LPHI 237 or any LTHE 300 course
- 3 Science
- 3 Elective
- 3 Upper Level Political Science
- 3 United Nations Practicum/POLI 342
- 1 Leadership Seminar

16*Spring*

- 3 Fine Art Series/LFIN
- 3 Political Theory/POLI 360
- 3 Upper Level Political Science
- 9 Elective

18

SENIOR

Fall

- 3 Political Sci. Senior Seminar/POLI 400
- 3 Upper Level Political Science
- 9 Elective

15*Spring*

- 3 Senior Seminar/LBST 383
- 6 Upper Level Political Science
- 5 Elective

14**Total credits: 128**

The Gannon University – Duquesne School of Law, 3+3 Early Admissions Program has been designed for qualified students to earn an undergraduate and a law degree in six years rather than seven. Under the early admissions program students may receive a *Bachelors Degree in Political Science after three years of undergraduate work and the successful completion of the first year of full time study at the Duquesne School of Law.* The student would then receive their Law Degree after successful completion of the second year at Duquesne School of Law.

Qualified students may wish to pursue this Political Science Program option.

POLITICAL SCIENCE MINOR

A minor in political science may be accomplished by taking the 6 credit foundations sequence – POLI 111 U.S. Government and either POLI 122 Public Policy, or POLI 133 Introduction to International Relations plus 12 credits in upper level courses. This minor is strongly recommended as preparation for teaching social studies and civics at the elementary and secondary levels. Students are encouraged to plan the minor in consultation with an advisor from the political science department. A Political Science minor also complements a major in Global Language and International Business.

THE NEXT STEP
Baccalaureate Degree program for Graduates of Two Year Colleges
Political Science/Pre-Law
(Numerals in front of courses indicate credits)
Pre-Senior Year

- 3 US Government and Politics/POLI 111
- 3 Public Policy Analysis/POLI 122
- 9 Political Science Electives
- 6 Global Language
- 3 Foundations of Theology/LTHE 101
- 3 Introduction to Philosophy/LPHI 131
- 3 Fine Art Series/LFIN
- 3 Literature Series/LENG

 33

Senior Year

- 3 Choice of (1):Comparative Govt/POLI 220, Far Eastern Govts/POLI 231, Regional Studies/POLI 322, International Relations/POLI 240, 121 Int Law and Organization/POLI 341, US Foreign Policy/POLI 343
- 3 Political Theory I/POLI 360
- 3 Political Science/POLI 311, 312, 315, 317, 331 or 350
- 3 Senior Coordinating Seminar/POLI 400
- 6 Political Science Electives
- 3 Senior Seminar/LBST 383
- 3 Theology or Phil III Series/LTHE or LPHI
- 1 Leadership Seminar
- 3 Electives
- 6 Choice of (2):
Social Psychology/SOCI 211,
Intro to Psychology/PSYC 111,
Microeconomics/BCOR 111,
Macroeconomics/BCOR 112,
History of the US to 1865/HIST 221,
History of US to Present/HIST 222

 34

Students will be permitted to take other courses in substitution for any course listed above which they have satisfactorily completed prior to admission into the Next Step program. Students are required to complete 7-19 credits in the Liberal Studies Core. Students may transfer courses equivalent to Foundations of Theology, Introduction to Philosophy, the Literature Series and/or the Fine Arts Series. Students must take the Leadership Seminar, the Theology/Philosophy III Series, and the Senior Seminar or approved capstone at Gannon.

All students graduating from the College of Humanities must have completed six credits of a Modern Global Language.

**PRE-LAW – THE CHARLES L. DEANER, ESQ, '48,
PRE-LAW PROGRAM**

 PETER AGRESTI, JD *Program Director*

 FACULTY: *Hon.* Stephanie Domitrovich, Peter Agresti, JD.

Aims and Objectives:

The Association of American Law Schools recommends that a Pre-Law Program should be concerned with the development of basic skills and insights fundamental to the later attainment of legal competence. The quality of education called for should include:

- A. comprehension and expression in words;

- B. critical understanding of the human institutions and values with which the law deals; and
- C. creative power in thinking.

According to the Association: "The development of these fundamental capacities is not the monopoly of any one subject-matter area, department or division. Rather, their development is the result of a highly individualized process pursued with high purpose and intensive intellectual effort by persons with at least a reasonable degree of native intelligence. Perhaps the most important variable ingredient of a proper climate for this process is the quality of undergraduate instruction. Certainly, it is not any particular course or combination of courses. Shortly stated, what the law schools seek in the entering students is not accomplishment in mere memorization but accomplishment in understanding, the capacity to think for themselves, and the ability to express their thoughts with clarity and force."

At Gannon University individuals expressing an interest in Pre-Law are initially placed in a sequence of courses in their Freshman and Sophomore years which introduce them to many of the major fields within Gannon. During this period the student, in consultation with the Director of the Pre-Law Program, is encouraged to select a field of concentration and to plan a course of studies which seems best suited to his or her individual interests and attitudes and to the fulfillment of the objectives of the Pre-Law Program.

Students from any major may elect to pursue a Minor in Pre-Law Studies consisting in 18 credit hours of approved courses selected from Pre-Law and Cognate fields. Students may also choose to complete a Legal Studies Certificate.

GANNON UNIVERSITY – DUQUESNE SCHOOL OF LAW 3/3 EARLY ADMISSION

PETER AGRESTI, JD *Program Director*

ADVISORY COMMITTEE: *Hon.* Stephanie Domitrovich, Joseph Martone, Esq.

Gannon University, in collaboration with Duquesne University School of Law, offers a competitive, early admissions program for Pre-Law students. This integrated partnership provides special academic opportunities for qualified students to earn both an undergraduate degree and a law degree in six years rather than seven. Under the early admissions program, students may receive a Bachelors Degree from Gannon University after three years of undergraduate work and the successful completion of the first year of full time study at Duquesne University School of Law.

The early admissions program is only open to those applicants who enter the program as freshmen and complete all three years of their undergraduate work at Gannon University. Admission is highly competitive and the program is limited to a maximum of twenty students per year.

Students in the early admissions program will choose an undergraduate major in Arts and Humanities, Business, Criminal Justice, English, General Science, History, Accounting, Legal Studies Paralegal, Political Science, Interdisciplinary Studies and Philosophy, at the time of their acceptance into the program and will be required to take several courses from the Pre Law curriculum. The Liberal Studies Core as well as all major and College requirements will be completed at Gannon University except in cases where Duquesne Law School classes may be applied to such requirements.

The Pre-Law Adviser and a Pre-Law Advisory Committee including a representative of Duquesne University Law School and other members of the legal community, will provide counseling, advisement, opportunities for internships, field trips to Duquesne and generally

help prepare those enrolled in the program with assistance in preparing for law school, the law school admissions test and eventual entrance into the legal profession.

Students will take the Law School Admissions Test in their third year and will be interviewed by a selection committee which will include the Dean of Duquesne University Law School or a designate. Selection criteria will include a minimum cumulative grade point average of 3.5 for the three years at Gannon University and a minimum LSAT score in the 60th percentile on the test. Evidence of leadership potential and interest and commitment to the legal profession and other qualitative factors will be considered in selection decisions.

Duquesne University will admit from five up to ten students who meet the above criteria and who are recommended by the Selection Committee. At Duquesne's option, more than ten students may be admitted.

The early admissions program is specifically designed for Gannon University undergraduate students with outstanding academic credentials who will distinguish themselves at the undergraduate level. By participating in this program, students may not only save the expenses of the additional year of study normally required to complete both undergraduate and law school degrees but they may also qualify for special scholarship and grant-in-aid opportunities at both Gannon University and Duquesne Law School.

COURSE DESCRIPTIONS

LEGL 111: Introduction to Law

Introduction to legal institutions and processes; evolution of the American legal system; major substantive areas of law; legal reasoning and the adversarial process; and, the role of attorneys and courts in American society. 3 credits

PLAW 357: Legal Analysis and Persuasion

Legal analysis and persuasion will introduce the student to the fundamentals of legal thinking, including the critical examination of case law, statutory law and other written materials. Applying this legal analysis, students will learn to persuade a targeted audience in both written and oral forms. Classroom exercises include briefs, mock appellate arguments and/or mock trial. 3 credits/Spring, Third or Fourth Year

PLAW 380: Career Preparation in Law

This course will introduce students to the skills required to succeed on a legal career path. This will include an overall foundation of legal skills in thinking critically and clear and concise legal writing. There will also be a specific focus on the LSAT and legal job opportunities. This focus will be facilitated through responses to hypotheticals, questions, samples, and study materials. 3 credits

Pre-Law Curriculum

This is not the track for 3+3 students. This is the curriculum for pre-law students who have not decided on a major in their freshmen and sophomore years.

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|----------|----------------------------------|
| 3 | College Comp/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| *3 | Legal Research Wrtg/LEGL 211 |
| *3 | Intro. to Law/LEGL 111* |
| <u>2</u> | First-Year Seminar/LEGL 100 |
| 14 | |

Spring

| | |
|----------|----------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | History Without Borders/LHST 111 |
| *3 | Political Science/POLI 112 |
| 3 | Legal Research Wrtg/LEGL 212 |
| <u>3</u> | Intro. to Philosophy |
| 15 | |

SOPHOMORE

| | |
|----|--------------------------------------|
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Literature Series/LENG |
| 3 | Fine Art Series/LFIN |
| 3 | LS/Science |
| 3 | Math |
| 3 | Legal Analysis & Persuasion/PLAW 357 |
| 3 | Public Speaking/SPCH 111 |
| 6 | Modern Foreign Language |
| 3 | Cognates |
| 3 | Elective |
| 33 | |

** PC Applications exam may be taken. If passed, CIS 150 or 170-172 may be waived.

PRE-LAW MINOR

Beyond the sophomore year, Pre-Law students must select a major field of study. Additional Pre-Law Cognates are recommended and a Pre-Law Minor may be earned through the completion of 18 credit hours, including:

| | |
|-----|--|
| 3 | Intro to Law/LEGL 111 |
| 3 | Legal Analysis and Persuasion/PLAW 357 |
| 3-6 | Constitutional Law/POLI 350 |
| | Civil Liberties and Civil Rights/POLI 351 |
| | Philosophy of Ethical Responsibility/LPHI 237 |
| | Legal Research Writing I/LEGL 211 |
| | Philosophy & Law/PHIL 290 |
| 3-6 | Logic/PHIL 210 |
| | Advanced Composition/ENGL 211 |
| | Business and Professional Communication/ENGL 212 |
| 3-6 | Criminal Law & Procedure/CRJS 320 |
| | Congress & Legislative Process/POLI 315 |
| | Career Prep in Law/PLAW 380 |
| | Legal Research Writing II/LEGL 212 (Prerequisite LEGL 211) |

Law and Politics

Students pursuing this track will take most of the required courses in the Political Science major, but will substitute two legal courses, Introduction to Law & Society and Legal Analysis & Persuasion, for two upper level Political Science courses.

Students who intend to go on to law school are encouraged to complete the Legal Studies Certificate. The certificate can be completed within the four year program by using those courses as the allowable cognates and electives in the student's major. If the pre law school student does not want to complete the certificate, they are encouraged to take some of the Legal Studies courses so that they can learn skills that could enable them to find summer employment and/or part-time employment in legal settings. Some helpful courses would include Legal Research & Writing I and II, Public Records Research, Computers in Law, and Trial Prep and Procedure.

PSYCHOLOGY

LUKE J. ROSIELLE, Ph.D., *Program Director*

FACULTY: *Associate Professors:* Jessica Hartnett, Lori Lindley, Luke Rosielle, Andrew Caswell, John Ranney. *Assistant Professors:* Ryan Leonard, Sophia Stepanyan. *Associate Teaching Professor:* Barbara Townsend.

ADJUNCT FACULTY: Bruce Kobal, Richard States, Emily Wachter, Tim Johnson.

Mission Statement

The mission of the Psychology Program at Gannon University is to prepare students to thrive in a diverse and changing world by engaging students in scholarship, research, internships and a critical approach to gaining knowledge in the field of psychology.

Vision

The Psychology Program at Gannon University aspires to:

- Empower students to evaluate and generate knowledge
- Engage in cutting edge research
- Promote ethics in research and the application of knowledge
- Improve science literacy
- Create positive change in the community
- Produce graduates who will be leaders in their communities and careers

Aims and Objectives

The Department of Psychology and Counseling offers two separate undergraduate degrees in Psychology: a **Bachelor of Arts** and a **Bachelor of Science** degree.

The **Bachelor of Arts** in Psychology prepares students for a variety of professional and liberal arts careers by providing maximal flexibility in vocational planning. Because of the strong foundation the curriculum provides in research methods, the Liberal Studies Core and behavioral sciences, the psychology major prepares the student to pursue graduate study in a variety of fields including Psychology, Social Work, Counseling, Business and Health Care Administration, Law and others. It also prepares the student for other careers that require a strong liberal arts background.

The **Bachelor of Science** in Psychology prepares students for graduate programs in Neuroscience, Cognitive Psychology, Biopsychology and other related fields. Students gain extensive research experience through advanced statistics and research courses. In addition, students select courses in Mathematics, Statistics, Biology, Chemistry or Computer Science to augment their psychology courses and increase their competitiveness in their chosen area of emphasis. Specialized course sequences are also available for students who combine the psychology major with the pre-medical or pre-physical therapy curriculum.

The **Bachelor of Arts in Psychology and Master of Science in Clinical Mental Health Counseling 4+2** program provides students with an accelerated degree option. The 4+2 program in psychology allows students to complete their bachelor and master's degrees in 6 years by joining the BA in Psychology with a MS in Clinical Mental Health Counseling. BA students are able to register for first year CMHC courses during their senior year. BA in Psychology students would need to plan for a reduced credit load in their senior year to accommodate taking the first year masters level courses. Students would also need to be approved through an interview process with the CMHC faculty in the fall of their junior year in order to begin registering for the first year CMHC courses in the senior year. Students would be conditionally accepted into CMHC program at that point, pending satisfactory academic performance with at least a 3.0 cumulative GPA. Students would be restricted to 12 semester hours in the fall and spring semesters of their senior year which would include 9 hours of masters level courses each semester, and senior thesis in the fall and senior LBST capstone

in the spring. The masters level courses would be used to fulfill the requirements of their BA degree as well as fulfilling requirements for the MS degree. Upon successful completion of the BA degree at the end of the spring semester in the fourth year, students would be formally admitted into the MS program as graduate students.

COURSE DESCRIPTIONS

PSYC 101: First-Year Seminar

The First-Year Seminar is a discussion/experience-based course intended to orient the new student to Gannon University, to introduce the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life, and to encourage development of academic, personal and spiritual aspects of the student's life. Each seminar is unique, depending upon the instructor and/or program in which it is offered. (Freshman are expected to complete the First-Year Seminar during the first semester at Gannon. If not, the student must complete the requirement prior to the sophomore year.) *2 credits, Fall*

PSYC 111: Introduction to Psychology

An introduction to the principal theories and methods used by psychology to explain human personality, behavior and adjustment. *3 credits, Fall, Spring*

PSYC 211: Psychological Statistics

An introduction to frequency distributions, sampling distributions, t-tests, analysis of variance, correlation, linear regression, and non-parametric statistics. *3 credits, Fall, Spring*

PSYC 212: Psychological Statistics Lab

Application of and practice using the theoretical concepts in statistics introduced in PSYC 211. This lab should be taken in the same semester or the following semester as PSYC 211. It is required for psychology majors, optional for non- majors.

Prerequisite: PSYC 211

1 credit, Spring

PSYC 214: Careers in Psychology

An overview of the field of psychology, designed to orient students to the psychology major and how best to tailor it to meet their interests and professional goals. Topics to be covered include ethics, professional writing, applying to graduate school, career opportunities at the bachelor's level, applying the psychology major to other fields, and professional involvement in psychology.

Prerequisite: PSYC 111

3 credits

PSYC 215: Introduction to Counseling

This course provides an overview of the profession of counseling and related helping professions. Professional credentialing, effective helper characteristics, and the work of counselors and related professionals will be reviewed. The multiple roles that counselors play in a range of settings will be introduced. Theoretical approaches, helping relations skills, and current professional issues will be addressed. *3 credits, Fall, Even numbered years*

PSYC 222: Psychology of Human Development

An investigation of the theories and research findings related to the understanding of complex behavior as it evolves throughout the lifespan.

Prerequisite: PSYC 111

3 credits, Fall, Spring

PSYC 225: Social Psychology

An examination of the relationship between social settings and cognitive, affective, and behavioral processes. Includes the study of group dynamics.

Prerequisite: PSYC 111

3 credits, Fall, Spring

PSYC 232: Psychopathology

A general introduction to various models of psychopathology with emphasis on the study of anxiety disorders, depression, psychotic disorders, and personality disorders.

Prerequisite: PSYC 111

3 credits, Fall, Spring

PSYC 234: Health Psychology

A consideration of the roles played by psychological factors in the maintenance of health and the development of illness. Emphasizes the importance of the therapeutic relationship which includes the patient, the patient's family and the health provider. Includes both a review of relevant clinical and research findings and practical concepts/skill development.

Prerequisite: PSYC 111

3 credits, Spring

PSYC 239: Servant Leadership

This particular leadership seminar examines the role of leader as servant in an international setting. Students will study theories of leadership, including servant leadership, and apply what they have learned in Ireland. Students will spend one week working with children or adults at agencies serving underprivileged neighborhoods in the city of Limerick.

1 credit, Spring

PSYC 240: Horses for Interpersonal Skills

A unique, experiential application of equine-assisted activities to interpersonal skill development. Incorporates exploration of theories, research and skills related to self awareness and emotional intelligence. Includes off-site, hands-on interactions with therapy horses.

The course does not involve riding and no equine experience is necessary. Students will be responsible for their own transportation to off-site portion of class and a course fee is required.

Prerequisite: PSYC 111

3 credits, Fall, Odd numbered years

PSYC 241: Sport Psychology: Theory and Application

A comprehensive introduction to the psychological factors that relate to sports involvement and performance. Issues include psychological aspects of elite athlete's motivation and performance, intervention and performance enhancement, anxiety and skill performance.

Finally, the course will cover topics relating to enhancing well-being and health in athletics.

Prerequisite: PSYC 111

3 credits, Fall, Even numbered years

PSYC 245: Introduction to Forensic Psychology

Forensic Psychology is generally defined as the application of the science and profession of psychology to issues relating to law and the legal system. This course is intended to provide an overview of the various applications of psychology to forensic settings. This course focuses on the production and application of psychological knowledge and research findings for the civil and criminal justice systems. The student will explore criminal profiling, crime scene investigations, and serial murders. Based on this applications approach, the course also investigates police psychology, legal psychology, psychology of crimes and delinquency, "victimology" and victim services, psychological assessments, mental disorders, and correctional psychology.

Prerequisites: CRJS 110, PSYC 111

3 credits, Spring, Odd numbered years

PSYC 250: Professional Seminar I

The first in a three-seminar professional development series for psychology majors, this course emphasizes psychology as a research science. Students will learn about the current state of psychological science, including controversies, best practices, and data collection.

Prereq: PSYC 111, Psychology majors only

1 credit, Fall

PSYC 251: Psychology of Physical Activity

The primary objective of the class is to provide the student with a general overview of the reciprocal relationship between psychological parameters and exercise and health. Course topics include, but will not be limited to, exercise adherence, exercise promotion, the relationship between physical activity and depression, anxiety, positive well-being, self-efficacy, cognitive functioning, distress, sleep disorders, mood, self-esteem, stress, and behavioral interventions for health promotion.

Prerequisite: PSYC 111

3 credits, Spring, Odd numbered years

PSYC 260: Professional Seminar II

The second in a three-seminar professional development series for psychology majors, this course emphasizes career paths in and related to psychology. Students will develop their own professional identity in psychology and will reflect on information provided by guest speakers who are professionals in the community.

Prereq: PSYC 111, Psychology majors only

1 credit, Spring

PSYC 265: Cross-Cultural Psychology

An examination of the role that cultural differences play in social interaction. Factors such as race, ethnicity, religion, gender, and language are considered as they impact behavior between individuals and between groups.

Prerequisite: PSYC 111, Junior or senior standing.

3 credits, Fall, Spring

PSYC 275: Psychology of Women

This course concerns psychological approaches to studying women. It examines relevant theory and research. Topics include identity and self-concept, relationships and power, sexuality, parenting, work, mental health and women of color.

Prerequisite: PSYC 111, Junior or senior standing.

3 credits, Fall, Odd numbered years

PSYC 280: Inside Out: Reducing Prejudice

The course is an in-depth examination of the theories of prejudice, discrimination, and prejudice reduction in unique intergroup setting. "Outside" college students from Gannon and "inside" inmates will study alongside one another at a correctional institution and work together in small groups to create a project to reduce intergroup tensions.

Prerequisite: PSYC 111, Sophomore or higher standing.

3 credits, Fall, Even numbered years

PSYC 292: Industrial/Organizational Psychology

An introduction to the application of psychological principles to the work environment.

Topics include such areas as employee selection, placement, training, employee morale and motivation, supervisory styles, leadership, and general organizational behavior.

Prerequisite: PSYC 111

3 credits, Spring, Even numbered years

PSYC 300: Psychology of Creativity

This course was originally designed to integrate the practice of creative production with psychological theory and research dealing with creative behavior. Presently, these facets will be preserved but the emphasis will shift somewhat to theories and research. Creative production, however, will still be required. Throughout the semester, the student will complete various creative exercises and will read essays on the creative process. The exercises will provide an opportunity to develop creative skills in artistic, musical or literary expression, in theatrical production or in scientific and technical problem solving. Readings in psychoanalytic, behavioral, humanistic, and psychophysiological theories of creativity will provide students with the basis for exploring creativity in themselves and in others.

Prerequisite: PSYC 111

3 credits

PSYC 303: Research Methods w/Lab

An introduction to basic procedures in psychological research. The components of an experimental study including literature review, hypothesis formation, experimental design, ethics, statistical analysis, interpretation, and communication of research findings are covered. Concepts are illustrated by conducting small group experiments in the lab portion of the course.

Prerequisites: PSYC 211

4 credits, Fall

PSYC 304: Advanced Research Methods

A continuation of PSYC 303, this course involves advanced concepts in psychological research, as well as the design and implementation of individual research based on the formation of an original hypothesis. All research is done under the guidance and supervision of the instructor.

Prerequisites: PSYC 211, PSYC 303

3 credits, Spring

PSYC 305: Learning and Cognition

A general introduction to the major theories of learning and cognition. A chronological overview of the gradual change from predominately behavioral models to predominately cognitive models of learning is examined.

Prerequisite: PSYC 111, PSYC 211 or equivalent course.

3 credits

PSYC 306: Psychology of Communication

An introduction to psycholinguistic theory with emphasis on the pragmatics of human communication.

Prerequisite: PSYC 111

3 credits

PSYC 307: The Helping Relationship

Emphasis is placed on learning the skills necessary to develop a helping relationship. Students will practice relationship building skills with each other in class. Video feedback will be used as well as class discussion to assess student performance. Person-Centered Theory will be analyzed as a rationale for the helping relationship.

3 credits, Fall, Odd numbered years

PSYC 308: Psychological Assessment

This course provides an introduction to the process of psychological assessment. A broad array of techniques is presented including behavioral observation, interviews with varying degrees of structure as well as psychological tests that have been developed to assess cognition, personality and interpersonal processes. Neuropsychological instruments will be discussed as well as techniques used in the assessment of families.

Prerequisite: PSYC 111, PSYC 211, PSYC 232

Junior or senior standing as Psychology major

3 credits, Spring, Odd numbered years

PSYC 309: Group Dynamics

An examination of group dynamics, with an emphasis on interpersonal processes and therapeutic group elements. A variety of group formats and functions will be covered. The course includes both theoretical and experiential components.

Prerequisite: PSYC 111

3 credits, Fall, Even numbered years

PSYC 311: Multivariate Statistics

A continuation of PSYC 211 with coverage of such topics as multiple regression, analysis of covariance, and selected current topics in the field of psychological statistics.

Prerequisites: PSYC 211, PSYC 212, PSYC 303

3 credits, Spring, Odd numbered years

PSYC 313: Psychometrics

A survey of psychological testing and evaluation with an examination of basic technical considerations such as reliability, validity, and standardization. Selected, widely used tests will be reviewed. Some of the controversies in interpretation and application of standardized test results will also be discussed.

Prerequisites: PSYC 111, PSYC 211

3 credits, Spring, Even numbered years

PSYC 314: Adulthood and Aging

Special consideration of the major psychological processes of aging as they relate to individual behavior and adaptation. Includes the influences of aging on the body, learning and memory, employment and productivity, personality, and psychopathology.

Prerequisite: PSYC 111, PSYC 222

Junior or senior standing

3 credits, Spring, Odd numbered years

PSYC 315: Physiological Psychology

A study of neural mechanisms and their relationship to behavior. A survey of the development of physiological concepts in psychology.

Prerequisite: PSYC 111, BIOL 104 or higher, Junior or senior standing.

3 credits, Spring

PSYC 316: Human Factors Psychology

Human factors psychology seeks to take psychological knowledge (especially relating to how people perceive, perform, attend, remember, and think) and apply this knowledge to making the world an easier and safer place in which to interact. The goal of this class is to give students a basic overview of these cognitive processes and then apply them to such topics as the design of displays, controls, and workspaces, stress and workload, safety and accident prevention, and human-computer interaction.

Prerequisite: PSYC 111, Junior or senior standing

3 credits

PSYC 317: Evolutionary Psychology

Evolutionary Psychology represents the contemporary study of the genetic roots of human behavior, the interaction between biology and the environment, and the ways in which the ancestral environment may have shaped contemporary life. Topics include, but are not limited to: gender differences, romantic relationships and attraction, parenting, environmental preferences, food preferences, violence, warfare, and cooperation.

Prerequisite: PSYC 111, Junior or senior standing

3 credits

PSYC 318: Sensation and Perception

Sensation and Perception is the study of how people use their sensory systems (vision, touch, hearing, taste, and smell) to perceive aspects of their environment. This class will present an overview of the basic sensory processes and how the brain uses this information interpret, navigate, and interact with the world.

Prerequisite: PSYC 111

3 credits, Spring, Even numbered years

PSYC 319: Physiological Psychology Lab

The laboratory in physiological psychology gives the student hands-on experience conducting physiological psychology research and communicating the results of this research. The particular experiments conducted in the laboratory will closely mirror the topics concurrently discussed in PSYC 315, Physiological Psychology.

Corequisite: PSYC 315

1 credit, Spring

PSYC 325: Cognitive Psychology

This course will provide an overview of some topics in the area of cognitive psychology. Topics include the neural basis of cognition, perception, attention, memory, knowledge, and thinking.

Prerequisites: PSYC 111, PSYC 211

3 credits, Fall

PSYC 326: Cognitive Psychology Lab

The laboratory in cognitive psychology will give the student practical experience programming and running computer-based cognitive psychology experiments. The particular experiments will closely mirror those concurrently discussed in PSYC 325, Cognitive Psychology.

Corequisite: PSYC 325

1 credit, Fall

PSYC 340: Positive Psychology

Positive psychology is the scientific study of the strengths that enable individuals and communities to thrive. This course will provide an introduction to positive psychology.

Students explore the concepts, the research behind the concepts, cognitions, and practices that enhance well-being.

Prerequisite: PSYC 111

3 credits, Fall, Odd numbered years

PSYC 350: Motivation and Emotion

A survey of major theorist in motivation and emotion, with attention paid to the core research in these fields as well as understanding how these theories apply to everyday life.

Prerequisite: PSYC 111

3 credits, Fall, Even numbered years

PSYC 352: History and Systems in Psychology

A detailed consideration of the formal systems of psychology (e.g., Structuralism, Behaviorism, Humanistic-Existentialism) a review of psychology's roots in philosophy and physiology and a survey of the current status of the discipline, with special emphasis on one or more topics of continuing historical interest.

Prerequisite: PSYC 111, Junior or senior standing

3 credits

PSYC 360: Professional Seminar III

The third professional seminar in psychology will help students prepare for the process of applying to graduate or professional school, or gaining meaningful employment post-graduation. Students will form a cohort of other students with similar post-graduation interests and application timeframes.

Prerequisite: PSYC 111, Psychology majors only

1 credit, Fall

PSYC 362: Psychotherapy Theories

A survey of the various forms of psychotherapy including the history of the field, methods, theoretical and applied models of the therapeutic process, as well as practical issues such as training, gaining credentials, and other professional issues. The experience of becoming and working as a psychotherapist and coverage of selected specialty areas will also be considered.

Prerequisite: PSYC 111, Junior or senior standing

3 credits, Fall, Even numbered years

PSYC 372: Personality Theory

A survey of major theories of personality with emphasis on the Freudian, Neo-analytic, Cognitive, Behavioral and Existential perspectives.

Prerequisite: PSYC 111

3 credits, Spring, Even numbered years

PSYC 382: Undergraduate Psychology Internship

An opportunity to use the principles of psychology in applied settings under professional supervision. A program of readings is completed concurrently with the field placement. The objective is the integration of theoretical knowledge with practice.

Prerequisites: PSYC 111, Credits are by arrangement.

3 or 6 credits

PSYC 390-394: Special Topics in Psychology

Prerequisite: PSYC 111, prerequisites vary with particular course being offered

1-3 credits

PSYC 395: Research Practicum

The design and implementation of special research projects where the Psychology major works under the personal supervision of a faculty member. This course requires instructor permission.

Prerequisites: PSYC 211, Credits are by arrangement.

1-3 credits

PSYC 396-399: Independent Study

Individual study of a particular topic in Psychology under the supervision of a faculty member. This course requires instructor permission. Credits by arrangement.

1-3 credits

PSYC 400: Senior Thesis in Psychology

This seminar for senior majors in Psychology deals with recent research in a wide variety of specialty areas in psychology. The emphasis is on the synthesis of previous research and the critical analysis of specific research methods and findings.

Prerequisite: Senior standing as Psychology major.

3 credits, Fall, Spring

Psychology Bachelor of Arts Curriculum*(Numerals in front of courses indicate credits)***FRESHMAN***Fall Semester*

| | |
|----|-------------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Intro to Psychology/PSYC 111 |
| 2 | First-Year Seminar/PSYC 101 |
| 14 | |

Spring Semester

| | |
|----|----------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Psy of Human Dev/PSYC 222 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Psychopathology/PSYC 232 |
| 15 | |

SOPHOMORE*Fall Semester*

| | |
|----|---------------------------------|
| 3 | Human Biology/BIOL 104 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Global Language |
| 3 | Psyc Elective |
| 3 | Psyc Statistics/PSYC 211 |
| 1 | Professional Seminar I/PSYC 250 |
| 16 | |

Spring Semester

| | |
|----|----------------------------------|
| 3 | Philosophy II Series/LPHI |
| 3 | Literature Series/LENG |
| 3 | Social Psyc/PSYC 225 |
| 3 | Global Language |
| 1 | Psyc Statistics Lab/PSYC 212 |
| 1 | Professional Seminar II/PSYC 260 |
| 3 | Psyc Elective |
| 17 | |

JUNIOR*Fall Semester*

| | |
|----|-----------------------------------|
| 4 | Research Methods/PSYC 303 |
| 3 | Cognitive Psych/PSYC 325 |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Cross-cultural Psyc/PSYC 265 |
| 3 | Electives |
| 1 | Professional Seminar III/PSYC 360 |
| 17 | |

Spring Semester

| | |
|----|-----------------------------|
| 3 | Psyc Elective |
| 3 | Physiological Psyc/PSYC 315 |
| 3 | Fine Art Series/LFIN |
| 6 | Electives |
| 1 | Leadership Seminar |
| 16 | |

SENIOR*Fall Semester*

| | |
|----|-----------------------------|
| 3 | Psyc Senior Thesis/PSYC 400 |
| 3 | Psyc Electives |
| 12 | Electives |
| 18 | |

Spring Semester

| | |
|----|-------------------------|
| 3 | Senior Seminar/LBST 383 |
| 12 | Electives |
| 15 | |

Psychology Bachelor of Science Curriculum

Students are required to complete a minor in Mathematics, Statistics, Biology, Chemistry or Computer Science; or, to choose at least 15 credits from the list of Cognate courses.

*(Numerals in front of courses indicate credits)***FRESHMAN***Fall Semester*

| | |
|----|-------------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Intro to Psychology/PSYC 111 |
| 2 | First-Year Seminar/PSYC 101 |
| 14 | |

Spring Semester

| | |
|----|----------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Psych of Human Dev/PSYC 222 |
| 3 | Math/MATH 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Psychopathology/PSYC 232 |
| 15 | |

SOPHOMORE

Fall Semester

- 3 Human Biology/BIOL 104
- 3 The Bible: An Intro/LTHE 201
- 3 Psych Statistics/PSYC 211
- 3 Global Language
- 3 Minor *or* Cognate course
- 1 Professional Seminar I/PSYC 250

16*Spring Semester*

- 3 Philosophy II Series/LPHI
- 3 Literature Series/LENG
- 1 Psych Statistics Lab/PSYC 212
- 3 Social Psych/PSYC 225
- 3 Global Language
- 1 Professional Seminar II/PSYC 260
- 3 Minor *or* Cognate course

17

JUNIOR

Fall Semester

- 4 Research Methods/PSYC 303
- 4 Cognitive Psych/PSYC 325/326
- 3 LPHI 237 *or* any LTHE 300 course
- 3 Minor *or* Cognate course
- 3 Public Speaking/SPCH 111
- 1 Professional Seminar II/PSYC 360

18*Spring Semester*

- 3 Minor *or* Cognate course
- 4 Physiological Psych/PSYC 315/319
- 3 Adv Research Methods/PSYC 304
- 3 Fine Art Series/LFIN
- 3 Research Practicum
- 1 Leadership Seminar

17

SENIOR

Fall Semester

- 3 Senior Thesis/PSYC 400
- 6 Minor *or* Cognate courses
- 6 Psych elective

15*Spring Semester*

- 3 Senior Seminar/LBST 383
- 3 Multivariate Statistics/PSYC 311 *or* Psychometrics/PSYC 313
- 3 Psych elective
- 6 Minor *or* elective courses

15**Cognate Courses**

| | |
|--------------|--|
| MATH 140 | Calculus 1 |
| MATH 141 | <i>or</i> higher numbered MATH courses |
| BIOL 106/107 | Introductory Microbiology/LAB |
| BIOL 115/116 | Human Anatomy/Physio I/LAB |
| BIOL 117/118 | Human Anatomy/Physio II/LAB |
| BIOL 122/123 | Molecular and Cellular/LAB |
| BIOL 124/125 | Animal Form and Function/LAB |
| CHEM 111/112 | General Chemistry I/LAB |
| CHEM 114/115 | General Chemistry II/LAB |
| CHEM 221/222 | Organic Chemistry I/LAB |
| CHEM 224/225 | Organic Chemistry II/LAB |
| CHEM 366/367 | Structural Biochemistry/LAB |
| CIS 180/181 | Problem Solving & Comp Prog/LAB |
| CIS 182/183 | Object-Oriented Programming/LAB |
| CIS 220 | Data Structures and Algorithms |
| CIS 239 | The User Experience |
| CIS 360 | Comparative Languages |
| PHYS 105/106 | General Physics I/LAB |
| PHYS 108/109 | General Physics II/LAB |

Psychology Pre-Medical Bachelor of Science Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall Semester

| | |
|-----------|-----------------------------------|
| 3 | College Composition/LENG 111 |
| 4 | General Chemistry I/CHEM 111/112 |
| 4 | Molecular & Cellular/BIOL 122/123 |
| 3 | Intro to Psychology/PSYC 111 |
| 2 | First-Year Seminar/PSYC 101 |
| <u>16</u> | |

Spring Semester

| | |
|-----------|-------------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Psych of Human Dev/PSYC 222 |
| 3 | Math/MATH 112 or 140 (preferred) |
| 4 | General Chem II/CHEM 114/115 |
| 4 | Animal Form & Function/BIOL 124/125 |
| <u>17</u> | |

SOPHOMORE

Fall Semester

| | |
|-----------|----------------------------------|
| 4 | Organic Chemistry I/CHEM 221/222 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Psych Statistics/PSYC 211 |
| 3 | Psychopathology/PSYC 232 |
| 3 | History Without Borders/LHST 111 |
| 1 | Professional Seminar I/PSYC 250 |
| <u>17</u> | |

Spring Semester

| | |
|-----------|----------------------------------|
| 3 | Intro to Philosophy/LPHI 131 |
| 4 | Organic Chem II/CHEM 224/225 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Social Psych/PSYC 225 |
| 1 | Professional Seminar II/PSYC 260 |
| 1 | Psych Statistics Lab/PSYC 212 |
| <u>15</u> | |

JUNIOR

Fall Semester

| | |
|-----------|-----------------------------------|
| 4 | Research Methods/PSYC 303 |
| 3 | Structural Biochemistry/CHEM 366 |
| 4 | General Physics I/PHYS 105/106 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Global Language |
| 1 | Professional Seminar III/PSYC 360 |
| <u>18</u> | |

Spring Semester

| | |
|-----------|----------------------------------|
| 3 | Health Psychology/PSYC 234 |
| 4 | Physiological Psych/PSYC 315/319 |
| 4 | General Physics II/PHYS 108/109 |
| 3 | Philosophy II Series/LPHI |
| 3 | Global Language |
| 1 | Leadership Seminar |
| <u>18</u> | |

SENIOR

Fall Semester

| | |
|-----------|---------------------------------|
| 3 | Literature Series/LENG |
| 3 | Cognitive Psych/PSYC 325 |
| 3 | Fine Art Series/LFIN |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Psych Elective |
| <u>15</u> | |

Spring Semester

| | |
|-----------|-------------------------|
| 3 | Senior Thesis/PSYC 400 |
| 3 | Senior Seminar/LBST 383 |
| 6 | Psych Electives |
| <u>12</u> | |

Psychology Pre-Physical Therapy Bachelor of Science Curriculum*(Numerals in front of courses indicate credits)***FRESHMAN***Fall Semester*

- 3 College Composition/LENG 111
- 4 General Chemistry I/CHEM 111/112
- 3 Foundations of Theology/LTHE 101
- 3 Intro to Psychology/PSYC 111
- 2 First-Year Seminar/PSYC 101

15*Spring Semester*

- 3 Crit Analysis & Comp/LENG 112
- 3 Psych of Human Dev/PSYC 222
- 3 Math/MATH 112 or 135
- 4 General Chem II/CHEM 114/115
- 3 History Without Borders/LHST 111
- 1 PT Seminar I/PT 110

17**SOPHOMORE***Fall Semester*

- 4 Molecular & Cellular/BIOL 122/123
- 3 Introduction to Philosophy/LPHI 131
- 3 Psych Statistics/PSYC 211
- 3 Psychopathology/PSYC 232
- 3 The Bible: An Intro/LTHE 201
- 1 Professional Seminar I/PSYC 250

17*Spring Semester*

- 3 Literature Series/LENG
- 4 Animal Form & Function/BIOL 124/125
- 3 Public Speaking/SPCH 111
- 3 Social Psych/PSYC 225
- 1 Psych Statistics Lab/PSYC 212
- 1 PT Seminar II/PT 210
- 1 Professional Seminar II/PSYC 260

16**JUNIOR***Fall Semester*

- 4 Research Methods/PSYC 303
- 4 General Physics I/PHYS 105/106
- 4 Human Gross Anatomy/BIOL 365/366
- 3 Global Language
- 1 Professional Seminar III/PSYC 360

16*Spring Semester*

- 3 Health Psychology/PSYC 234
- 3 Philosophy II Series/LPHI
- 4 General Physics II/PHYS 108/109
- 4 Animal Physiology/BIOL 368/369
- 3 Global Language

17**SENIOR***Fall Semester*

- 3 Senior Thesis/PSYC 400
- 3 Fine Art Series/LFIN
- 3 Cognitive Psych/PSYC 325
- 1 Leadership Seminar
- 3 LPHI 237 or any LTHE 300 course
- 3 Psych Electives

16*Spring Semester*

- 3 Physiological Psych/PSYC 315
- 4 Exercise Physiology/SPRT 390/391
- 3 Senior Seminar/LBST 383
- 6 Psych Elective

16

Psychology B.A. and CMHC M.S. 4+2 program – undergraduate matrix only*(Numerals in front of courses indicate credits)***FRESHMAN***Fall Semester*

| | |
|-----------|---|
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Human Biology/BIOL 104 |
| 3 | Intro to Psychology/PSYC 111 |
| 3 | Introduction to Philosophy/ LPHI 131 |
| 2 | First-Year Seminar/PSYC 101 |
| <u>17</u> | |

Spring Semester

| | |
|-----------|-------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Psych of Human Dev/PSYC 222 |
| 3 | Psychopathology/PSYC 232 |
| 3 | Fnd of Theology/LTHE 101 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Elective |
| <u>18</u> | |

SOPHOMORE*Fall Semester*

| | |
|-----------|---------------------------------|
| 3 | The Bible an Intro/LTHE 201 |
| 3 | Elective |
| 3 | Psych Statistics/PSYC 211 |
| 3 | Global Language |
| 3 | Cognitive Psych/PSYC 325 |
| 1 | Professional Seminar I/PSYC 250 |
| <u>16</u> | |

Spring Semester

| | |
|-----------|----------------------------------|
| 3 | Philosophy II Series/LPHI |
| 3 | Literature Series/LENG |
| 3 | Social Psych/PSYC 225 |
| 3 | Global Language |
| 1 | Psych Statistics Lab/PSYC 212 |
| 1 | Professional Seminar II/PSYC 260 |
| 3 | Electives |
| <u>17</u> | |

JUNIOR*Fall Semester*

| | |
|-----------|---------------------------------------|
| 4 | Research Methods/PSYC 303 |
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |
| 1 | Professional Seminar III/PSYC 360 |
| 9 | Electives |
| <u>18</u> | |

Spring Semester

| | |
|-----------|-------------------------------|
| 3 | Cross-Cultural Psych/PSYC 265 |
| 3 | Physiological Psych/PSYC 315 |
| 3 | Fine Art Series/LFIN |
| 9 | Electives |
| <u>18</u> | |

SENIOR*Fall Semester*

| | |
|-----------|---|
| 3 | Senior Thesis/PSYC 400 |
| 3 | Strategies & Techniques/GCOU 648 |
| 3 | Intro to Professional Counseling/ GCOU 627 |
| 3 | GCOU 608 Human Dev. Across Lifespan |
| <u>12</u> | |

Spring Semester

| | |
|-----------|-------------------------------|
| 3 | Senior Seminar/LBST 383 |
| 3 | Research Methodology/GCOU 603 |
| 3 | Group Dynamics/GCOU 605 |
| 3 | Couns. & Personality/GCOU 610 |
| 3 | Theories/GCOU 608 |
| <u>15</u> | |

PSYCHOLOGY MINOR

The psychology minor provides students with a foundation in the science of human behavior that can be an asset to any major.

Completion of the following courses and electives will satisfy the requirements for a minor in Psychology:

| | |
|-----------|-------------------------------------|
| 3 | Introduction to Psychology/PSYC 111 |
| 3 | Psychological Statistics/PSYC 211 |
| <u>12</u> | Psychology Electives* |
| <u>18</u> | |

* *These electives are to be selected in consultation with Minor advisor and chosen to meet student objectives in taking Psychology as a minor.*

THE NEXT STEP

Baccalaureate Degree Program for Graduates of Two Year Colleges

Prerequisite: Introduction to Psychology/PSYC 111

(Numerals in front of courses indicate credits)

| PRE-SENIOR YEAR | SENIOR YEAR |
|---------------------------------------|--|
| 3 Psyc of Human Development/PSYC 222 | 3 Cognitive Psyc/PSYC 325 |
| 3 Psychopathology/PSYC 232 | 3 Physiological Psyc/PSYC 315 |
| 4 Research Methods/PSYC 303 | 3 Senior Seminar/LBST 383 |
| 4 Psyc Stats & Lab/PSYC 211, 212 | 12 Psyc Electives |
| 3 Careers in Psychology/PSYC 214 | 3 Social Psyc/PSYC 225 |
| 3 Introduction to Philosophy/LPHI 131 | 3 Senior Thesis in Psyc/PSYC 400 |
| 3 Literature Series/LENG | 3 LPHI 237 <i>or</i> any LTHE 300 course |
| 3 Foundations of Theology/LTHE 101 | 1 Leadership Seminar |
| 3 Fine Art Series/LFIN | 1 Elective |
| 6 Global Language | |
| <hr/> 35 | <hr/> 32 |

All students graduating from the College of Humanities, Education and Social Sciences must have completed six credits of a modern global language.

Students will be permitted to take other courses in substitution for any course listed above which they have satisfactorily completed prior to admission into the Next Step program. Students are required to complete 7-19 credits in the Liberal Studies Core. Students may transfer courses equivalent to Foundations of Theology, Introduction to Philosophy, the Literature Series and/or the Fine Arts Series. Students must take the Leadership Seminar, the Theology/Philosophy III Series and the Senior Seminar or approved capstone at Gannon.

PUBLIC SERVICE AND GLOBAL AFFAIRS

School of Public Service and Global Affairs

JEFFREY H. BLOODWORTH, PhD. *Program Director*

Public Service & Global Affairs (PSGA) is an inter-disciplinary major rooted in the study of Global Languages, History, Legal Studies and Political Science. The major is intended to intellectually and vocationally prepare students for careers in public service and global affairs. In pursuit of this, the major mandates study abroad and internships while providing experiential education opportunities and embedding career preparation in its curriculum. The variety of courses and field experiences allow students the flexibility to build a curriculum and set of classes that jive with their interests and career goals.

Vision Statement

The Public Service and Global Affairs (PSGA) program seeks to attract talented students who have a global perspective and are culturally sensitive and internationally competent so that they can be effective workers and citizens of an increasingly global and diverse society, economy, and workplace. Our efforts will draw strength from Gannon's Catholic Identity and emphasis on liberal learning, and contribute to the enhancement of the intellectual life of the University.

Mission Statement

The Public Service and Global Affairs (PSGA) program is an inter-disciplinary, undergraduate program dedicated to high quality education, research, and service enhanced by making connections across various academic disciplines. Students will be empowered to be highly skilled professionals committed to public service careers in government, nonprofits, international organizations or the private sector, supported by high-quality, evidence-based research. Essentially, we seek to inspire students to become global citizens and responsible public servants. To that end, PSGA offers its students a diverse curriculum that balances the arts, sciences and humanities with professional training.

Internship & Study Abroad

While providing a well-balanced curriculum, the major also provides opportunities for innovative experiential education, study abroad and career preparation. Every student will have study abroad experience and an internship.

Internships will be 6-12 credits and will be either domestic or international. Examples of domestic internships include international development, public service, national security, or opportunities at the Washington Center. International internships are available in consultation with the Office of Learning Abroad.

Study Abroad is recommended for sophomores or during the fall semester of the junior year. In addition to the traditional one-semester study abroad experience at an international university, the study abroad requirement can be completed with a series of short-term international trips or with a substantial international internship.

Examples of different paths students can use to meet the goal of a study abroad experience and meaningful internships include:

1. Semester of study abroad & semester-length internship (domestic or international)
2. Semester of study abroad & summer internship (domestic or international)
3. Semester-length, domestic internship & series of short-term study abroad experiences

Program Standards

In order to remain in good standing, students must fulfill the following. Failure to meet academic or professional standards will result in probation or dismissal from the program.

1. Professional standards include professional behavior in the classroom, internship and study abroad settings and are expected at all times.
2. Students must attain a 3.0 overall GPA to remain in good standing within the program. GPAs will be calculated at the end of the spring semester. If students do not attain these minimum standards, they will be placed on PSGA program probation.
3. Failure of a PSGA program course (required courses, language and PSGA seminars) will automatically result in probation, regardless of GPA. Required courses may be repeated once. If not successfully passed, the student will not be permitted to continue in the program and will need to choose a different major.
4. Students with a cumulative GPA below a 3.0 will be given one semester to achieve a semester GPA of 3.0 or they will be dismissed from the program. If successful, they will then have one additional semester to achieve an overall GPA of 3.0 or be automatically dismissed from the PSGA program.

Program Components: Admission Requirements

Admission into the PSGA Program: overall high school GPA of 3.0 or better. The admission requirement for most programs in CHESS is an overall high school GPA of 2.5. Because of the higher expectations for writing and research and the required study abroad and internship, a higher GPA on admission will help to ensure success in the program.

International Students: International students seeking admittance will be evaluated upon their home country's metrics and standards. Global Admissions & Outreach staff are able to evaluate high school grades from other countries so the School will be able to admit international students on comparable standards.

Transfer Students: current students, attending Gannon or another institution, who wish to transfer into the PSGA program, must have an overall college GPA of 3.0.

Sample PSGA Program of Study

Because of the individualized nature of this program, the program of study for each student will differ depending on their own curriculum plan. Therefore, the program of study below should be used as an example.

(Numerals in front of courses indicate credits)

FIRST YEAR

Fall

| | |
|-----------|----------------------------------|
| 3 | College Composition/LENG 111 |
| 1 | Intro to PSGA/PSGA 101 |
| 3 | Global Language I |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Intro to US Government/POLI 111 |
| 2 | First Year Seminar/PSGA 100 |
| <u>15</u> | |

Spring

| | |
|-----------|--|
| 3 | Critical Analysis and Composition/LENG 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | History Without Borders/LHST 111 |
| 3 | Fundamentals of Speech/SPCH 111 |
| 3 | Global Language II |
| <u>15</u> | |

SECOND YEAR

Fall

| | |
|-----------|---------------------------------|
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | ENGL 212 or ENGL 394 |
| 3 | Global Language III |
| 3 | PSGA Core Elective |
| 3 | Intro to Law & Society/PLAW 260 |
| <u>15</u> | |

Spring

| | |
|-----------|---|
| 3 | America in the World/HIST 222 |
| 3 | Philosophy II Series |
| 3 | Intro to International Relations/POLI 133 |
| 3 | PSGA Core Elective |
| 3 | Global Language IV |
| <u>15</u> | |

THIRD YEAR

Fall

| | |
|-----------|--|
| 12 | Semester Study Abroad (during which Fine Arts, English Literature, and two general elective courses are completed) |
| <u>12</u> | |

Spring

| | |
|-----------|---------------------------------|
| 1 | Leadership Seminar/PSGA 300 |
| 2 | Research Seminar/PSGA 301 |
| 3 | PSGA Core Elective |
| 3 | General Elective |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Statistics/PSYC 211 |
| <u>15</u> | |

THIRD YEAR

Summer

| | |
|-----------|-----------------------|
| 12 | Off-Campus Internship |
| <u>12</u> | |

FOURTH YEAR

Fall

| | |
|-----------|-------------------------|
| 3 | Senior Seminar/PSGA 400 |
| 3 | PSGA Core Elective |
| 9 | General Electives |
| <u>15</u> | |

Spring

| | |
|-----------|------------------------------|
| 3 | Integrating Seminar/LBST 383 |
| 3 | Natural Science |
| 8 | General Electives |
| <u>14</u> | |

COURSE DESCRIPTIONS

PSGA 100: First-Year Seminar

The First-Year Seminar is a discussion/experience-based course intended to orient the new student to Gannon University, to introduce the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life, and to encourage development of academic, personal and spiritual aspects of the student's life. Each seminar is unique, depending upon the instructor and/or program in which it is offered. *2 credits*

PSGA 101: Intro to PSGA

This course is designed to introduce students to the ideas behind, rationale for, and careers in public service & global affairs. In this course, students will engage in informational interviews with professionals engaged in public service & global affairs and write a career prospectus. *1 credit*

PSGA 300: Leadership Seminar

The Leadership Seminar introduces students to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in the various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. *1 credit (offered in the spring of the junior year)*

PSGA 301: Research Seminar

The Research Seminar is intended to prepare students to develop, write, and defend their bachelor's thesis. This course focuses upon the development of their research topic, locating relevant secondary literature, delving into the primary research at a major archive, which will culminate into the production and defense of a research prospectus. Students will present their prospectus at "Celebrate Gannon." *2 credits (offered in the spring of the junior year)*

PSGA 350: PSGA Internship

The PSGA internship gives students an opportunity to gain important experience beyond the classroom through work at a governmental or private agency concerned with public policy. The course can be taken in any semester (fall and spring) as well as during the summer term for academic credit ranging from 1-12 hours. A student may register for up to 12 credits of Internship. Six credits will satisfy "PSGA Core Electives." Credits beyond this will fall under "Free Electives." If the situation arises where more credits are justified, the student will need to seek individual approval from the PSGA director for any credits, above 12 credits. *1-12 credits*

PSGA 390-392: Special Topics*3 credits***PSGA 400: Senior Seminar**

Writing Seminar course is geared toward preparing students to write a medium-length, thesis driven, bachelor's thesis. The course will focus on the process of composition, with a heavy emphasis on editing and revision. Students will defend their essays in front of a panel of their choosing. Thesis writing using the research collected during PSGA 301. *3 credits (offered in the fall of the senior year)*

SOCIAL WORK

PARRIS J. BAKER, Ph.D., MSSA, *Program Director*

FACULTY: *Associate Professor:* Sara Lichtenwalter. *Assistant Professor:* Parris J. Baker.
Adjunct Professor: Charles Murphy.

The practice of professional social work requires not only the intellectual capacity to absorb a substantial body of knowledge, but also the ability to master skills in interpersonal relationships, to effect social change through social policy advocacy and to consume and produce relevant, evidence-based research. Professional social work promotes personal commitment to the NASW Code of Ethics and the fundamental principles and tenets of Catholic Social Thought. Critical to the development of professional social workers at the baccalaureate level is the acquisition of generalist practice skills; the capacity to work with various size client systems; to interact with diverse populations who may function in different social and cultural environments; and to embrace the challenges of securing social and economic justice.

The mission of the Gannon University Social Work Program is to prepare students as social work professionals able to competently promote human and community well-being by utilizing social work knowledge, values and skills. Through a curriculum informed by the Judeo-Christian concept of social caring and social work professional values, we produce graduates committed to: service; integrity; social and economic justice; human rights; the dignity and worth of the person and their relationships; and scientific inquiry who will become leaders in local, regional and global communities.

The Gannon University Social Work Program directs special attention toward preparing students to engage international social work practice and policy, to conceptualize the interrelationship and interdependence of our global community, to promote human rights as defined by the United Nations' Universal Declaration of Human Rights and to analyze international social welfare concerns such as poverty, healthcare and social and economic justice.

The Social Work Program of Gannon University is accredited at the baccalaureate level by the Council on Social Work Education. Upon graduation, students who have earned a letter grade of B or better in the social work concentration and are accepted in an accredited master of social work program can achieve Advanced Standing. Advanced Standing permits students to complete graduate social work education in 12-18 months.

Vision Statement

To be the recognized leader in social work education; a program that produce students who passionately pursue the values and ethics of professional social work; who facilitate social transformation in individuals, families, organizations, and communities; who believe in the empowerment of social systems, and advocate for social equity and inclusion, economic justice, and political representation for all.

Mission Statement

The mission of the Gannon University Social Work Program is to prepare students as social work professionals who competently promote human and community well-being by utilizing social work knowledge, values and skills. Through a curriculum informed by the Judeo-Christian concept of social caring and social work professional values, we produce graduates committed to: service; integrity; social and economic justice; human rights; the dignity and worth of the person and their relationships; and to scientific inquiry; who will become leaders in local, regional, and global communities.

Core Values

1. Service
2. Social Justice
3. Dignity and Worth of the Person
4. Importance of Human Relationships
5. Integrity
6. Competence

| LIBERAL STUDIES | | (42) | FIELD OF CONCENTRATION | | (45) |
|------------------------|-------------------------------------|-------------|--------------------------------------|------------------------------|-------------|
| LENG 111 | College Composition | (3) | SCWK 111 | Intro to Social Work | (3) |
| LENG 112 | Critical Analysis & Comp. | (3) | SCWK 212 | Soc. Prob., Serv. & Issues | (3) |
| LHST 111 | History without Borders | (3) | SCWK 221 | Human Beh/Soc Env I | (3) |
| LTHE 121 | Sacred Scripture | (3) | SCWK 222 | Human Beh/Soc Env II | (3) |
| LPHI 131 | Introduction to Philosophy | (3) | SCWK 230 | Human Diversity | (3) |
| | First-Year Seminar | (2) | SCWK 360 | Interviewing Skills | (3) |
| | Leadership | (1) | SCWK 361 | Intro to Generalist Practice | (3) |
| SPCH 111 | Public Speaking | (3) | SCWK 362 | Gen Practice | |
| | MATH (met in major) | (0) | | w/Family/Group | (3) |
| | *Philosophy II Series | (3) | SCWK 363 | Gen Practice w/Org/Com | (3) |
| | *Theology II Series | (3) | SCWK 364 | Social Welfare Policy | (3) |
| | *English Literature Series | (3) | | Programs, & Issues | |
| | *Fine Arts Series | (3) | SCWK 380 | Social Work Research | (3) |
| | *Theology/ Philosophy III Series | (3) | SCWK 490 | Field Placement I | (6) |
| SCWK 212 | *Social Science | (0) | SCWK 491 | Field Placement II | (6) |
| | (Met in Major) | | | | |
| | Natural Science | (3) | REVISED GENERAL ELECTIVES (9) | | |
| | | | CRJS 360 | Criminal Justice Statistics | |
| | | | | <i>or</i> | |
| <i>Senior Year</i> | | | PSYC 211 | Psychological Statistics | (3) |
| SCWK 400 | Capstone Senior Seminar | (2) | | Global Language | (6) |
| SCWK 401 | Capstone Senior Seminar | (1) | | | |

ELECTIVES (32)**TOTAL 128**

* Please consult semester schedule/catalog for approved courses.

COURSE DESCRIPTIONS**SCWK 111: Introduction to Social Work**

This is the first course in the Social Work program and is required for all other courses in the Social Work Sequence. It provides the student an opportunity to learn about Social Work and exposes him/her to the field of Social Work Practice. Students are also required to participate in field observation in an agency setting for 3 hours per week. *3 credits, fall*

SCWK 211: Intro to Gerontology

An overview of the study of gerontology. Examines aging in America, stereotypes, theories on aging, adult development, work and living environments, and selected problems of the elderly. This course has a service-learning component. *3 credits, fall*

SCWK 212: Social Problems, Services and Issues

This is the foundation course of the Social policy sequence and is required for admission to the Social Work Program. It is designed to provide students with a basic understanding of the historical development of social welfare policy in the United States. In addition to its primary

purpose of introducing students to the social policy process, this course provides students with an opportunity to explore career choices through interactions with local human service delivery organizations during tours of community agencies. Furthermore, there is a 20 hour volunteer component to this course. *3 credits*

SCWK 213: Medical Terminology

This course introduces social work students and other students to medical terminology and demonstrates the interaction and interrelationship between and among anatomy, physiology, and pathology. *1 credit*

SCWK 220: Dying, Death and Bereavement

This course explores dying, death and grief, a topic of interest to personnel in the human service and related professions. Issues discussed are theories of dying, death and bereavement with aged, and assessments and interventions with clients and their families. Social cultural differences in attitude and behavior toward death as well as ethical, legal issues, resources and support services are explored. *3 credits*

SCWK 221: Human Behavior and the Social Environment I

This is the introductory course to understanding human behavior from a multidimensional, biopsychosocial approach. Here we focus on the social environment and apply theoretical frameworks in order to put human behavior into perspective. In this course students begin to study the person from a biological perspective, looking at the major systems of the human body. We also examine psychological and sociological theories and knowledge by looking at cognition, emotion, the self as well as stress and coping. This course also examines the impact of culture, spirituality, the physical environment and social institutions in shaping human behavior. Finally, this course addresses different sized social systems from formal organizations, communities, groups and the family. Students begin to see how social systems promote or defer health and well being. *3 credits*

SCWK 222: Human Behavior and the Social Environment II

This is the continuation of HBSE I. This course takes a person-in-environment focus across the life span. For each stage in the Life Cycle biological, psychological, sociological, and spiritual variables that influence development are identified. This course addresses the impact of various size systems on human behaviors as well as issues of discrimination and social/economic justice. *3 credits*

SCWK 223: Human Behavior and the Social Environment III

Human Biology: Examination of the major human biological systems with a special emphasis on understanding the brain and the effects of drugs and alcohol. *3 credits*

SCWK 230: Human Diversity

This course studies the impact of discrimination and inequality on specific and generalized collectivities (groups) in our environment. Particular and specific attention will be given to the more vulnerable populations of women, gay and lesbians, and minorities of color. The course will examine the response(s) offered by specific disciplines (i.e., professional social work) and by the larger society, as they relate to discrimination and inequality. Methods to celebrate differences are explored. *3 credits*

SCWK 315: Bio Medical Aspects of Aging

This course is designed to acquaint students with the biological and medical changes occurring in the organs of man during the aging process. Course will include a layman's discussion of the aging and pathological process of the organs as well as common medical pharmacological, and surgical treatments of these organ systems. *3 credits*

SCWK 316: Counseling Older Adults

This course will identify various areas impacting lives of the "young" old, "middle" old, and the "old" old. Misconceptions, stereotypes, and biases toward the aging process will be explored. The course focuses on assessment, counseling interventions, and techniques designed to enrich the world of the mature adult and their families. *3 credits*

SCWK 322: Correctional Counseling and Case Management

An examination of strategies for affecting offender behavior change by correctional counseling and case management in both institutional and community based settings. Emphasis will be on functional and contemporary approaches. CRJS elective.

Prerequisite: CRJS 201

3 credits

SCWK 328: Drugs of Abuse

The U.S. has the highest rate of drug abuse of any industrialized country in the world. This course is designed to provide the student with a broad understanding and insight into drug abuse within American society and its impact upon society in general. The primary focus will be on how the criminal justice system, health care system, and other institutions attempt to deal with the nations' drug problem. The course will focus on what has been done in the past by society about the drug problem, what is and what is not working now, and what needs to be done in the future.

3 credits

SCWK 330: The Juvenile Justice System

An analysis of the justice system as it relates to the disposition of cases involving the juvenile offender. Where appropriate, a comparative analysis with the adult process will be emphasized.

3 credits, Spring and Distance Learning (Internet)

SCWK 332: Balance and Restorative Justice

This course introduces the student to the state of the art in juvenile justice. It provides the student with an understanding and a working knowledge of the key principles in balanced and restorative justice. Key issues that will be addressed are how to implement and measure these principles.

3 credits

SCWK 333: Victimology

This course will examine the plight of victims including child maltreatment, domestic violence, victimization at work and school. It further explores the extent of homicide victimization. In reviewing the above mentioned topics, guest speakers with expertise in these areas will present their viewpoints on the extent of victimology. Throughout this course, the BARJ principle will be the focus in balancing the victim's role in the criminal justice system.

3 credits

SCWK 336: Mental Health and the Elderly

Factors involved in successful aging and maintenance of healthy personality functioning are investigated. The most common psychological disorders of the elderly are considered from etiological, diagnostic, and therapeutic aspects.

3 credits

SCWK 360: Interviewing Skills

This course introduces students to the basic interpersonal helping skills using a problem solving model. Students are expected to demonstrate understanding of the relationship of interpersonal skills to social work practice and to demonstrate initial mastery of the basic helping skills.

3 credits

SCWK 361: Introduction to Generalist Practice

Emphasis is placed on introducing students to a generalist problem-solving practice framework that is applicable across a wide range of settings, problems and different size systems.

3 credits

SCWK 362: Generalist Practice with Families/Groups

This is a continuation of SCWK 361. It is designed to reinforce, deepen and expand the student's knowledge of the generalist problem-solving practice framework with particular emphasis on recognizing its utility in working with groups and the family size systems.

Prerequisite: SCWK 361

3 credits

SCWK 363: Generalist Practice with Organizations/Communities

Continuing with the generalist problem-solving model, this course focuses on a generalist approach to practice with community and institutional systems. Students gain knowledge

and skills in working with both organizations and communities through such activities as community assessments and asset mapping, along with opportunities to demonstrate leadership by advocating for policies and services in their field placements. Professional social work interventions for vulnerable populations such as homeless and immigrant populations, the low-income elderly and disabled, and families residing in marginalized neighborhoods are considered utilizing organization theory and various frameworks for community analysis. This course is designed to be taken concurrently with SCWK 490 (Social Work Field Placement I) and facilitates the integration of field experience with course content.

Prerequisites: SCWK 361

3 credits

SCWK 364: Social Welfare Policy, Programs and Issues

This course analyzes social welfare policy, programs and services. In addition to developing conceptual understanding, students will begin to develop skills in policy analysis using the policies of local community agencies as case illustrations. The impact of State, Federal, and global policies on social welfare are explored.

Prerequisite: SCWK 361

3 credits

SCWK 380: Social Work Research Methods

Through participation in a semester long research project, students learn that they are both a consumer and a producer of empirically based knowledge. This course includes an introduction to evidence-based practice models and assists students in developing beginning knowledge and skill in evaluating their practice and conducting evaluative research. The relationship between epistemological approaches, theory, and scientific are explored in light of ethical scientific inquiry and research practice informed by the NASW Code of Ethics Standards for Research.

3 credits

SCWK 390-394: Special Topics in Social Work

Topics of special and/or current interest in all areas of Social Work will be covered. The topics will vary from year to year, depending on the faculty resources and the needs of the students.

1-3 credits

SCWK 395-399: Independent Study

1-3 credits

SCWK 400: Social Work Senior Integrating Seminar I

This course is intended to help students integrate knowledge along with developing and refining skills for beginning professional Social Work practice. Students will use specific episodes of services (live cases) from their field experience in this course.

Concurrent with SCWK 363, SCWK 490

2 credits

SCWK 401: Social Work Senior Integrating Seminar II

A continuation of SCWK 400 intended to facilitate the integration of knowledge, along with the development and refining of skills for beginning Social Work Practice. Taken concurrently with SCWK 491.

Prerequisite: SCWK 400.

1 credit

SCWK 490 & 491: Social Work Field Placement I and II

In field placement, students are expected to demonstrate in specific and concrete ways that they are prepared as beginning professional generalist practitioners to work with all size systems from individual, family, group, organization and community. It is the program's expectation that students will not only use the values and ethics that they have acquired through their liberal arts foundation and the social work curriculum but that they will actively promote these values and ethics in agency settings. The field component by its very nature of exposing students to real and complex life situations demonstrates and requires students and field instructors to seek new social work knowledge in order to find the best solutions to meet the client systems needs.

Corequisite: SCWK 363, 400

6 credits

SCWK 495: Advanced Interviewing Skills

This course will focus on two very similar approaches to interviewing: solution focused and motivational interviewing. Both approaches are similar and reinforce each other and both approaches are aimed at what professionals label difficult clients. The course requires a basic understanding and skill in using basic interviewing skills. These skills will be quickly reviewed and then students will learn both solution focused and motivational interviewing.

Prerequisite: SCWK 360

3 credits

Social Work Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN*Fall Semester*

- 3 College Composition/LENG 111
- 3 Social Work/SCWK 111
- 3 Foundations of Theology/LTHE 101
- 2 First-Year Seminar
- 3 Public Speaking/SPCH 111

14

Spring Semester

- 3 Crit Analysis & Comp/LENG 112
- 3 Elective
- 3 Introduction to Philosophy/LPHI 131
- 3 Elective
- 3 Social Problems, Services, Issues/SCWK 212

15

SOPHOMORE*Fall Semester*

- 3 History Without Borders/LHST 111
- 3 Literature Series/LENG
- 3 The Bible: An Intro/LTHE 201
- 3 Hum Beh & Soc Env I/SCWK 221
- 3 Human Diversity/SCWK 230
- 3 Philosophy II Series/LPHI

18

Spring Semester

- 3 Psychology/PSYC 111
- 3 Elective
- 1 Leadership Seminar
- 3 Interviewing Skills/SCWK 360
- 3 Hum Behav & Soc Env II/SCWK 222
- 3 LPHI 237 or any LTHE 300 course

16

JUNIOR*Fall Semester*

- 3 Statistics/SOCI 351/PSYC 211/CRJS 360
- 3 Intro to Generalist Practice/SCWK 361
- 3 Global Language
- 3 Fine Art Series/LFIN
- 6 Electives

18

Spring Semester

- 3 Natural Science/BIOL 104 Human Biology Recommended
- 3 Generalist Practice with Families/Groups/SCWK 362
- 3 Generalist Practice with Comm. & Org/SCWK 363
- 3 Social Work Research Meth/SCWK 380
- 3 Global Language

15

SENIOR*Fall Semester*

- 6 Social Work Field Placement I/SCWK 490
- 3 Social Welfare Policy, Prog & Issues/SCWK 364
- 5 Electives
- 2 Social Work Senior Integrating Sem I/SCWK 400

16

Spring Semester

- 6 Social Work Field Placement II/SCWK 491
- 1 Social Work Senior Integrating Seminar II/SCWK 401
- 9 Elective

16

THE NEXT STEP**Baccalaureate Degree Program for Graduates of Two Year Colleges****Social Work***(Numerals in front of courses indicate credits)***PRE-SENIOR YEAR**

- 3 HBSE I/SCWK 221
- 3 Human Behavior in the Social Environment II/SCWK 222
- 3 Intro to Generalist Practice/SCWK 361
- 3 Generalist Practice with families/groups/SCWK 362
- 3 Social Welfare Policy, Programs and Issues/SCWK 364
- 3 Human Diversity/SCWK 230
- 3 Psychology Statistics/PSYC 211 *or* Criminal Justice Statistics/CRJS 360
- 3 Intro to Philosophy/LPHI 131
- 3 Foundations of Theology/LTHE 101
- 3 Literature Series/LENG
- 3 Fine Art Series/LFIN

33**SENIOR YEAR**

- 3 Interviewing Skills/SCWK 360
- 3 Generalist Practice with Organization/Communities/SCWK 363
- 6 Social Work Field Placement I/SCWK 490
- 6 Social Work Field Placement II/SCWK 491
- 2 Social Work Senior Integrating Seminar I/SCWK 400
- 1 Social Work Senior Integrating Seminar II/SCWK 401
- 3 Elective
- 3 LPHI 237 *or* any LTHE 300 course
- 1 Leadership Seminar
- 3 Social Work Research Methods/SCWK 380

31*** Academic credit is not given for Life Experience.*

Students will be permitted to take other courses in substitution for any course listed above which they have satisfactorily completed prior to admission into the Next Step program. Students are required to complete 7-19 credits in the Liberal Studies Core. Students may transfer courses equivalent to Foundations of Theology, Introduction to Philosophy, the Literature Series and/or the Fine Arts Series. Students must take the Leadership Seminar, the Theology/Philosophy III Series and the Senior Seminar or approved capstone at Gannon.

SOCIAL WORK MINOR

A minor in social work is intended to expand the knowledge and skills of individuals who hope to work in correctional settings, probation, group homes, mental health agencies and other human service settings.

- 3 SCWK 111 Intro to Social Work
- 3 SCWK 212 Social Problems, Services, and Issues
- 3 SCWK 230 Human Diversity
- 3 SCWK 360 Interviewing Skills
- 3 SCWK 361 Intro to Generalist Practice
- 3 SCWK 362 Generalist Practice with Families/Groups

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SOCIOLOGY

JULIA MACK, Ph.D., *Program Director*

FACULTY: *Assistant Professor*: Richard W. Moodey.

The Sociology Program is primarily a service provider offering courses and academic support for students, programs and departments throughout the University. Substantive areas of inquiry covered by courses offered in the Sociology Program include: culture, human diversity, minority-majority group relations, social inequality, social theory, deviant behavior and social institutions. Instruction in social research methods, applied statistics and use of statistical software is also available.

COURSE DESCRIPTIONS

SOCI 110: Basic Sociology

An introduction to sociology, its perspectives, methods, theories, and selected substantive areas. The substantive areas selected will vary. *3 credits, Fall, Spring*

SOCI 111: Introduction to Anthropology

An introduction to the traditional four fields of anthropology: archaeology, linguistics, physical anthropology, and cultural anthropology. *3 credits*

SOCI 120: Individual, Culture, and Society

An introduction to the social scientific study of human diversity, and to the practical implications of such knowledge. *3 credits, Spring*

SOCI 210: Deviant Behavior

An analysis of the processes by which behavior is characterized as deviant or conforming. Issues treated include labeling, control, stigma, and deviant careers. *3 credits*

SOCI 230: Minority Groups

A study of the way certain categories of Americans, including but not limited to racial and ethnic minorities, have come to be objects of stereotyping, prejudice, and discrimination. Various ways of working to overcome prejudice and discrimination are discussed. *3 credits*

SOCI 292: Cultural Anthropology

An introduction to anthropological descriptions and explanations of the highly diverse ways of life created by people living in different times and places. *3 credits*

SOCI 293: Physical Anthropology

An introduction to physical anthropology, its history, methods, theories, and selected practical applications, including forensic anthropology. Topics include: the social history and application of physical anthropology, race and human variation, primatology, and hominid evolution. *3 credits*

SOCI 351: Statistics for the Social Sciences

This course is an introduction to the fundamentals of applied statistics. Students will learn basic descriptive and inferential methods for univariate, bivariate, and multivariate analyses. Emphasis is placed on practical applications of statistical methods. Critical evaluation of each application is an important element of the process. Instruction in the use of statistical software is provided. *3 credits*

SOCI 352: Methods of Social Research

Practical guidance in the design of both quantitative and qualitative research. Topics include theory and research design, conceptualization, measurement, data construction and analysis, and the ethics of social research.
Prerequisite: SOCI 351 *3 credits*

SOCI 390-394: Supervised Readings and Special Topics in Sociology

3 credits

SOCI 395-399: Independent Study

1-3 credits

THEOLOGY

ERIC S. DART, Ph.D. *Chairperson*

FACULTY: *Professors:* Terry Giles, Suzanne Richard. *Assistant Professors:* Eric Dart, Janna Gonwa, Rev. Jason Mitchell, Rev. Casimir Wozniak. *Instructors:* Rev. T. Shane Mathew. *Adjunct Faculty:* Rev. Jason Glover, Emily Greci, Caleb Gundlach, Brent Heckman, Rev. Michael Kesicki, Kimberly Lytle, A. Tiggy McLaughlin, Rev. Nicholas Rouch, Keith Sundberg, Sister Charlotte Anne Zalot O.S.B.

Vision

The Theology Department is a community of faculty and students engaged: in the interpretation and articulation of the Christian faith; in the understanding of religious experience; and in the search for the truth about God and the human family.

Mission

The faculty of the Theology Department will: successfully introduce students to theological reflection, Christian morality, and the Bible; enable students to understand their role as ethical agents of change in the world; and engage in academic research.

Department Outcomes

- Students articulate major concepts within the Judeo-Christian tradition.
- Students apply Catholic moral teaching to contemporary issues.
- Students apply Catholic teaching on ecumenism and/or interreligious dialogue to global religious traditions.
- Students apply theological method and Christian experience in the process of independent research.

Curriculum

The Theology Department supports the mission of Gannon University and its commitment to the Catholic Intellectual Tradition. As a defining aspect of the intellectual life and student experience at Gannon, the theology department affords students with a learning experience that is directed towards the scientific and systematic investigation of the Catholic Intellectual Tradition.

As an essential part of the Gannon student experience, the Theology Department provides courses that are an integral part of the Liberal Studies Core. Each student first takes LTHE 101 Foundations of Theology and Christian Morality. In this course, students are exposed to the Catholic Intellectual Tradition and the basic foundations of Christian moral living. The second Theology course in the Liberal Studies Core sequence is LTHE 201 The Bible: An Introduction. In this course, students will explore the Judeo-Christian Bible using methods of Biblical interpretation. Finally, Gannon students complete their Liberal Studies Core requirements by taking either a Theology or Philosophy course. Students are accorded the choice between any of the Theology Department's LTHE 300 level offerings or LPHI 237 Philosophy of Ethical Responsibility.

The Theology Department also offers both a major and a minor in Theology. The Theology major, which consists of 36 credits, provides students with a thorough understanding of Catholic Theology. The Theology major concludes with a capstone course THEO 400 Senior Project where students demonstrate competency in the field, the ability to do independent research and engage in experiential-learning. The Theology minor consists of 18 credit hours

of theology. The theology minor is intended to supplement a student's major area of study and prepare students for ministry roles such as leadership in parish life, religious education or personal enrichment.

COURSE DESCRIPTIONS

LTHE 101: Foundations of Theology and Christian Morality

Rooted in the richness of the Catholic Intellectual Tradition, this course explores the religious experiences of the human person and their relationship to Christian moral living.

Prerequisite: None

3 credits

LTHE 201: The Bible: An Introduction

Students will explore the structure, theological themes, literary forms, and historical context of the Judeo-Christian Bible using methods of Biblical interpretation.

Prerequisite: LTHE 101

3 credits

LTHE 301: Faith, Revelation and Theology

An investigation of the nature and methods of the science of Theology, with a study of the phenomenon of faith, of Revelation, and of Biblical and Magisterial hermeneutics.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 311: Theology of Jesus Christ

A consideration of the question, "Who is Jesus of Nazareth?", and a study of the answers to that question presented by the Scriptures, ecclesiastical tradition and classic and contemporary theology.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 321: Theology of Church

A study of the origins, nature, structure and role of the Church, with special emphasis on the theological insights of Vatican II.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 323: Vatican II and the Catholic Tradition

A study of the historical, social, and theological dimensions of Vatican II and the ongoing process of Vatican II's reception in the life of the Roman Catholic Church, the ecumenical community, and the world.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 325: Women and the Pilgrim Church

A study of women's contribution in scripture, Theology, and the Church from the Church's origins to the contemporary times.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 327: American Catholicism

Most American Catholics and practically all Americans of other denominations have very little knowledge of the growth and development of the Catholic community in the United States and the role American culture played in that development. Thus, this course seeks to impart to students a good overview of the history of the American Catholic community from colonial times to the present day. We will then interpret some of the key events, movements and developments of that history, which continues to shape the distinctive ethos of American Catholicism. Hence, this course will be an exercise in historical theology, or more precisely, historical ecclesiology. Students will be able to fully capture the meaning and richness of the American Catholic experience.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 331: Theology of Christian Worship

This course will introduce students to the theological foundations, historical evolution and practice of Christian worship over the course of the last twenty centuries. Though guided

by Catholic insights into the nature and purpose of worship among followers of Jesus Christ, the course will be broadly ecumenical in its treatment of the variety of ways in which Christian communities have worshipped in the past and currently devote special times and places to the art of worshipping their God. The whole range of ways in which Christians have prayed in common—from the earliest, residential experiments, to the lavish liturgies housed in Europe’s great cathedrals, to the so-called “megachurch spectacles” of today—will be examined. A unique aspect of the course is the manner in which it will challenge groups of students to devise entirely new modes of worship of their own suited to needs and aspirations of millennials.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 333: Theology of Marriage

This course is a study of the Judeo-Christian understanding of marriage in its various aspects: biblical, theological, psychological, and canonical. It will concentrate on the following topics: defining marriage, God and marriage, marriage preparation, and issues surrounding marriage today.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 341: The Life and Thought of John Henry Newman

This course will introduce students to the life and thought of one of the most significant Church figures of modern times. Blessed John Henry Newman was a towering figure in the 19th century and his influence continues to be felt today. Newman offers us an inspirational model of a life devoted to holiness; a mind alive to religious Truths and the spiritual/invisible world; a religious mind capable of vivid expression and powerful written arguments; and the dedication and courage to align one’s life with the Truths that one confesses and the inner voice of one’s conscience. Newman’s example of persistent faith stands as a rebuke against contemporary fads of cultural and moral relativism. His defense of a true liberal education continues to serve as a warning against the negative effects of exclusive secularism, utilitarianism, and hyper-specialization.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 342: God in the World: The Life, Thought, and Theology of Karl Rahner

This course is a study of the life, thought, and theology of Jesuit theologian Karl Rahner. This course will explore Rahner’s life as well as his thought and theology including: human existence, God, Grace, Christology, the church, and various contemporary areas of theology.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 351: Catholic Moral Theology

A study of the themes, concepts and teachings that embody the Catholic moral tradition. Students will identify and examine the Catholic Church’s teachings on morality, derived from Scripture, Tradition, the teaching authority of the Church and Christian experience. Students will also apply and evaluate these aspects of Revelation as they pertain to contemporary issues in the globalized world.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 353: Theology and Cyberspace

This course will explore the moral and ethical dimensions of various digital technologies that mediate between people and the external world from within the Christian theological tradition.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 354: Race and Theology

An examination of the intersections between Christian theology and race, exploring Christianity’s role in creating the modern concept of race, the historical use of Christian theology both to defend and to challenge racially discriminatory social policies, and recent attempts by Christian theologians to reclaim and reinterpret race-based concepts within constructive theological discourse.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 358: God and Radical Evil

An examination of the historical and theological development of the idea of God's relationship to evil. The analysis will include readings from Sacred Scripture, the early Christian Church and contemporary theologians, as well as traditional and modern atheists. Students will create their own theodicy (i.e. explanation on why evil exists in light of belief in a loving God) using the material from the course and their own experiences.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 359: Good and Evil: Reconciling the Holocaust

An examination of the reality of the holocaust from multiple historical and spiritual perspectives that will challenge students to integrate this knowledge with theological inquiry concerning the existence of God. In May, faculty and students will travel to Poland and Prague (the Czech Republic) to visit the Auschwitz and Treblinka death camps as well as Jewish and Polish cultural sites.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 361: Hebrew Bible 1: Torah

The Hebrew Bible is divided into three great sections: Torah, Prophets (Nevi'im), and Writings (Kethuvim). This course is an examination of the first section of the Hebrew Bible. Known in most English translations as the Pentateuch, the Torah is composed of: Genesis, Exodus, Leviticus, Numbers and Deuteronomy. In this course, we consider the formation of the literature, major literary forms and themes contained in the Torah.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 362: Hebrew Bible 2: Prophets

This course is an introduction to the second of three bodies of literature within the Hebrew Bible: the Prophets. This collection of literature has had a tremendous influence and continues to inspire and speak with relevance now no less than when the scrolls were first composed. During this course, we will exam the background and composition of this collection of literature as well as the major themes contained in the documents. The course is divided into two sections: the Former Prophets and the Later Prophets. As we examine the literature, appropriate scholarly methodologies will be introduced and applied. The literature of the Prophets is thousands of years old, yet, the themes contained in the documents are relevant even today. Discussion will be encouraged as together we struggle with the far reaching implications of these voices from the past.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 363: Hebrew Bible 3: Writings

This course is an introduction to the literature of the third part of the Hebrew Bible: the Ketuvim. This part of the Hebrew Bible contains books that some will find familiar (Psalms) as well as books that, to many, seem strange and distant (Qohelet – Ecclesiastes). This course will examine the composition and history of the books in this, the last, part of the Hebrew Bible. The themes of the books and the contribution the books make to the overall collection of Hebrew sacred text will be investigated.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 365: The Synoptic Gospels

A course in biblical theology that studies the Synoptic Gospels and the Acts of the Apostles so as to understand both the figure of Jesus, including his life, teaching, work, passion, death, resurrection, and ascension, and the development of the Christian community of faith.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 367: The Theology of John and Paul

A course in biblical theology that studies theological themes such as justification, eternal life, grace, covenant, faith and love, contained in the Letters of Paul, the Letter to the Hebrews, the Catholic Letters, the Gospel of John and the Book of Revelation. As a synthesis of the results of biblical exegesis, the overview of the New Testament writings draws out foundations for

Trinitarian theology, Christology, Soteriology, Ecclesiology, Sacramental Theology, Christian Anthropology and Eschatology.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 368: Archaeology and the Bible

This course will offer a basic survey of the Biblical Lands of Israel and Transjordan with an interdisciplinary focus on archaeology, history, society, and the biblical text. It introduces students to the most recent discoveries impacting our understanding of the unique sociopolitical, historical, literary, and religious context of the biblical lands and its diverse peoples. The focus is the Bronze and Iron Ages as a context for the Israelite period of the Old Testament, and the Greco-Roman periods as the setting for the New Testament Period, including relevant materials from contemporary societies in different cultural settings throughout the Mediterranean World.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 371: The Catholic Tradition

A study of some of the basic beliefs concerning Jesus Christ, the Church, worship and sacrament.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 372: Jesuits: Saints or Scoundrels

An examination of the historical development and spirituality of the Society of Jesus (Jesuits) from St. Ignatius of Loyola to Pope Francis. The analysis will include a close reading of the Autobiography and Spiritual Exercises of the founder St. Ignatius, the contributions of former Superior General Fr. Pedro Arrupe, and the distinctively Ignatian pontificate of Pope Francis.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 373: Protestant Tradition

The Protestant Tradition course is an examination of contemporary Protestant expressions and the interface of religion, politics, and social movements. The course provides a context by investigating the nature of Protestantism beginning with its origins in the Reformation of the 16th century. The defining characteristics of the movement are examined, as are the ways in which these characteristics influenced subsequent church formation both in Europe and in North America. An overview of the different traditions within the Protestant movement provides the basis for the examination of several expressions of Protestantism within the Erie area.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 374: Protestant Christianity in the 21st Century

The Protestant Christianity course is an examination of contemporary Protestant expressions and the interface of religion, politics, and social movements. The course provides a context by investigating the nature of Protestantism beginning with its origins in the Reformation of the 16th century. The defining characteristics of the movement are examined, as are the ways in which these characteristics influenced subsequent church formation both in Europe and in North America. An overview of the different traditions within the Protestant movement provides the basis for the examination of several expressions of Protestantism within the Erie area.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 377: Ancient Christianity: From Jerusalem to Rome

This course examines the origins of Christianity and traces its development and institutional expansion until the end of antiquity, when the Roman church of the western Mediterranean began to resemble the Catholic Church. Central themes include the diversity of early Christian traditions, theological controversy in the service of unity, and the effects of changes in intellectual trends on ordinary people.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 381: Christianity and World Religions: Western Tradition

This course will consider the teachings of the monotheistic world religions (Christianity, Judaism, Zoroastrianism, Islam) in the context of Christian belief, emphasizing both the openness of a post-conciliar Catholicism to insights from other faiths, points of similarity in beliefs and in practice between Christianity and other religions, and the distinctiveness of other religious traditions.

Prerequisite: LTHE 101, LTHE 201

3 credits

LTHE 383: Christianity and World Religions: Eastern Tradition

This course will consider the teachings of the South and East Asian world religions, as well as primal (pre-literate) religions, in the context of Christian belief, emphasizing both the openness of a post-conciliar Catholicism to insights from other faiths, points of similarity in beliefs and in practice between Christianity, and other religions, and the distinctiveness of other religious traditions.

Prerequisite: LTHE 101, LTHE 201

3 credits

THEO 400: Senior Research Project

A research project that serves as the culmination of a student's study of theology and applies to his/her own vocational interests. Students will be challenged to apply theological method and Christian experience in the process of independent research.

Prerequisite: LTHE 101, LTHE 201

THEO 455: Catholic Social Teaching Immersion

A study of Catholic Social Teaching derived from Sacred Scripture, the Catholic Tradition, and contemporary teachings. Students will apply this knowledge by encountering the poor and marginalized in a specific context. Through the experience, students will learn why Catholic social teaching is an important part of the Church's history and future. Specific course content will vary based on the immersion destination.

Prerequisite: LTHE 101, LTHE 201

Theology Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN*Fall Semester*

| | |
|-----------|---|
| 2 | First-Year Seminar |
| 3 | College Composition/LENG 111 |
| 3 | Global Language |
| 3 | Foundations of Theo/ Morality/LTHE 101 |
| 3 | Psychology/PSYC 111 |
| 3 | History Without Borders/LHST 111 |
| <u>17</u> | |

Spring Semester

| | |
|-----------|-------------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Global Language |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | The Bible: An Introduction/LTHE 201 |
| 3 | Science |
| <u>15</u> | |

SOPHOMORE*Fall Semester*

| | |
|-----------|-------------------------------|
| 3 | Fundamental Theology/LTHE 30_ |
| 3 | Christology Series/LTHE 31_ |
| 3 | Speech/SPCH 111 |
| 3 | Fine Art Series/LFIN |
| 3 | Elective |
| <u>15</u> | |

Spring Semester

| | |
|-----------|------------------------------------|
| 3 | Upper Level Literature/ENGL |
| 3 | Philosophy II Series/LPHI |
| 3 | Mathematics |
| 3 | Sacraments/Worship Series/LTHE 33_ |
| 3 | Elective |
| <u>15</u> | |

JUNIOR

Fall Semester

| | |
|-------|---------------------------------------|
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | Moral Theology Series/LTHE 35_ |
| 3 | Bible Series/LTHE 35_ |
| 3 | Elective |
| 3 | Elective |
| <hr/> | |
| 16 | |

Spring Semester

| | |
|-------|------------------------------|
| 3 | History of Theology/LTHE 37_ |
| | Tradition Series/LTHE 37_ |
| 3 | Theology Elective |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |
| <hr/> | |
| 18 | |

SENIOR

Fall Semester

| | |
|-------|--|
| 3 | Integrating Seminar/LBST 383 |
| 3 | Comparative Theology Series/ LTHE 38_ |
| 3 | Elective |
| 3 | Elective |
| <hr/> | |
| 15 | |

Spring Semester

| | |
|-------|-------------------------|
| 3 | Senior Project/THEO 400 |
| 3 | Theology Elective |
| 3 | Elective |
| 3 | Elective |
| 3 | Elective |
| <hr/> | |
| 17 | |

Total Credits: 128**THEOLOGY MINOR**

The minor consists of 18 credits and can usually fit easily with the student's major.

Required

| | |
|----|---|
| 3 | LTHE 101 Foundations of Theology and Christian Morality |
| 3 | LTHE 201 The Bible: An Introduction |
| 12 | 12 Credits of Theology at the 300 or 400 level |

WOMEN'S STUDIES MINOR

CAROLYN BAUGH, Ph.D., *Program Director*

The minor in Women's Studies is an interdisciplinary field of inquiry that encourages students to understand and articulate how gender makes a difference – in the lives and experiences of women, as well as men; in the practices and institutions of human societies; and in the cultural products of societies, such as art and literature. Emphasizing the importance of historical and cross-cultural perspectives, students in the minor will critically examine the intersections of gender, class, race, ethnicity, sexual orientation, age and ability to make visible structures of power that otherwise remain hidden.

Curriculum Outline

A minor in Women's Studies will consist of 18 credits.

Required: (6 credits)

| | |
|---|--|
| 3 | Introduction to Women's Studies/WMST 201 |
| 3 | Gender and Rationality/LBST 383 |

Electives: (12 credits)

- 3 Women and Crime/CRJS 340
- 3 American Military History: Women and War/HIST 282
- 3 Women in Middle Eastern History/HIST 308/WMST 308/GLOBL 308
- 3 Women Writers/LENG 249
- 3 Women in Photography/LFIN 252
- 3 Women in Western Philosophy/PHIL 248
- 3 Psychology of Women/PSYC 275
- 3 Physical Activity and Women/SPRT 326
- 3 Women and the Pilgrim Church/LTHE 325
- 3 Special Topics in Women's Studies/WMST 390-391

COURSE DESCRIPTIONS

WMST 201: Introduction to Women's Studies

An interdisciplinary course that explores the diversity of women's lives through essays, readings, and the study of scholarly theories and research. The course will examine a wide range of social issues and the status of women in an historical context and in contemporary society.

Prerequisite: Open to sophomore, junior or senior students or instructor's permission.

3 credits, Fall

WMST 390: Special Topics in Women's Studies

Courses may include: Gender and Identity in Literature; and Women in Science.

3 credits

Morosky College of Health Professions and Sciences

SARAH EWING, Ph.D., *Dean*

The Morosky College of Health Professions and Sciences is composed of the School of Health Professions and the School of Sciences. The curriculum offered by each program within the college is designed to prepare students upon graduation to meet professional responsibilities in their field of learning or to pursue graduate studies. Students are engaged in active learning. They learn by working with the faculty — in the classroom, in research endeavors, in professional practice settings, in industry, and in the community. All of the programs within the college build upon the Mission of Gannon University and provide the foundation for life-long learning.

APPLIED EXERCISE SCIENCE

Department Chair: SUZANNE E. KITTS, Ph. D.

FACULTY: *Professor:* Kory Stauffer. *Associate Professors:* Suzanne Kitts, J. David Mosinski. *Assistant Professors:* Elizabeth Starns, Jason Willow. *Instructor:* Jenna Rappold

The Applied Exercise Science Department offers a Bachelor of Science degree through the Morosky College of Health Professions and Sciences. The program is designed to prepare students for employment and/or graduate training in many areas including, but not limited to, athletic training, exercise physiology, physical and occupational therapy, nutrition, health and wellness program administration, medicine and allied health professions, kinesiology, and exercise science. The Applied Exercise Science program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). Students can use their skills in a variety of health and fitness positions, including becoming a research assistant, a health/fitness technician, a personal trainer, an athletic trainer or a fitness specialist. Additional employment opportunities may include becoming a strength and conditioning professional, an athletic coach, a physical activity project coordinator, entry level positions in pharmaceutical sales, or positions in corporate fitness. The department also prepares the student for possible certification by national governing bodies such as the American College of Sports Medicine and the National Strength and Conditioning Association, among others.

In general, students in the department take courses in the basic sciences (biology and chemistry) during the first two years of the program, in addition to the humanities and social sciences (to satisfy the University's liberal arts requirements). During the final two years of study, majors take advanced sequences of courses in human anatomy, physiology, kinesiology, nutrition, exercise physiology, psychology of sport and exercise, motor development, learning and performance, and athletic injury care and prevention.

Admission into the Undergraduate program:

Recommended standards for high school students for consideration for acceptance to the undergraduate Applied Exercise Science Department include:

1. Overall high school GPA of 3.0 or higher.
2. SAT score of 1000 or higher or ACT score of 21 or higher.
3. Completion of college prep biology and chemistry with labs and three years of college prep mathematics.

Master of Science in Exercise Science Early Admission

Highly qualified students may be eligible to earn early admission in the 36 credits Master of Science degree program in Sport and Exercise Science. Students meeting the following academic criteria will be eligible for early admission:

1. Overall high school GPA of 3.2 or higher.
2. SAT score of 1050 or higher (or ACT equivalent)
3. Completion of college prep biology and chemistry with labs and three years of college prep mathematics.

Students who enter the early admission program will be eligible to take graduate level classes during their senior year provided that they continue to meet minimum academic milestones of a 3.0 overall GPA and a 3.0 GPA in prerequisite coursework. For more information about the graduate program, please see our Graduate Catalogue.

Master of Science in Athletic Training, 5-year program

Students interested in the field of Athletic Training will find our accelerated 3+2 program to be particularly attractive. In this program, interested students are accepted into the Master of Athletic Training program as incoming freshmen and transition seamlessly, into graduate studies at the conclusion of the junior year provided that they achieve defined levels of proficiency in their prerequisite and general coursework.

1. Overall high school GPA of 3.0
2. SAT of 1000 (math and verbal) or ACT equivalent of 21
3. International students should achieve a minimum TOEFL score of 79 to be considered for full-time enrollment.

COURSE DESCRIPTIONS

SPRT 101: First Year Seminar in Sport and Exercise Science

The First Year Seminar is a discussion/experience-based course to orient the new students to Gannon University, to introduce the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life and to encourage development of academic, personal and spiritual aspects of the student's life. Each seminar is unique, depending upon the instructor and/or program in which it is offered. SPRT 101 First Year Seminar in Sport and Exercise Science affords students the opportunity to explore and experience topics related to health and wellness. Topics include the importance of physical activity, healthy eating, stress and relaxation, social wellness, cultural experiences, and service. Students will also partake in classroom activities and discussion related to research and professionalism.

Lecture: Two hours per week

2 credits, Spring

SPRT 109: Introduction to Golf

This is an introductory course for beginner to intermediate golfers aimed at teaching not only basic swing dynamics but also the fundamental rules, language and etiquette of the game. This course will require an additional fee of \$175 per student which will account for busing, range access, course access and instructional fees at the teaching location.

Lecture/Activity: Five hours per week.

2 credits, variable

SPRT 120: Foundations of Sport and Exercise Science

This course will provide undergraduates with an introduction to the scientific disciplines of kinesiology, biomechanics, exercise physiology, sport psychology, nutrition and others. Course topics may include an introduction to various biomechanical aspects of physical activity and sport, functional human anatomy, and biomechanical principles that underlie performance of various sports and exercise-related activities, as well as a basic knowledge of exercise physiology as it relates to physical activity.

Lecture/Lab: One hour per week.

1 credit, Fall

SPRT 130: Nutrition for Sport and Exercise

This course is designed to introduce the concepts of proper nutrition with specific concentration given to the promotion and maintenance of optimal physical performance both at the elite as well as recreational levels. The course will discuss such topics as the role of carbohydrates, protein and fat in exercise and sport; vitamin and mineral intake and exercise; the role of fluid intake and electrolytes in physical activity; nutrition and fitness assessment; ergogenic substances in sport and exercise and the myths of the fad diet craze.

Lecture: Three hours per week.

3 credits, Spring

SPRT 163: Comprehensive Fitness Training

This is an introductory course for those interested in learning about comprehensive fitness training that includes strength, aerobic and nutritional considerations.

Lecture/Activity: Two hours per week

2 credits, Both Terms

SPRT 240: Sport Psychology: Theory and Application

A comprehensive introduction to the psychological factors that relate to sports involvement and performance. Issues include psychological aspects of elite athlete's motivation and performance, intervention and performance enhancement, anxiety and skill performance.

Lecture: Three hours per week.

3 credits, Fall

SPRT 250: Psychosocial Aspects of Exercise and Physical Activity

The primary objective of the class is to provide the student with a general overview of the reciprocal relationship between psychological parameters and exercise and health. Course topics include, but will not be limited to, exercise adherence, exercise promotion, the relationship between physical activity and depression, anxiety, positive well-being, self-efficacy, cognitive functioning, distress, sleep disorders, mood, self-esteem, stress, and behavioral interventions for health promotion.

Lecture: Three hours per week.

3 credits, Spring

SPRT 310: Research Methods in Exercise Science

An introduction to the research process to familiarize the student with basic statistical techniques in Exercise Science research both qualitative and quantitative in nature; to provide extensive writing experiences for students; to prepare students to complete the SPRT450 (Independent Study in Exercise Science) Senior Research Proposal/Project; to provide prerequisite coursework for entrance into graduate programs in school of the student's choosing.

Lecture: Three hours per week.

3 credits, Fall

SPRT 326: Physical Activity and Women

This class will address a wide variety of topics unique to women in sport and physical activity. Topics may include the female athlete TRIAD, exercise and eating disorders, exercise and osteoporosis, and others.

Lecture: Three hours per week.

3 credits, variable

SPRT 340: Group Instruction and Fitness Management

This course will allow the student to apply their current knowledge of exercise to a practical setting. The class will provide exercise science majors with the theoretical and practical knowledge of teaching a group exercise class. This course will also instruct on how to develop and manage fitness programs and exercise facilities.

Lecture: Three hours per week

3 credits, Spring

SPRT 360: Kinesiology

Analysis of sport and human movement using both anatomical and biomechanical approaches. Application of the basic principles and laws of physics as applied to sport and physical activity will be presented. Recommended junior year.

Prerequisites: Take One Group (BIOL 108/109 and BIOL 110/111 or BIOL 122/123 and BIOL 124/125)

Lecture: Three hours per week.

3 credits, Both Terms

SPRT 361: Kinesiology Lab

This course complements and enhances the Kinesiology lecture course.

Prerequisite: Concurrent enrollment in SPRT360 is recommended.

Lab: Three hours per week.

1 credit, Both Terms

SPRT 390: Physiology of Exercise and Sport

An examination of the physiological functions of man as they relate to stresses created by various sports and other physical activities. Acute and chronic effects of various training programs are examined for their contribution to the improvement of performance in sport and physical activity.

Prerequisites: Take One Group (BIOL 108/109, BIOL 110/111 or BIOL 122/123, BIOL 124/125)

Lecture: Three hours per week.

3 credits, Both Terms

SPRT 391: Physiology of Exercise and Sport Lab

The application of physiological principles to sport and physical activity, including adaptation responses to exercise. Both immediate and long-term adaptations are studied.

Prerequisite: Concurrent enrollment in SPRT 390 recommended.

Lab: Three hours per week.

1 credit, Both Terms

SPRT 393: Disordered Eating in Athletics

Students in the course will gain a comprehensive understanding of eating disorders in athletes. The course contains an overview of disordered eating among athletes including the psychopathology and etiology, an examination of the effects of disordered eating on the health and performance of athletes and finally, information regarding the identification, prevention, treatment and management of disordered eating in athletes.

Lecture/Lab: Two hours per week

2 credits, Fall Even Years

SPRT 395: Issues and Controversies in Sports Nutrition and Human Performance

This senior level course is designed to review topics in sports nutrition and human performance and to discuss, in detail, current issues that face athletes and those who work with them.

Students will also critically review current events related to sports nutrition and will also present scientific research on a variety of topics, such as the use of performance enhancing drugs, the relationship between current diet and fitness fads and sports performance, nutritional issues in weight-loss oriented sports.

Lecture/Lab: Two hours per week

2 credits, Fall Odd Years

SPRT 400: Fitness Assessment and Exercise Prescription

The assessment and promotion of physical fitness including concepts and techniques of fitness testing, principles of weight training, aerobic exercise, nutrition, and stress management as applied to health and fitness settings. Emphasis on methods and protocols for screening, evaluating, and prescribing exercise.

Prerequisites: SPRT 390/391

Lecture: Three hours per week.

3 credits, Fall

SPRT 401: Fitness Assessment Lab

This class will complement and enhance the Fitness Assessment and Exercise Prescription lecture class course. The class will focus on the practical application of the assessment and promotion of physical fitness including concepts and techniques of flexibility and body composition assessment, strength and cardiovascular testing, principles of weight training, and aerobic exercise as applied to health and fitness settings.

Corequisite: Concurrent enrollment in SPRT 400 required

Lab: Three hours per week.

1 credit, Fall

SPRT 405: Exercise Biochemistry

This course is designed to provide students with a comprehensive exposure to the effects of exercise on cellular metabolism and cell structure and function. The course begins with a refresher of biochemical concepts that the student was introduced to in previous coursework including metabolism, protein, carbohydrates and lipids, nucleic acids and gene expression. The course will then delve into such topics as neural control of movement

and muscular contraction and the integration of exercise metabolism specifically related to the macronutrients. Finally, students will receive training on how to assess the biochemical processes of people who exercise.

Prerequisites: SPRT 130, SPRT 390 required

Lecture/Lab: ONLINE

3 credits, Spring

SPRT 414: Motor Development Across the Lifespan

This class will address a wide variety of topics within the field of motor development.

Specifically, the course will discuss motor development from conception through adulthood.

The class will incorporate dynamic systems theory with the hourglass model of the stages of motor development in explaining the process of human growth and associated skill proficiency development.

Lecture: Three hours per week.

3 credits, Fall

SPRT 415: Principles of Motor Learning and Performance

This course examines the many aspects of learning and executing motor skills. Teaching methodology, learning theories, neurophysiological phenomena, maturational and psychosocial factors are investigated as they relate to movement patterns in sport and physical activity.

Lecture: Three hours per week.

3 credits, Spring

SPRT 416: Human Motor Control

This course will be directed at studying the nature of movement and how that movement is controlled. Sample topics include such issues as the role of the central nervous system in the organization of movement, the role of sensory information and how the body uses this information to select and control movement, the best ways to study movement and the identification and measurement of those with movement disorders.

Lecture: Three hours per week.

3 credits, Spring

SPRT 420: Prevention and Care of Athletic Injuries

General foundations and specific concepts related to injury prevention, evaluation, management, and rehabilitation of athletic injuries are presented. This course is designed to introduce the student to the basic knowledge and skills necessary to recognize, evaluate, and treat athletic injuries of the head and face, spine and torso, and extremities.

Prerequisite: SPRT 360/361 required

Lecture/Lab: Four hours per week.

4 credits, Spring

SPRT 424: Biomechanics

The purpose of this course is to apply the knowledge gained in previous courses to human movement contexts. Specifically, the student will apply the principles of physics to sport and exercise settings.

Prerequisite: SPRT 360/361 required

Lecture/Lab: Three hours per week.

3 credits, Fall

SPRT 425: Clinical Exercise Physiology

This course will provide classroom and informal laboratory experiences that take full advantage of current knowledge and trends in rehabilitation of populations with cardiac, pulmonary and metabolic disorders through assessment and specific exercise programming. The course will also expose the student to the interpretation of electrocardiograms both at rest and during submaximal and maximal exercise bouts.

Prerequisites: SPRT 390/391 required

Lecture: Three hours per week.

3 credits, Spring

SPRT 430: Practicum in Sports and Exercise Science

This course is designed to provide clinical learning experiences that allow the Sport and Exercise Science student to synthesize knowledge and Sport/Exercise Science concepts in a variety of practice settings. Provides majors with clinically-based learning experiences to expand their understanding of sport and exercise science in an area of choice.

Prerequisite: Permission from instructor or program director required.

3 credits, Both Terms and Summer

SPRT 450: Independent Study in Sport and Exercise Science

The student explores an area of topical or special interest pertinent to the study of Sport and Exercise Science. The experience allows the student to explore, in depth, a subject area through a research project, advanced clinical experience, prophylactic care plan development, or other area as approved by project advisor.

Prerequisite: Permission from instructor or program director required.

1-3 credits, Both Terms and Summer

SPRT 460: Sport Ethics

The objective of this course is to explore broad issues in the philosophy of sport by examining the ethical presuppositions of competitive athletics and their connections to moral and ethical theory. The discussion of each topic deals with examples from the world of sport and illuminates them in light of philosophical work on such values as fairness, justice, integrity, and respect for rights.

Prerequisite: Senior standing, final semester of academic preparation.

Lecture: Three hours per week

3 credits, Spring

SPRT 470: Advanced Strength Training and Conditioning

The objective of this course is to provide majors with theoretical and practical knowledge of the physiological, biomechanical, administrative aspects of designing and supervising strength and conditioning programs for various populations, and understanding the legal aspects of starting your own strength training facility.

Prerequisites: SPRT 360/361 and SPRT 390/391 required.

Lecture: Three hours per week

3 credits, Spring

SPRT 471: Principles of Athletic Training

This course is designed to give graduate-level athletic training students an overview of essential athletic training principles. Students will gain knowledge in the areas of musculoskeletal injuries, environmental risk factors, mechanisms and characteristics of sport trauma, and coordinating the sports medicine team.

Lecture/Lab: 3 hours per week

3 credits, Summer

SPRT 472: Taping and Bracing of Athletic Injuries

This course is designed to develop taping skills of both upper and lower extremity, fitting of protective equipment, and the application of various bracing and splinting materials within the athletic training profession.

Lecture/Lab: 2 hours per week

2 credits, Summer

SPRT 473: Non-Orthopedic Injury Assessment

This course prepares the athletic training student to assess and manage non-orthopedic injuries and illnesses that may be encountered while working in the athletic training profession. The course will focus on the etiology, recognition, pathological course, treatment, and prognosis of various general medical conditions including concussion management, heat management and other pathological conditions pertaining to the respiratory, cardiovascular, endocrine, genitourinary, and neurological systems.

Lecture/Lab: 3 hours per week

3 credits, Summer

SPRT 474: Clinical I in Athletic Training

This course consists of hands-on clinical athletic training experiences under the supervision and guidance of a program-approved healthcare provider in a professional setting. The course meets throughout the semester for formal competency development. This course includes skill development in taping and wrapping techniques, first aid general medical examination and lower extremity assessment evaluations.

Clinical: hours per week variable

4 credits, Fall

SPRT 475: Lower Body Extremity Assessment

This course addresses evaluation techniques and assessment of musculoskeletal injuries to the spine, trunk, abdomen, and lower extremities. The student must integrate knowledge of anatomical structures, physiology principles, and evaluative techniques to provide a basis for critical decision-making in an injury management environment. Decision-making will be based on recognition, evaluation, and immediate care of orthopedic injuries caused by physical activity or exercise.

Lecture/Lab: 3 hours per week

3 credits, Fall

SPRT 476: Therapeutic Modalities

Basic physiological responses of the human body to the application of therapeutic heat, therapeutic cold, therapeutic electricity, iontophoresis, ultrasound and other basic therapeutic modalities used in sport medicine are examined.

Lecture/Lab: 3 hours per week

3 credits, Fall

SPRT 477: Clinical II in Athletic Training

This course consists of hands-on clinical athletic training experiences under the supervision and guidance of a program-approved healthcare provider in a professional setting. The course meets throughout the semester for formal competency development. This course includes skill development in therapeutic interventions and musculoskeletal assessment and evaluation. The course also includes content for goniometric measurements and muscle function assessments such as manual muscle testing.

Clinical: hours per week variable

4 credits, Spring

SPRT 478: Upper Body Extremity Assessment

This course addresses evaluation techniques and assessment of musculoskeletal injuries to the head, face, and upper extremities. The student must integrate knowledge of anatomical structures, physiological principles, and evaluative techniques to provide a basis for critical decision-making in an injury management environment. Decision-making will be based on recognition, evaluation, and immediate care of orthopedic injuries caused by physical activity or exercise.

Lecture/Lab: 3 hours per week

3 credits, Spring

SPRT 479: Therapeutic Rehabilitation

A systematic approach to individual rehabilitative exercise program development as it relates to athletic injury recovery. Basic information of using the various forms of therapeutic exercises, techniques, indications and contraindications of exercise, and exercise progression as related to athletic injury, prevention, reconditioning and return to participation guidelines will be discussed.

Lecture/Lab: 3 hours per week

3 credits, Spring

SPRT 480: Advanced Health and Fitness Assessment and Instruction

An in-depth analysis of exercise stress testing for cardiacs, symptomatics, and asymptomatics will also be presented. Traditional, as well as more recently developed stress-testing procedures will also be discussed. This class will provide structured experiences in the classroom, laboratory, and gymnasium to improve knowledge and understanding of graded exercise testing, exercise prescription, and physical activities as used in prevention and rehabilitative programs as outlined in the American College of Sports Medicine (ACSM) Guidelines.

Prerequisites: SPRT 360/361, SPRT 390/391 and SPRT 400/401 required.

Lecture: Three hours per week

3 credits, variable

SPRT 490: Special Topics in Sport and Exercise Science

This course provides the opportunity to present topics of interest that are not regularly offered in the curriculum.

Prerequisites: To Be Determined

Lecture: 3 hours per week

3 credits, variable

| | | | |
|---|-------------|---|-------------|
| LIBERAL STUDIES CORE | (42) | EXERCISE SCIENCE CORE | (46) |
| ____ LENG 111 College Composition | (3) | ____ SPRT 130 Sport Nutrition | (3) |
| ____ LENG 112 Crit Analysis & Comp | (3) | ____ SPRT 250 Exercise Psychology | (3) |
| ____ LENG Literature Series* | (3) | ____ SPRT 310 Research Methods | (3) |
| ____ LTHE 101 Found. of Theo. & Christ. Moral. | (3) | ____ SPRT 340 Group Exercise | (3) |
| ____ LTHE 201 The Bible: An Introduction | (3) | ____ SPRT 360/361 Kinesiology w/Lab | (4) |
| ____ LPHI 131 Intro to Philosophy | (3) | ____ SPRT 390/391 Exercise Physiology w/Lab | (4) |
| ____ LPHI Philosophy II Series* | (3) | ____ SPRT 400/401 Exercise Test w/Lab | (4) |
| ____ LTHE Theo III Option* <i>or</i> LPHI 237 | (3) | ____ SPRT 414 Motor Development | (3) |
| ____ LHST 111 History Without Borders | (3) | ____ SPRT 415 Motor Performance and Learning | (3) |
| ____ SPCH Speech Requirement* | (3) | ____ SPRT 416 Human Motor Control | (3) |
| ____ PSYC111 Introduction to Psychology | (3) | ____ SPRT 420 Care and Prevention of Injuries | (4) |
| ____ LFIN Fine Arts Series* | (3) | ____ SPRT 425 Clinical Exercise Physiology | (3) |
| ____ First Year Seminar | (2) | ____ SPRT 430 Practicum | (3) |
| ____ Leadership Seminar | (1) | ____ SPRT 470 Advanced Strength and Conditioning | (3) |
| ____ LBST 383 Senior Seminar | (3) | | |
| MATHEMATICS | (6) | SCIENCE | (16) |
| ____ PSYC 211 <i>or</i> MATH 213 Statistics | (3) | BIOLOGY SERIES^B | (8) |
| APPROVED GENERAL ELECTIVES^A | (25) | ____ Series I: BIOL 108/109 & BIOL 110/111 | |
| _____ | | ____ Series II: BIOL 115/116 & BIOL 117/118 | |
| _____ | | ____ Series III: BIOL 122/123 & BIOL 124/125 | |
| _____ | | | |
| _____ | | CHEMISTRY | (4) |
| _____ | | ____ CHEM 111 General Chemistry I | (3) |
| _____ | | ____ CHEM 112 General Chemistry I Lab(1) | |

Minimum Total Credits: 128

* Please see Gannon University's Undergraduate Catalog for course options.

^A Approved general electives can be met by completion of any course offered at Gannon University. Students should work closely with their academic advisor to identify courses that best align with their educational and career goals. Students may choose to use these credits to complete a dual degree or pursue one or minors to complement their degree in public health. Below are recommendations for some educational or career tracks.

^B Biology requirement is met by taking ONE of the following series (should include lecture and lab):

Series I – BIOL 108/109 Essentials of Anatomy & Physiology I, BIOL 110/111 Essentials of Anatomy & Physiology II

Series II – BIOL 115/116 Human Anatomy and Physiology I, BIOL 117/118 Human Anatomy and Physiology II

Series III – BIOL 122/123 Molecular and Cellular Biology, BIOL 124/125 Animal Form and Function

^c Students may choose courses that contain a Service Learning component as part of their Liberal Core. Please see the course catalog for course descriptions that will meet this requirement.

All pre-requisites and co-requisites must be met to enroll in courses. Please see Gannon University's Undergraduate Catalog to review course descriptions and requirements.

MAJOR FIELDS OF STUDY

Applied Exercise Science Curriculum

Students who choose to pursue a Bachelor of Science degree with a major in Applied Exercise Science have opportunities to focus on prerequisites for Physical Therapy, Physician Assistant, Pre-Medical, and Chiropractic graduate school with planning and communication with advisor.

(Numerals in front of courses indicate credits)

FRESHMAN (32 credits)

Fall

| | |
|-----------|--|
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology & Christian Morality/LTHE 101 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 2 | First Year Seminar |
| 3 | Speech Requirement/SPCH |
| 3 | Introduction to Psychology/PSYC 111 |
| <u>17</u> | |

Spring

| | |
|-----------|--|
| 3 | Critical Analysis and Composition/ LENG 112 |
| 3 | The Bible: An Introduction/LTHE 201 |
| 3 | Sport Nutrition/SPRT 130 |
| 3 | Philosophy II Series/LPHI |
| 3 | History Without Borders/LHST 111 |
| <u>15</u> | |

SOPHOMORE (33 credits)

Fall

| | |
|-----------|---|
| 6 | Approved Elective |
| 4 | BIOLOGY I with Lab/ BIOL 108/109; 115/116; 122/123 |
| 4 | General Chemistry I with Lab/ CHEM 111/112 |
| 3 | Literature Series/LENG |
| <u>17</u> | |

Spring

| | |
|-----------|---|
| 3 | Exercise Psychology/SPRT 250 |
| 4 | BIOLOGY 2 with Lab/ BIOL 110/111; 117/118; 124/125 |
| 3 | Psychology Statistics/PSYC 211 |
| 3 | Fine Arts Series/LFIN |
| 3 | Approved Elective |
| <u>16</u> | |

JUNIOR (34 credits)

Fall

- 3 Research Methods/SPRT 310
- 4 Kinesiology with Lab/SPRT 360/361
- 3 LTHE/LPHI III
- 1 Leadership Seminar
- 7 Approved Electives

18*Spring*

- 4 Exercise Physiology with Lab/
SPRT 390/391
- 3 Group Exercise/SPRT 340
- 3 Motor Learning and Performance/
SPRT 415
- 6 Approved Electives

16

SENIOR (29 credits)

Fall

- 4 Exercise Testing and Prescription/
SPRT 400/401
- 3 Motor Development/SPRT 414
- 3 Practicum/Independent Study/
SPRT 430/450
- 3 Elective
- 3 Senior Seminar/LBST 383

16*Spring*

- 3 Motor Control/SPRT 416
- 4 Prevention and Care of Athletic Injuries/
SPRT 420
- 3 Clinical Exercise Physiology/SPRT 425
- 3 Advanced Strength and Conditioning/
SPRT 470

13**Applied Exercise Science – Master of Athletic Training 3+2***(Numerals in front of courses indicate credits)*

FRESHMAN (35 credits)

Fall

- 3 College Composition/LENG 111
- 3 Foundations of Theology
& Christian Morality/LTHE 101
- 3 Introduction to Philosophy/LPHI 131
- 2 First Year Seminar
- 3 Speech Requirement/SPCH
- 3 Introduction to Psychology/PSYC 111

17*Spring*

- 3 Critical Analysis and Composition/
LENG 112
- 3 The Bible: An Introduction/LTHE 201
- 3 Sport Nutrition/SPRT 130
- 3 Philosophy II Series/LPHI
- 3 Human Biology/BIOL 104
- 3 History Without Borders/LHST 111

18

SOPHOMORE (34 credits)

Fall

- 3 Research Methods/SPRT 310
- 3 Trigonometry/MATH 112
- 4 Human & Physiology I/Lab/
BIOL 115/116
- 4 General Chemistry I with Lab/
CHEM 111/112
- 3 Literature Series/LENG

17*Spring*

- 3 Exercise Psychology/SPRT 250
- 4 Human & Physiology II/Lab/
BIOL 117/118
- 3 Psychology Statistics/PSYC 211
- 4 Kinesiology/Lab/SPRT 360/361
- 3 Psychology of Human Development/
PSYC 222

17

JUNIOR (34 credits)

Fall

| | |
|----|--|
| 3 | Introduction to Physics/PHYS 101 |
| 4 | Exercise Physiology/Lab/SPRT 390/391 |
| 4 | Exercise Testing and Prescription/ SPRT 400/401 |
| 3 | LTHE/LPHI III |
| 1 | Leadership Seminar |
| 3 | Fine Arts Series/LFIN |
| 18 | |

Spring

| | |
|----|---|
| 3 | Motor Learning & Performance/ SPRT 415 |
| 3 | Motor Control/SPRT 416 |
| 4 | Prevention & Care of Injuries/SPRT 420 |
| 3 | Clinical Exercise Physiology/SPRT 425 |
| 3 | Senior Seminar/LBST 383 |
| 16 | |

SENIOR (24-25 credits)

Fall

MAT PROGRAM STARTS

| | |
|----|--|
| 2 | Principles in Athletic Training/ GMAT 505 |
| 3 | Applied Kinesiology/GMAT 502 |
| 3 | Clinical Application of Care/ Prevention in AT/GMAT 504 |
| 2 | Foundations in Therapeutic interventions/GMAT 503 |
| 4 | Eval. And Treatment of the LE/ GMAT 531 |
| 2 | Clinical Medicine I/GMAT 542 |
| 16 | |

Spring

| | |
|-----|---|
| 4 | Evaluation and Treatment of the UE/ GMAT 538 |
| 3-4 | |

MINORS IN APPLIED EXERCISE SCIENCE

Department Chair: SUZANNE E. KITTS, Ph. D.

EXERCISE SCIENCE MINOR

KORY STAUFFER, Ph.D., HFI: *Minor Advisor*

Program Description: The Applied Exercise Science (AES) minor is designed to give students an understanding of the human body and how it responds to exercise and injury at all stages of life. Students will gain knowledge regarding human movement, how the body responds to exercise, and the benefits of an active lifestyle. The AES Minor is unique in that it offers students a variety of choices, allowing you to tailor the minor to your specific interests and career plans.

Requirements and Curriculum: The AES minor is open to students in any major and requires 18 credit hours and a "C" or better in all courses that apply toward the minor.

** Please note that there are prerequisites and corequisites must be met to enroll in courses.**

Required Courses (12 credits)

| | | | |
|----------|---------------------------------|-------------|--------------------|
| SPRT 360 | Kinesiology | (3 credits) | (Every semester) |
| SPRT 361 | Kinesiology Lab | (1 credit) | (Every semester) |
| SPRT 390 | Exercise Physiology | (3 credits) | (Every semester) |
| SPRT 391 | Exercise Physiology Lab | (1 credit) | (Every semester) |
| SPRT 420 | Prevention and Care of Injuries | (4 credits) | (Spring semesters) |

Elective Courses (6 credits)

| | | | |
|----------|--------------------------------|-------------|--------------------|
| SPRT 414 | Motor Development | (3 credits) | (Fall semesters) |
| SPRT 415 | Motor Learning and Performance | (3 credits) | (Spring semesters) |
| SPRT 416 | Human Motor Control | (3 credits) | (Spring semesters) |
| SPRT 430 | Practicum | (3 credits) | (Every semester) |
| SPRT 450 | Independent Study | (3 credits) | (Every semester) |

SPORT BEHAVIOR MINOR

SUZANNE KITTS, Ph.D., *Minor Advisor*

Program Description: The minor consists of 21 credits of behavioral focused Applied Exercise Science courses culminating in an Independent Study at the end of all coursework. The independent study will be coordinated with the student's academic major in an effort to merge their major program of study with the focus of the Sport Behavior minor curriculum. All prerequisites are in effect.

| | | |
|----------|--------------------------------|-----|
| SPRT 240 | Sport Psychology | (3) |
| SPRT 250 | Exercise Psychology | (3) |
| SPRT 414 | Motor Development | (3) |
| SPRT 415 | Motor Learning and Performance | (3) |
| SPRT 450 | Independent Study | (3) |
| SMGT 460 | Sport Ethics | (3) |
| | Electives | (3) |

NUTRITION MINOR

SUZANNE KITTS, Ph.D., *Minor Advisor*

Program Description: The Nutrition and Human Performance major offers an 18-19 credit Nutrition Minor. The coursework covers macronutrient and micronutrient basic chemistry, the roles of nutrients in the body, food sources and recommended intakes for the sport and general population. Other topics addressed include nutritional assessment, issues and current controversies in nutrition, eating disorders in athletes, and the relationship between nutritional deficiencies and specific chronic diseases throughout the lifespan.

Requirements and Curriculum: The Nutrition minor is open to students in any major and requires 18-19 credits and a "C" or better in all courses that apply toward the minor.

Required Courses (12 credits)

| | | | |
|----------|------------------------|-------------|---------------------|
| SPRT 130 | Sports Nutrition | (3 credits) | (Spring semesters) |
| NHP 250 | Nutrition and Health | (3 credits) | (Fall odd years) |
| NHP 400 | Nutritional Assessment | (3 credits) | (Spring odd years) |
| NHP 410 | Nutrition in Disease | (3 credits) | (Spring even years) |

Elective Courses (6-7 credits)

| | | | |
|----------|---|-------------|-----------------------|
| SPRT 250 | Exercise Psychology | (3 credits) | (Spring semesters) |
| NHP 310 | Science of Obesity & Weight Loss | (3 credits) | (Fall even years) |
| NHP 350 | Advanced Sports Nutrition | (3 credits) | (Fall semesters) |
| SPRT 393 | Eating Disorders in Athletes | (2 credits) | (Fall even semesters) |
| SPRT 395 | Issues and Controversies in Sports Nutrition | (2 credits) | (Fall odd semesters) |
| SPRT 405 | Exercise Biochemistry | (3 credits) | (Spring semesters) |
| PUBH 200 | Public Health | (3 credits) | (All semesters) |
| PUBH 300 | Epidemiology | (3 credits) | (All semesters) |

Completing Minor Requirements

- The nutrition minor is a supplement to a major degree and cannot be completed by itself. You must complete the minor before or at the same time as your major.
- The requirements such as grades (C or higher), completion of required courses, and completion of electives must be met to be awarded the Nutrition minor.
- You are responsible for monitoring your courses and are encouraged to contact the Program Director Dr. Suzanne Kitts at kitts001@gannon.edu if you have any questions or concerns about your progress or courses to take.

BIOCHEMISTRY

KEITH KRISE, Ph.D., *Program Director*

Aims and Objectives

Biochemistry is the study of the chemical composition and reactions within living systems. The Bachelor of Science in Biochemistry major is designed for students who enjoy the study of chemistry, but prefer to focus study on the biological chemistry facet. The students within the biochemistry major will take specific courses directing their study to the interface of biology and chemistry. The biochemistry major will have a strong fundamental background in chemistry with an emphasis on specific biology course work, plus a foundation in physics and mathematics. Successful graduates may enter full-time employment, graduate research programs in chemistry and biochemistry, or professional schools such as medical, pharmacy and dentistry.

Biochemistry Curriculum

(Numerals in front of the courses indicate credits)

FRESHMAN

Fall

| | |
|-----------|--------------------------------------|
| 2 | First-Year Seminar |
| 3 | CHEM 111: General Chemistry I |
| 1 | CHEM 112: General Chemistry I Lab |
| 3 | MATH 140: Calculus I |
| 3 | LENG 111: College Composition |
| 3 | BIOL 122: Molec. & Cell. Biology |
| 1 | BIOL 123: Molec. & Cell. Biology Lab |
| <u>16</u> | |

Spring

| | |
|-----------|--------------------------------------|
| 3 | CHEM 114: General Chemistry II |
| 1 | CHEM 115: General Chemistry II Lab |
| 3 | MATH 141: Calculus II |
| 3 | LENG 112: Crit Analysis & Comp |
| 3 | LTHE 101: Foundations of Theology |
| 3 | BIOL 124: Animal Form & Function |
| 1 | BIOL 125: Animal Form & Function Lab |
| <u>17</u> | |

SOPHOMORE

Fall

| | |
|-----------|--------------------------------------|
| 3 | CHEM 221: Organic Chemistry I |
| 1 | CHEM 222: Organic Chemistry I Lab |
| 3 | PHYS 210: Fund. of Physics I |
| 1 | PHYS 211: Fund. of Physics I Lab |
| 3 | LHST 111: History Without Borders |
| 3 | LPHI 131: Introduction to Philosophy |
| 3 | SPCH 111: Public Speaking <i>or</i> |
| | SPCH 113: Human Communication |
| <u>17</u> | |

Spring

| | |
|-----------|------------------------------------|
| 3 | CHEM 224: Organic Chemistry II |
| 1 | CHEM 225: Organic Chemistry II Lab |
| 3 | PHYS 212: Fund. of Physics II |
| 1 | PHYS 213: Fund. of Physics II Lab |
| 3 | LENG: Literature Series |
| 3 | BIOL 265: Genetics |
| 1 | BIOL 266: Genetics Lab |
| <u>15</u> | |

JUNIOR

Fall

| | |
|----|--------------------------------------|
| 3 | CHEM 325: Organic Spec Methods |
| 1 | CHEM 326: Organic Spec Methods Lab |
| 3 | CHEM 331: Physical Chemistry I |
| 1 | CHEM 332: Physical Chemistry I Lab |
| 3 | CHEM 366: Structural Biochemistry |
| 1 | CHEM 367: Biochemical Lab |
| 3 | LPHI: Philosophy II Series |
| 3 | LTHE 201: The Bible: An Introduction |
| 18 | |

Spring

| | |
|----------------|--|
| 3 | CHEM 336: Intro to Analytical Chem |
| 2 | CHEM 337: Intro to Analytical Chem Lab |
| 1 | CHEM 356: Chemical Literature |
| 3 | MATH 213: Applied Statistics |
| 3 | LPHI 237 or any LTHE 300-level course |
| 1 | Leadership Seminar |
| 4 [†] | BIOL 373/374: Molecular Biology w/Lab or BIOL 375/376: Cell Biology w/Lab |
| 17 | |

SENIOR

Fall

| | |
|----------------|--|
| 3 | CHEM 361: Adv Inorganic Chemistry |
| 3 | CHEM 368: Biochemical Pathways |
| 2 | CHEM 414: Computational Chemistry |
| 3 | LFIN: Fine Arts Series |
| 1 | Undergrad. Research (BIOL or CHEM) |
| 4 [†] | BIOL 373/374: Molecular Biology w/Lab or BIOL 375/376: Cell Biology w/Lab |
| 16 | |

Spring

| | |
|----------------|------------------------------------|
| 4 [†] | BIOL 375/376: Cell Biology w/lab |
| 4 | Chemistry or Biology Electives* |
| 1 | Undergrad. Research (BIOL or CHEM) |
| 1 | General Electives |
| 3 | Social Science |
| 3 | LBST 383: Senior Seminar |
| 16 | |

* Must be CHEM courses from levels 200, 300 and 400, or BIOL 126 & 127, BIOL 331 & 332, or BIOL 358 & 359.

† Both sets of courses are required and are offered in alternating spring semesters. Take the set that is offered in the junior year and the other set in the senior year.

BIOLOGY DEPARTMENT

BIOLOGY

RUSSELL MINTON, Ph.D., *Chairperson*; CHRISTOPHER DEMPSEY, Ph.D., *Associate Director*

FACULTY: *Professors*: Gregory M. Andraso, Michael Ganger, Elisa M. Konieczko, Edward (Ted) Phillips, Robert S. Rawding, Steven J. Ropski, Mary C. Vagula. *Associate Professors*: Quyen Aoh, Christopher Dempsey, Sarah J. Ewing, He Liu, Russell Minton. *Assistant Professors*: Prasad Dalvi, Matthew Gacura, Gary Vanderlaan. *Associate Teaching Professor*: Melanie Gustafson-Ropski. *Assistant Teaching Professors*: Renee Foradori, Michelle Kuns.

Aims and Objectives

The Biology Department is an academic community of faculty members and students engaged in the responsible pursuit and communication of biological knowledge. We provide students with a diverse curriculum to explore and study life in the classroom, laboratory, and field. We offer students a wide range of opportunities to acquire the knowledge and skills necessary to become competitive and excel in their chosen fields. Faculty members within the Biology Department work one-on-one with their advisees to guide their academic progress and advancement toward their individual career goals.

Students can major in **Biology, Freshwater and Marine Biology, or Biology-Secondary Education**. Students have the option to minor in Biology.

Biologists study living organisms and their life processes. They are concerned with the origin, function, and preservation of life, from the smallest cell to the largest ecosystem. Students with a degree in **Biology** can continue their education to pursue careers in research or medicine, or students can gain employment in industry, non-profit organizations, or government agencies with their knowledge of the biological sciences. Students with a degree in **Freshwater and Marine Biology** can continue their education or gain employment in fields dedicated to understanding, monitoring, and restoring water resources and the organisms that inhabit them. Students who complete their degree in **Biology-Secondary Education** can pursue a career teaching biology in secondary schools.

COURSE DESCRIPTIONS

Courses numbered BIOL 101 – BIOL 118, BIOL 140, and BIOL 191 may not be used to fulfill the requirements for a Biology major.

BIOL 100: First-Year Seminar: Scientific Reasoning and Biology

The First-Year Seminar serves the new student as an introduction to Gannon University through a unique and challenging learning experience. While each section of the First-Year Seminar course focuses on different content, each has as its intentions: the forging of the relationship between the new student and the Gannon community, the development of the integration of the academic, social, personal, and spiritual aspects of each student's life, and the animation of the tenets of Catholic social teaching in daily life and work.

In addition to the general goals inherent in each First Year seminar, BIOL 100 provides the student with the opportunity to examine the process of scientific reasoning and analysis, to review career options in the field of biology, to consider how one can merge the philosophies of science and the humanities, and how one can reconcile the empirical disciplines of the sciences with the spiritual aspects of faith based learning. *2 credits, Fall*

BIOL 101: General Biology

This course is for the nonbiology major dealing with general biological principles and brief surveys of the plant and animal world including some laboratory exercises and demonstrations. *3 credits, Fall*

BIOL 103: Environmental Issues

This course is a study of our environment and some of the interactions between humans and their surroundings. The course analyzes through an interdisciplinary approach how humans and their social institutions interact with physical and biological systems of the environment. The course surveys the most urgent environmental health problems facing humanity today. *3 credits, Fall, Spring*

BIOL 104: Human Biology

This course is designed to introduce students to some of the many complex, yet fascinating, processes of the human body. The course begins with a review of basic principles of chemistry. This introduction is followed by a limited discussion of cellular structure and metabolism. Subsequently, the basic structure and functions of selected organ systems are discussed. The course introduces students to some of the newer advances in medical and research technologies that are impacting our society, e.g. cloning, recombinant DNA technology, genetic engineering, stem cell research, and gene therapy. Students will also learn about the influences of globalization on human health. *3 credits, Fall, Spring*

BIOL 105: Human Biology Lab

Lab exercises complement topics in BIOL 104.
Concurrent with BIOL 104. *1 credit, Fall, Spring*

BIOL 106: Introductory Microbiology

This course covers basic morphological and behavioral characteristics of microorganisms (bacteria, fungi, prions, viruses, and protozoa) predominately associated with humans. Topics expand over microbial affiliations with different diseases, epidemiology, pathology and control. Additionally, an introduction to applied microbiology will be discussed.

Concurrent with BIOL 107.

3 credits, Fall, Spring

BIOL 107: Introductory Microbiology Lab

This course consists of labs which complement topics taught in BIOL 106.

Concurrent with BIOL 106.

1 credit, Fall, Spring

BIOL 108: Essentials of Anatomy and Physiology I

This course is a survey of anatomy and physiology of the human body. The first semester covers basic principles of biochemistry, metabolism, information processing, the cell, and the tissues. This leads to consideration of these body systems: integumentary, skeletal, muscular, nervous and endocrine.

Concurrent with BIOL 109.

3 credits, Fall

BIOL 109: Essentials of Anatomy and Physiology I Lab

This course consists of labs which complement topics taught in BIOL 108.

Concurrent with BIOL 108.

1 credit, Fall

BIOL 110: Essentials of Anatomy and Physiology II

This is a continuation of BIOL 108 and covers structure and function of the cardiovascular, respiratory, immune, digestive, and excretory systems. It concludes with a unit on reproduction and development.

Concurrent with BIOL 111.

Prerequisite: (BIOL 108, BIOL 109) or (BIOL 115, BIOL 116).

3 credits, Spring

BIOL 111: Essentials of Anatomy and Physiology II Lab

This course consists of labs which complement topics taught in BIOL 110.

Concurrent with BIOL 110.

Prerequisite: (BIOL 108, BIOL 109) or (BIOL 115, BIOL 116).

1 credit, Spring

BIOL 115: Human Anatomy and Physiology I

This is the first course in a two-semester sequence examining the integrated structure and function of the human body. After introducing the student to anatomical nomenclature, chemical and physiological principles, the course follows a systems approach to the understanding of cell chemistry, cells and tissues, and the integumentary, musculoskeletal, and nervous systems.

Concurrent with BIOL 116.

3 credits, Fall, Spring

BIOL 116: Human Anatomy and Physiology I Lab

This course includes laboratory exercises to compliment topics taught in BIOL 115.

Concurrent with BIOL 115.

1 credit, Fall, Spring

BIOL 117: Human Anatomy and Physiology II

This second course in a two-semester sequence completes the integrated study of the structure and function of the human body. It explores the endocrine, circulatory, lymphatic, respiratory, digestive, urinary and reproductive systems. Emphasis is placed on the interrelationships of these systems with the integrative and control functions of the nervous and endocrine systems.

Concurrent with BIOL 118.

Prerequisite: BIOL 115, BIOL 116.

3 credits, Fall, Spring

BIOL 118: Human Anatomy and Physiology II Lab

This course includes laboratory exercises to compliment topics taught in BIOL 117.

Concurrent with BIOL 117.

Prerequisite: BIOL 115, BIOL 116.

1 credit, Fall, Spring

BIOL 122: Molecular and Cellular Biology

This course is designed to introduce the student to certain aspects of cell structure and function, genetics, and molecular biology. This course, together with BIOL 124 and 126, provides the student with a firm foundation upon which the specialized courses can be built.

Concurrent with BIOL 123.

3 credits, Fall, Spring

BIOL 123: Molecular and Cellular Biology Lab

This course provides the student with laboratory experiences in which topics covered in BIOL 122 lecture are studied in an experimental fashion.

Concurrent with BIOL 122.

1 credit, Fall, Spring

BIOL 124: Animal Form and Function

This course begins with a survey of several animal phyla (e.g. Porifera, Cnidaria, Platyhelminthes, Annelida, Arthropoda, Echinodermata, Chordata). A functional approach is then taken to understand the major organ systems in animals, emphasizing the vertebrates.

Concurrent with BIOL 125.

Prerequisite: BIOL 122-123.

3 credits, Fall, Spring

BIOL 125: Animal Form and Function Lab

This course complements BIOL 124 lectures by giving the student a chance to experimentally investigate the anatomy and functions of some organ systems in animals.

Concurrent with BIOL 124.

Prerequisite: BIOL 122-123.

1 credit, Fall, Spring

BIOL 126: Ecosystem Biology and Evolution

This course introduces principles pertaining to the evolution, ecology and behavior of diverse life forms, including the classification and characterization of all life kingdoms, with special emphasis on plants.

Concurrent with BIOL 127.

Prerequisite: BIOL 122-125.

3 credits, Fall, Spring

BIOL 127: Ecosystem Biology and Evolution Lab

This course compliments the topics of BIOL 126 through experimentation.

Concurrent with BIOL 126.

Prerequisites: BIOL 122-125.

1 credit, Fall, Spring

BIOL 140: Introduction to Aquatic Science

This course explores the major ecological theories and principles dominating the fields of stream ecology, limnology, and marine biology. Topics include the abiotic properties and processes that affect organismal distribution and abundance across aquatic ecosystems, adaptations of aquatic organisms in response to abiotic and biotic evolutionary pressures in these ecosystems, and the ecological roles that organisms have in aquatic ecosystems. The importance of aquatic ecosystems and their associated taxa to humans, and how human activities can alter the properties and functions of these important ecosystems are also discussed.

Prerequisite: ENV 120.

3 credits, Spring

BIOL 191: Special Topics

Instructor permission required.

1-3 credits

Note about Prerequisites: Courses numbered 200 or above have a prerequisite of at least 8 credits of biology. Additional prerequisites are indicated.

BIOL 220: Botany

This course is a general survey of the plant kingdom. It examines the anatomy, physiology, reproduction, cytology, and taxonomy of the plants with a special emphasis on the flowering plants. Topics include germination, development, mineral nutrition, water relations, plant hormones, and environmental physiology.

Prerequisites: BIOL 122-127.

3 credits, Fall

BIOL 221: Botany Laboratory

This laboratory emphasizes plant identification and classification. The laboratories have an outdoor component.

Concurrent with BIOL 220.

Prerequisites: BIOL 122-127.

1 credit, Fall

BIOL 223: Invertebrate Zoology

This course explores the taxonomic, morphological, and physiological diversity of invertebrate animals. It also emphasizes the ecological roles of invertebrates.

Prerequisites: BIOL 122-125 and either BIOL 126-127 or BIOL 140.

3 credits, Spring

BIOL 224: Invertebrate Zoology Lab

This course emphasizes the classification and morphology of invertebrate animals.

Concurrent with BIOL 223.

Prerequisites: BIOL 122-125 and either BIOL 126-127 or BIOL 140.

1 credit, Spring

BIOL 232: Human Genetics

This course is intended to provide a broad exposure to introductory genetics, the study of inherited variation, and emphasizes human heredity and development. The course encompasses the fundamental principles of molecular, transmission, and population genetics. Basic cytogenetics topics and clinical aspects of selected heritable diseases are also discussed.

Prerequisites: Physician Assistant (PA)Major, BIOL 122-125.

3 credits, Spring

BIOL 265: Genetics

This introductory course deals with the principles of variation in prokaryotes and eukaryotes, with special reference to humans. Students will be introduced to Mendelian genetics, cytogenetics, molecular genetics, genomics, and some introductory aspects of biotechnology.

Concurrent with BIOL 266

Prerequisites: BIOL 122-125, CHEM 111, CHEM 114

3 credits, Fall, Spring

BIOL 266: Genetics Lab

This is an introductory laboratory course in genetics that surveys topics and procedures in classical and modern genetics. This course covers the use of model organisms, DNA technology and bioinformatics to study transmission and molecular genetics. Its main goal is to reinforce and apply the concepts presented in the lecture. In addition, students practice scientific writing.

Concurrent with BIOL 265

Prerequisites: BIOL 122-125, CHEM 111, CHEM 114

1 credit, Fall, Spring

BIOL 290: Research Methods in Biology

This course is designed to introduce students to fundamental research methods in biology. Students learn the principles of laboratory techniques used in the fields of molecular biology, cell biology and biochemistry. In addition, students learn common research methods in bioinformatics and biostatistics using software tools. Topics in experimental design, scientific data presentation, the peer-review process, and research ethics are also be discussed.

Prerequisite: BIOL 122-125.

3 credits, Spring

BIOL 292: Comparative Vertebrate Anatomy

This course is a study of vertebrate structure, its functional significance, and the range of variation in structure and function in different species from an evolutionary viewpoint.

Concurrent with BIOL 293.

Prerequisites: BIOL 122-127.

2 credits, Spring

BIOL 293: Comparative Vertebrate Anatomy Lab

This laboratory course complements and strengthens concepts covered in BIOL 292 through dissections of representative vertebrates.

Concurrent with BIOL 292.

Prerequisites: BIOL 122-127.

2 credits, Spring

BIOL 298: Principles of Ecology

This course is a study of plants and animals in relationship to their environment. Basic ecological principles such as structure and function of the ecosystem as illustrated by energy flow, nutrient cycling, environmental influences, and producer-consumer-decomposer relationships are discussed. Selected topics on population ecology, human ecology, and special topics or current environmental problems and worldwide issues are also introduced.

Prerequisites: BIOL 122-127.

3 credits, Spring

BIOL 299: Ecology Lab

The Ecology laboratory is designed to demonstrate basic ecological concepts discussed in lecture.

Concurrent with BIOL 298.

Prerequisites: BIOL 122-127.

1 credit, Spring

BIOL 302: Animal Behavior

This course is a study of the mechanisms and evolution of behavior in a variety of animal taxa. The course examines interactions among the environment, genetics, the endocrine system, and the nervous system in the development of behavior. It also addresses the current adaptive value of various behaviors and considers how natural selection may have altered behaviors in the past.

Prerequisites: BIOL 122-127.

3 credits, Fall

BIOL 306: Oceanography

Designed to acquaint students with the marine environment and its associated structure, which covers over seventy percent of the earth's surface. An environmental approach focusing on the physical, chemical and biological properties is emphasized throughout.

Prerequisite: ENV101 or ENV104 or Junior standing in Biology.

3 credits, Fall

BIOL 307: Vertebrate Embryology

This course compares the early embryonic development of amphibian, avian, and mammalian embryos and places special emphasis on human organogenesis.

Concurrent with BIOL 308.

Prerequisites: BIOL 122-127.

3 credits, Fall

BIOL 308: Vertebrate Embryology Lab

Concurrent with BIOL 307.

Prerequisites: BIOL 122-127.

1 credit, Fall

BIOL 320: Histology

This course deals with the cellular ultrastructure and microscopic anatomy of the tissues and organs comprising the human body.

Concurrent with BIOL 321.

Prerequisites: BIOL 122-127.

3 credits, Spring

BIOL 321: Histology Lab

Concurrent with BIOL 320.

Prerequisites: BIOL 122-127.

1 credit, Spring

BIOL 323: Wildlife Management

This course deals with basic management strategies, including the potential human role in using and benefiting from the preservation and management of the world's wildlife resources. This course has a Service Learning component.

Prerequisites: BIOL 122-127, BIOL 298 or concurrent. *3 credits, Spring; to alternate with BIOL 325*

BIOL 324: Wildlife Management Lab

This course deals with techniques of managing wildlife populations.

Concurrent with BIOL 323. This course has a Service Learning component.

Prerequisites: BIOL 122-127, BIOL 298 or concurrent.

1 credit, Spring

BIOL 325: Vertebrate Zoology

This course deals with vertebrate evolution, systematics, zoogeography, and physiological adaptations to specific environments.

Prerequisites: BIOL 122-127.

3 credits, Spring; to alternate with BIOL 323

BIOL 326: Vertebrate Zoology Lab

This course acquaints the student with Pennsylvania vertebrates, including their taxonomy, ecology and distribution.

Concurrent with BIOL 325.

Prerequisites: BIOL 122-127.

1 credit, Spring

BIOL 331: Microbiology

The course explores basic traits of microorganisms (bacteria, viruses, fungi, algae and protozoa) with an emphasis on bacterial structure, communication, physiology (catabolic and anabolic pathways), genetics and growth. Additional topics include microbial associations with medicine, pathogenesis, bioremediation and biotechnology.

Concurrent with BIOL 332.

Prerequisites: BIOL 122-125, plus any 3 additional credits in Biology.

3 credits, Fall, Spring

BIOL 332: Microbiology Lab

This lab involves the use of differential stains with microscopy enabling microbial visualization. Students are taught how to identify with molecular confirmation unknown microorganisms through the performance of multiple physiological tests. Additionally, an introduction to experiments performed in biotechnology and medical laboratory science are covered.

Concurrent with BIOL 331.

Prerequisites: BIOL 122-125, plus any 3 additional credits in Biology.

1 credit, Fall, Spring

BIOL 336: Clinical Microbiology

The appropriate methods for complete microbiological examination of clinical specimens is reviewed in lecture and presented in the laboratory. Procedures for the isolation and identification of bacteria, fungi, and viruses are taught. Emphasis is given to those organisms most commonly found in human infection.

Prerequisite: BIOL 122-127, 331-332.

2 credits

BIOL 337: Clinical Microbiology Lab

Concurrent with BIOL 336.

Prerequisites: BIOL 122-127, 331-332.

2 credits

BIOL 338: Immunology

This course is designed to introduce students to the structure and function of the immune system. Course content begins with a discussion of the molecular and cellular components involved in the elicitation of the immune response, e.g. antigen receptors, MHC molecules, antibodies, and cytokines. Subsequent discussion includes the role of the immune system in the defense against infectious agents and cancer, immunodeficiencies, hypersensitivities, organ transplantation, and autoimmune disease.

Concurrent with BIOL 339.

Prerequisites: BIOL 122-125, and either 331-332 or 378-379.

3 credits, Spring

BIOL 339: Immunology Lab

The lab is designed to emphasize some of the basic immunological principles that are discussed in lecture. Students are also introduced to some of the immunologically-based techniques routinely utilized in research and diagnostic laboratories (e.g. immunodiffusion, ELISA, immunoprecipitation, immunoelectrophoresis, RT-PCR, western blot and tissue culture techniques).

Concurrent with BIOL 338.

Prerequisites: BIOL 122-125, and either 331-332 or 378-379.

1 credit, Spring

BIOL 340: Aquatic Microbiology

This course is designed to study the interrelationships among micro-organisms, phytoplankton, aquatic plants, and the animals of aquatic systems. Cycling of elements in bodies of water is

emphasized, along with how humans have impacted these processes. In addition, this course discusses how this knowledge may be applied to both biotechnology and conservation efforts. Prerequisites: BIOL 122-125 and either BIOL 126-127 or BIOL 140. *3 credits, alternate Falls*

BIOL 341: Aquatic Microbiology Lab

This lab is designed to allow students to gain an understanding of microbiology from an environmental perspective. Experiments in this class focus on environmental sampling of aquatic microbes and quantification of various microbial processes. Experiments will also focus on how microbes can be used as indicator organisms for various environmental conditions. Concurrent with BIOL 340.

Prerequisites: BIOL 122-125 and either BIOL 126-127 or BIOL 140. *1 credit, alternate falls*

BIOL 344: Virology

This course is designed to expose students to the basic fundamentals (morphology, life cycles and host interactions) and advanced topics of viruses associated with human diseases. These topics focus on selected viruses and discuss their disease associations, epidemiology, vaccines, unique viral life cycles, host evasion techniques and control. Course topics also include viral gene therapy and emerging diseases.

Prerequisites: BIOL 122-127, BIOL 331-332, CHEM 221-222. *3 credits, Spring*

BIOL 347: Developmental Biology

This class offers a broad survey of topics in molecular developmental biology. Topics include fertilization, induction, signal transduction, gastrulation, neural development, and environmental effects on development. In addition, topics that are less intuitively associated with developmental biology such as metamorphosis, aging, and regeneration are also discussed.

Prerequisites: BIOL 122-127, 265-266. *3 credits, Fall*

BIOL 348: Developmental Biology Lab

Laboratory experiences reinforce the topics covered in Developmental Biology lecture. Topics include fertilization, induction, signal transduction, and environmental effects on development. Concurrent with BIOL 347.

Prerequisites: BIOL 122-127, 265-266. *1 credit, Fall*

BIOL 350: Biogeochemistry

Biogeochemistry is the study of the exchange of energy and elements between the biosphere and geosphere. This course examines principal biogeochemical cycles including the hydrological, carbon, sulfur, and nitrogen cycles. Focus is placed on both the micro-scale underpinnings of these cycles and the global implications of the processes.

Prerequisites: CHEM 224-225. *3 credits*

BIOL 354: Parasitology

This course is concerned with organisms which live on or in other organisms, and which depend on their hosts for some essential metabolic factor. Life cycles, behavior and treatment, and control of parasites are discussed. Recommended for students concentrating in the health sciences.

Prerequisites: BIOL 122-125 and either BIOL 126-127 or BIOL 331-332 *3 credits, Spring*

BIOL 355: Parasitology Lab

The lab is designed to familiarize students with the identification and morphology of parasites. Required for students in Medical Laboratory Science.

Concurrent with BIOL 354.

Prerequisites: BIOL 122-125 and either BIOL 126-127 or BIOL 331-332. *1 credit, Spring*

BIOL 358: Plant Physiology

This course is intended to provide a broad exposure to plant physiology, the study of plant function. The role of internal and external regulators of plant growth and development will be explored. An attempt is made to couple plant responses with molecular mechanisms. Important plant biochemical pathways are also covered.

Prerequisites: BIOL 122-127, CHEM 221.

3 credits, Spring

BIOL 359: Plant Physiology Lab

Current and classical techniques of experimental plant physiology are performed.

Concurrent with BIOL 358.

Prerequisite: BIOL 122-127, CHEM 221.

1 credit, Spring

BIOL 363: Endocrinology

Endocrinology, the study of hormones, is presented with an emphasis on neural-endocrine interactions, hormone-receptor interactions, mechanisms of hormone action, metabolism, a survey of the major endocrine tissues and glands, and reproductive physiology. Case studies are also integrated into the course.

Prerequisite: BIOL 122-125, 368-369.

3 credits, Fall

BIOL 365: Human Gross Anatomy

This course uses a regional approach to study the human body.

Concurrent with BIOL 366.

Prerequisites: BIOL 122-125.

3 credits, Fall, Spring

BIOL 366: Human Gross Anatomy Lab

This course compliments and enhances the human gross anatomy lecture course. Dissection of human cadavers by students is a key component of the course. In addition, learning is facilitated through the use of anatomical models and prosected human cadavers.

Concurrent with BIOL 365.

Prerequisites: BIOL 122-125.

1 credit, Fall, Spring

BIOL 368: Human Physiology

This course deals with the normal functioning of the human body and its component parts.

The essential concepts of physiology are presented at various levels or organization, from cellular to organ system level with special emphasis on the understanding of homeostasis and integrated regulations of various body processes among several systems. Specifically the course focuses on physiological mechanisms involved in neuronal and chemical signaling, movement, metabolism, respiration, circulation, excretion, etc.

Concurrent with BIOL 369.

Prerequisites: BIOL 122-125.

3 credits, Fall, Spring

BIOL 369: Human Physiology Lab

The principles and concepts learned in lecture class are reinforced through hands on experience in this course. The experiments in this course are designed to help the student develop the skills of acquiring and analyzing physiological signals, data interpretation and documentation.

Concurrent with BIOL 368.

Prerequisites: BIOL 122-125.

1 credit, Fall, Spring

BIOL 373: Molecular Biology

A study of the structure and function of nucleic acids and proteins as they relate to cellular and organismal systems. Topics include macromolecule synthesis, gene expression and regulation, DNA mutation and repair, molecular biology techniques, and bioinformatics methods.

Concurrent with BIOL 374.

Prerequisites: BIOL 265-266, CHEM 224.

3 credits, Spring

BIOL 374: Molecular Biology Lab

A course focused on the principles and practical application of molecular biology lab methods.

Students will show competency in techniques including macromolecule extraction and isolation, PCR, nucleic acid sequencing, and genomic and bioinformatic analyses.

Concurrent with BIOL 373.

Prerequisites: BIOL 265-266, CHEM 224.

1 credit, Spring

BIOL 375: Cell Biology

Fundamental cellular, subcellular, and molecular characteristics of animal cells are studied in this course. Included are specific studies on cellular organelles, the cytoskeleton, cellular and

intracellular membranes, intracellular transport, cell signaling, the cell nucleus, and protein synthesis, and protein structure and function. Also emphasized are current techniques used in cell biology, such as Southern, Northern, and Western Blots, PCR, RNA interference, and immunofluorescent confocal microscopy.

Concurrent with BIOL 376.

Prerequisites: BIOL 122-127, 4 additional credits biology, 16 credits chemistry. *3 credits, Fall*

BIOL 376: Cell Biology Lab

This course is designed to enhance the lectures presented in BIOL 375. Experiments used in this course illustrate the principles and research techniques of many aspects of animal cell biology.

Concurrent with BIOL 375.

Prerequisites: BIOL 122-127, 4 additional credits biology, 16 credits chemistry. *1 credit, Fall*

BIOL 378: Medical Microbiology

This course is designed for future health care professionals that need to have a useful and comprehensive introduction to host-parasite relationships, and a thorough understanding of the microbe in its roles as a disease-producing etiological agent. Infectious diseases for this course have been selected from the realm of prions, viruses, rickettsiae, chlamydiae, PPLO forms, bacteria, fungal, and protozoan to illustrate introductory medical terminology and the principles of pathogenic microbiology.

Concurrent with BIOL 379.

Prerequisite: BIOL 122-125, Physician Assistant (PA) or LECOM majors. *3 credits, Spring*

BIOL 379: Medical Microbiology Lab

This course consists of labs which complement topics taught in PHAS 365.

Concurrent with BIOL 378.

Prerequisite: BIOL 122-125, Physician Assistant (PA) or LECOM majors. *1 credit, Spring*

BIOL 380: Marine Ecology

This course examines the biology of marine life within the context of modern ecological principles. Structure, physiology, and behavior of marine organisms will be studied from the perspectives of adaptation to the ocean environment, biological productivity, and interspecific relationships. Emphasis will be placed on life in intertidal zones, estuaries, surface waters, and the deep sea.

Prerequisites: BIOL 122-125 and either BIOL 140 or BIOL 126-127. *3 credits, alternate springs*

BIOL 381: Field Ecology

This course is devoted primarily to field work. Lectures stress the structure of specific plant and animal communities indigenous to the Erie area. Concepts of community ecology are utilized extensively. Special emphasis is placed on deleterious factors of the environment and how they affect community structure and function. Field exercises demonstrate through modern sampling techniques the physical, chemical, and biological structure of communities. Visitations to a variety of ecosystems are an integral part of the laboratory.

Concurrent with BIOL 382.

Prerequisites: BIOL 122-127, 298-299 or instructor's permission. *2 credits*

BIOL 382: Field Ecology Lab

The practical aspects of ecosystem ecology are studied in this course. Visits are made to a variety of local ecosystems; e.g. streams, forests, ponds, bogs, marshes, etc.

Concurrent with BIOL 381.

Prerequisites: BIOL 122-127, 298-299 or instructor's permission. *2 credits*

BIOL 383: Tropical Marine Biology

This course is open to all students regardless of major and fulfills the Liberal Studies Core Science requirement. The course is offered over spring break in the Bahamas, where students investigate ecological systems such as coral reefs, mangroves, beaches, tidal pools, and inland habitats. This course has a Service Learning component.

Prerequisite: Instructor's permission.

3 credits, Spring

BIOL 384: Ecology of Yellowstone National Park

This course is taught at Yellowstone National Park where students examine the vegetation, thermophilic life, and ecology of Yellowstone National Park. Topics covered include grizzly bears; wolf reintroduction; impact of fires, geysers and past volcanic activity; geological history including earthquakes, vegetation, thermophilic life, and the herbivores of the park (bison, moose, antelope, and elk). One day is also spent at the Museum of the Rockies in Bozeman reviewing their dinosaur exhibit and getting a behind-the-scenes tour. This course has a Service Learning component.

Prerequisite: Instructor's permission.

2-3 credits, Summer

BIOL 385: Limnology

Limnology introduces students to the physical, chemical, and biological dynamics of inland waters. Topics covered include lakes, streams, rivers, wetlands, and estuaries. Special emphasis is placed on the Great Lakes region.

Concurrent with BIOL 386.

Prerequisite: BIOL 122-125 and either BIOL 126-127 or BIOL 140.

3 credits, Fall

BIOL 386: Limnology Lab

Students take advantage of aquatic ecosystems in the Lake Erie watershed and use Gannon's research vessel "Environaut." They collect physical, chemical, and biological samples to analyze in the laboratory using standard limnological methods.

Concurrent with BIOL 385.

Prerequisite: BIOL 122-125 and either BIOL 126-127 or BIOL 140.

1 credit, Fall

BIOL 390: Plant Ecology

The abiotic and biotic factors that limit the abundance and distribution of plants are discussed. These factors are explored at several levels: individual, population, metapopulation, community, and ecosystem.

Prerequisites: BIOL 122-127.

3 credits

BIOL 391: Plant Ecology Lab

This laboratory is intended to reinforce many of the concepts discussed in lecture. Hypothesis testing is important in science and as such, data collection and analysis are used to test hypotheses. These hypotheses require us to become familiar with the local plant families and common sampling methods. The laboratories have an outdoor component.

Concurrent with BIOL 390.

Prerequisites: BIOL 122-127.

1 credit

BIOL 395: Fisheries Biology

This course explores the morphology, classification, life history, population dynamics, and ecology of freshwater fishes.

Concurrent with BIOL 396.

Prerequisite: BIOL 122-125 and either BIOL 126-127 or BIOL 140.

3 credits, Fall

BIOL 396: Fisheries Biology Lab

This course emphasizes collection, identification, and assessment of local fishes.

Concurrent with BIOL 395.

Prerequisite: BIOL 122-125 and either BIOL 126-127 or BIOL 140.

1 credit, Fall

BIOL 400: Aquatic Toxicology

This course is an in-depth study of the interactions between anthropogenic chemicals and aquatic ecosystems. Topics include the origin, fate, chemical and biological detection, and quantification of pollutants and their impact at the molecular, biochemical, cellular, physiological, organismal, and community levels of organization.

Prerequisites: CHEM 224-225.

3 credits

BIOL 487: Biology Research

In this course, the student works individually with a biology faculty member to identify a research project that can be conducted at Gannon University or in collaboration with another organization. The student conducts a literature review, designs a research project, and prepares a written research proposal that is submitted to the faculty mentor at the end of the semester.

Prerequisite: BIOL 122-125 & written permission of faculty mentor.

1-3 credits

BIOL 488: Directed Research I

In this course, the student works with a biology faculty member on an ongoing or newly developed project. Upon completion of the project, or a designated portion thereof, the student makes a presentation.

Prerequisites: BIOL 122-125 and written permission of faculty mentor.

1-3 credits

BIOL 489: Directed Research II

In this course, the student continues to work with a biology faculty member on an ongoing or newly developed project. Upon completion of the project, or a designated portion thereof, the student makes a presentation.

Prerequisites: BIOL 122-125 and written permission of faculty mentor.

1-3 credits

BIOL 490-495: Special Topics in Biology

Topics of special and/or current interest in all areas of biology will be covered. For these courses, a student conducts a literature search. A written and oral report based on the review of applicable scientific literature must be accepted by the faculty before a grade is given.

Prerequisites: BIOL 122-127 plus 8 additional BIOL credits. Instructor written permission is required.

1-3 credits, Fall, Spring

BIOL 496-499:

These numbers designate special situations such as CO-OP projects, internships, independent study and experimental courses at the upper-divisional level. A written report and oral presentation to the biology faculty is required. The credit may take the place of BIOL 490-495 providing it exceeds 1 credit and the requirement of a written and oral report is included.

Prerequisites: BIOL 122-127 & written permission of the Chair of Biology Department.

1-3 credits

BIOLOGY

RUSSELL MINTON, Ph.D., *Chairperson*; CHRISTOPHER DEMPSEY, Ph.D., *Associate Director*

The Biology Department values broadly trained students who are knowledgeable in a diversity of disciplines within biology. Such broad training is important in today's age, when there is considerable overlap among the biological disciplines. Students are therefore encouraged to take a variety of courses to fulfill the 27 credits of upper-level electives required in the major.

However, students should work closely with their academic advisor(s) to determine the coursework that best suits their educational and career goals. Several emphases and courses relevant to specific disciplines are listed below. Students may also choose to complete the biology degree with a pre-Physician Assistant (pre-PA) option. These curriculum tracks allow students to earn their degree in biology and complete the prerequisite courses necessary to apply for matriculation into professional PA graduate programs.

Students majoring in biology also have the option to participate in two academic travel courses that allow students to study tropical marine biology in the Bahamas or the ecology of Yellowstone National Park. These courses combined with the laboratory experiences and opportunities to pursue faculty-mentored undergraduate research provide students with the laboratory skills, critical thinking ability and problem-solving skills that are pivotal to be successful in biology-related careers.

GRADUATION REQUIREMENTS FOR BACHELOR OF SCIENCE DEGREE IN BIOLOGY

- Biology courses required for a Bachelor of Science degree in biology include: BIOL 122/123, BIOL 124/125, BIOL 126/127, BIOL 265/266, 27 credits of upper-level courses in biology* (200-level or above), and 2 credits of BIOL 487-489 or BIOL 490-495.
 - **Pre-Physician Assistant Track:** Students complete all of the requirements for the Bachelor of Science degree in biology listed above. However, students are required to complete Human Gross Anatomy with Lab – BIOL 365/366; Human Physiology with Lab – BIOL 368/369, and Microbiology with Lab – BIOL 331/332 as part of the 27 credits of upper-level courses in biology*. Students are also recommended to complete Medical Terminology – PHAS 121, Introduction to Psychology – PSYC 111, Basic Sociology – SOCI 110, Applied Statistics – MATH 213, and faculty-mentored research – BIOL 487-489 as part of the requirements within the major.
 - Students are required to complete a minimum of 4 labs associated with upper-level biology courses (200-level and above), and all upper-level biology labs are required with the course, where indicated.
 - Students may earn a maximum of 6.0 credits in BIOL 487-489 toward the biology courses required within the major. Two (2) credits can be used to fulfill the 2 credit requirement in BIOL 487-489, BIOL 490-495, or BIOL 496-499; and 4 credits can be used to fulfill the 27 credit requirement of upper-level biology elective credits. If additional academic credit is earned beyond 6 credits, the credit(s) can be used toward the 11.0 credits of general electives.
 - Students must earn a 2.0 grade point average or higher across all of the courses required within the major, which includes required courses in biology, chemistry, physics, and mathematics.
- * CHEM 366/367: Structural Biochemistry and lab and CHEM 368: Biochemical Pathways may be used to fulfill the 27 credits of upper-level courses in biology.

Biology Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN
First Semester

| | |
|----------|---|
| 4 | Molecular & Cellular Biology/ BIOL 122-123 |
| 4 | General Chemistry I/CHEM 111-112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <hr/> 16 | |

Second Semester

| | |
|----------|--|
| 4 | Animal Form & Function/BIOL 124-125 |
| 4 | General Chemistry II/CHEM 114-115 |
| 3 | Mathematics/MATH 111, 112, 140, 141, 213* |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <hr/> 17 | |

SOPHOMORE
Third Semester

| | |
|----------|--|
| 4 | Ecosystem Biology & Evolution/ BIOL 126-127 |
| 4 | Organic Chemistry I/CHEM 221-222 |
| 3 | History Without Borders/LHST 111 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Mathematics/MATH 111, 112, 140, 141, or 213 |
| <hr/> 17 | |

Fourth Semester

| | |
|----------|-----------------------------------|
| 4 | Genetics/BIOL 265-266 |
| 4 | Organic Chemistry II/CHEM 224-225 |
| 3 | General Elective |
| 3 | Philosophy II Series/LPHI I† |
| 3 | Social Science Elective† |
| <hr/> 17 | |

JUNIOR

*Fifth Semester***

| | |
|----|---|
| 4 | Biology Elective with lab (200-level or higher)# |
| 4 | Biology Elective with lab (200-level or higher)# |
| 4 | College Physics 1/PHYS 105-106 |
| 1 | Leadership Seminar† |
| 3 | LPHI 237 or any LTHE 300 course |
| 16 | |

*Sixth Semester***

| | |
|-------|--|
| 4-8 | Biology Electives (200-level or higher)# |
| 4 | College Physics 2/PHYS 108-109 |
| 3 | Fine Arts Series/LFIN† |
| 3 | Public Speaking/SPCH 111 or SPCH 113 |
| 14-18 | |

SENIOR

*Seventh Semester***

| | |
|----|--|
| 2 | Biology Research/BIOL 487-489 or Special Topics in Biology/ BIOL 490-495 8 Biology Electives (200-level or higher)# |
| 3 | General Electives† |
| 3 | Literature Series/LENG† |
| 16 | |

Eighth Semester

| | |
|-------|---|
| 4-8 | Biology Elective with lab (200-level or higher)# |
| 6 | General Electives† |
| 3 | Senior Seminar/LBST 383† |
| 13-17 | |

** Semester in which a Learning Abroad Experience could be completed.

* Students interested in pursuing graduate school (M.S. or Ph.D. programs) are strongly encouraged to complete MATH 140 and MATH 213 to fulfill the math requirements.

Please refer to Gannon University's Undergraduate Catalog for course options. Students must meet all prerequisites and/or corequisites to register for a course. Students must complete a total of 27 credits of biology electives (200-level or higher) to graduate with a B.S. in Biology. Please refer to the Biology Department's policy on laboratories associated with upper level (BIOL 200-level) courses. Please refer to notes listed within curriculum matrix in the undergraduate catalog.

† Please refer to Gannon University's Undergraduate Catalog for course options.

FRESHWATER AND MARINE BIOLOGY

CHRISTOPHER DEMPSEY, Ph.D., *Program Director*

Gannon's Freshwater and Marine Biology major provides students with coursework and hands-on experience to prepare them for employment or graduate training in the field of aquatic science. Our location on the shore of Lake Erie makes Gannon an ideal place to study aquatic systems. Presque Isle Bay, the eastern Basin of Lake Erie, and the many tributary streams that flow into the lake are natural laboratories for Gannon faculty and students. With 25% of the earth's surface fresh water, 10% of the United States' population, and 30% of Canada's population, the Great Lakes basin is an internationally valuable resource that requires better understanding, monitoring, and restoration. As water resources become more in demand, the need for aquatic scientists is expected to grow.

The combination of biological and environmental science perspectives, along with coursework in chemistry, physics, and mathematics provides students in the Freshwater and Marine Biology major broad and practical exposure to factors that influence aquatic ecosystems. Although the curriculum for the major is quite directed or prescribed, students have the ability to choose among numerous upper-level electives in water-related courses to personalize their degree.

Students in the Freshwater and Marine Biology major also have a great number of opportunities for field internships with agencies and organizations such as Presque Isle State Park, Pennsylvania Sea Grant, Department of Environmental Protection (DEP), Erie County

Board of Health, Pennsylvania Fish and Boat Commission, the Regional Science Consortium, and the Western Pennsylvania Conservancy. Many of these groups have offices in the Tom Ridge Environmental Center located at the foot of Presque Isle and all of them are located within miles of campus.

FRESHWATER AND MARINE BIOLOGY CURRICULUM

| | | | |
|---|-------------|--|--------------|
| LIBERAL STUDIES CORE | (42) | PHYSICS | (8) |
| ____ LENG 111 College Composition | (3) | ____ PHYS 105 College Physics 1 | (3) |
| ____ LENG 112 Crit Analysis &Comp | (3) | ____ PHYS 106 College Physics 1 Lab | (1) |
| ____ LENG Literature Series | (3) | ____ PHYS 108 College Physics 2 | (3) |
| ____ LTHE 201 The Bible: An Intro | (3) | ____ PHYS 109 College Physics 2 Lab | (1) |
| ____ LTHE 101 Foundations of Theology | (3) | | |
| ____ LPHI 131 Intro to Philosophy | (3) | MATHEMATICS | (6) |
| ____ LPHI Philosophy II Series | (3) | ____ MATH 112 Trigonometry | (3) |
| ____ LPHI 237 <i>or</i> any LTHE 300 course | (3) | <i>or</i> | |
| ____ LFIN Fine Arts Series | (3) | ____ MATH 140 Calculus | |
| ____ Social Science Elective | (3) | ____ MATH 213 Applied Statistics | (3) |
| ____ LHST 111 History without Borders | (3) | | |
| ____ LBST 383 Senior Seminar | (3) | ANALYSIS ELECTIVES | (8-9) |
| ____ First Year Seminar | (2) | ____ BIOL 331 Microbiology | (3) |
| ____ Leadership Seminar | (1) | ____ BIOL 332 Microbiology Lab | (1) |
| ____ SPCH 111 Speech | (3) | ____ ENV 400 Env. Toxicology | (3) |
| | | ____ ENV 401 Env. Health and Tox. Lab | (1) |
| BIOLOGY | (22) | ____ CHEM 336 Intr Mod An Chem | (3) |
| ____ BIOL 140 Intro to Aquatic Sci | (3) | ____ CHEM 337 Intr Mod An Chem Lab | (2) |
| ____ BIOL 122 Molec & Cell Bio | (3) | ____ ENV 336 Water Quality | (3) |
| ____ BIOL 123 Molec & Cell Bio Lab | (1) | ____ ENV 337 Water Quality Lab | (1) |
| ____ BIOL 124 Anim Form & Func | (3) | | |
| ____ BIOL 125 Anim Form & Func Lab | (1) | ORGANISMAL ELECTIVES | (7-8) |
| ____ BIOL 306 Oceanography | (3) | ____ BIOL 223 Invertebrate Zoology | (3) |
| ____ BIOL 385 Limnology | (3) | ____ BIOL 224 Invertebrate Zoology Lab | (1) |
| ____ BIOL 386 Limnology Lab | (1) | ____ BIOL 340 Aquatic Microbiology | (3) |
| ____ BIOL 488 Biology Research I | (2) | ____ BIOL 341 Aquatic Microbiol Lab | (1) |
| ____ BIOL 489 Biology Research II | (2) | ____ BIOL 383 Tropical Marine Biology* | (3) |
| | | ____ BIOL 395 Fisheries Biology | (3) |
| ENVIRONMENTAL SCIENCE | (7) | ____ BIOL 396 Fisheries Biology Lab | (1) |
| ____ ENV 120 Intro to Env Sci I | (3) | | |
| ____ ENV 101 Physical Geology | (3) | ADDITIONAL SCIENCE ELECTIVES | (6-8) |
| ____ ENV 102 Physical Geology Lab | (1) | ____ BIOL 350 Biogeochemistry | (3) |
| | | ____ BIOL 351 Biogeochemistry Lab | (1) |
| CHEMISTRY | (16) | ____ BIOL 265 Genetics | (3) |
| ____ CHEM 111 General Chem I | (3) | ____ BIOL 266 Genetics Lab | (1) |
| ____ CHEM 112 General Chem I Lab | (1) | ____ ENV 121 Intro to Env Sci II | (3) |
| ____ CHEM 114 General Chem II | (3) | ____ ENV 220 GIS | (3) |
| ____ CHEM 115 General Chem II Lab | (1) | ____ BIOL 380 Marine Ecology | (3) |
| ____ CHEM 221 Organic Chem I | (3) | | |
| ____ CHEM 222 Organic Chem I Lab | (1) | GENERAL ELECTIVES | (2-6) |
| ____ CHEM 224 Organic Chem II | (3) | | |
| ____ CHEM 225 Organic Chem II Lab | (1) | | |
| | | | |

Total Credits: 128

** Service Learning Course*

Freshwater and Marine Biology Curriculum*(Numerals in front of courses represent credits)**First Semester*

| | |
|-------|--|
| 3 | Intro to Environmental Science I/ ENV 120 |
| 4 | Gen Chem I & Lab/CHEM 111 & 112 |
| 3 | College Comp/LENG 111 |
| 2 | First Year Seminar |
| 3 | History Without Borders/LHST 111 |
| <hr/> | |
| 15 | |

Third Semester

| | |
|-------|---|
| 4 | Mol & Cellular Bio & Lab/ BIOL 122 & 123 |
| 4 | Organic Chem I & Lab/ CHEM 221 & 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Speech/SPCH 111 |
| <hr/> | |
| 17 | |

*Fifth Semester**

| | |
|-------|--|
| 4 | Limnology & Lab/BIOL 385 & 386 |
| 4 | College Physics 1 & Lab/ PHYS 105 & 106 & 109 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Philosophy II Series/LPHI |
| 3 | Oceanography/ENV 306 |
| <hr/> | |
| 17 | |

Seventh Semester

| | |
|-------|---------------------------------|
| 2 | Biology Research II/BIOL 489 |
| 3-4 | Science Elective |
| 3-4 | Science Elective |
| 3-4 | Science Elective |
| 1 | Leadership Seminar |
| 3 | LPHI 237 or any LTHE 300 course |
| <hr/> | |
| 15-18 | |

Second Semester

| | |
|-------|-----------------------------------|
| 3 | Intro to Aquatic Science/BIOL 140 |
| 4 | Gen Chem II & Lab/CHEM 114 & 115 |
| 3 | Trig or Calculus/MATH 112 or 140 |
| 3 | Intro to Philosophy/LPHI 131 |
| 3 | Crit Analysis & Comp/LENG 112 |
| <hr/> | |
| 16 | |

Fourth Semester

| | |
|-------|--|
| 4 | Anim Form & Func & Lab/BIOL 124 & 125 |
| 4 | Organic Chem II & Lab/ CHEM 224 & 225 |
| 4 | Physical Geology & Lab/ENV 101 & 102 |
| 3 | Lit Series/LENG |
| 2-3 | General Elective |
| <hr/> | |
| 17-18 | |

Sixth Semester

| | |
|-------|----------------------------------|
| 2 | Biology Research I/BIOL 488 |
| 4 | College Physics 2 & Lab/PHYS 108 |
| 3-5 | Science Elective |
| 3-4 | Science Elective |
| 3 | Fine Arts Series/LFIN |
| <hr/> | |
| 15-18 | |

*Eighth Semester**

| | |
|-------|------------------------------|
| 3-5 | Science Elective |
| 3-4 | Science Elective |
| 3 | Senior Seminar/LBST 383 |
| 3 | Social Science Elective |
| 0-3 | General Elective (if needed) |
| <hr/> | |
| 12-18 | |

** Semester in which a Learning Abroad Experience could be completed.*

BIOLOGY/SECONDARY 7-12 EDUCATION

Students may earn a Bachelor of Science degree in Biology /Secondary Education or a Bachelor of Arts degree in Biology/Secondary Education. Those students who want to obtain a graduate degree in biology or biology-related area are advised to complete the Bachelor of Science degree in Biology /Secondary Education. Students should work with their academic advisors to identify the appropriate courses to complete the biology or science electives within the curriculum to suit their career goals.

Program Requirements

- All education courses are required to be completed with a grade of C or better.
- LENG 111, LENG 112, Literature Series, and MATH courses require a grade of C or better.
- A GPA of 3.0 or greater is required of all students seeking teacher certification.

For a detailed explanation of all requirements refer to the Education section of the University Catalog.

Bachelor of Science Degree

Biology/Secondary Education 7-12 Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|----|------------------------------------|
| 4 | Molecular & Cell Biol/BIOL 122-123 |
| 4 | General Chemistry I/CHEM 111-112 |
| 2 | First-Year Seminar*/EDCR 104 |
| 3 | Public Speaking/SPCH 111 |
| 3 | College Composition/LENG 111 |
| 3 | Mathematics/MATH 111, 112, or 140 |
| 19 | (no charge for 19th credit) |

Second Semester

| | |
|----|-----------------------------------|
| 4 | Animal Form & Func/BIOL 124-125 |
| 4 | General Chemistry II/CHEM 114-115 |
| 1 | Foundations of Teaching/EDCR 103 |
| 3 | Psych of Learn/Teach/EDCR 101 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Mathematics/MATH 112, 141, or 213 |
| 18 | |

SOPHOMORE

Third Semester

| | |
|----|--|
| 4 | Ecosys Biol & Evol/BIOL 126-127 |
| 4 | Organic Chemistry I/CHEM 221-222 |
| 3 | Instr Design & Classroom Mgmt/ EDCR 105 |
| 0 | Sec Educ Field Experience I+/EDFL 101 |
| 3 | Critical Analysis/LENG 112 |
| 3 | Introduction to Philosophy/LPH1 131 |
| 17 | |

Fourth Semester

| | |
|----|---|
| 4 | Invert Zoology/BIOL 223-224 or Vertebrate Zoology/BIOL 325-326 |
| 4 | Organic Chem II/CHEM 224-225 |
| 3 | Literature Series/LENG |
| 1 | Leadership Seminar/LHES 240 |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Overview of Special Educ/SPED 101 |
| 18 | |

JUNIOR

Fifth Semester

| | |
|-----------|---|
| 4 | Biology Electives (200 or higher) |
| 2 | Biology Research/BIOL 487-489 or Special Topics in Biol/BIOL 490-495 |
| 1 | Meth/Mat for Instr Sem/EDCR 321 |
| 0 | Sec Educ Field Exp II+/EDFL 102 |
| 3 | History without Borders/LHST 111 |
| 3 | Literacy Dev, Strat, Assmts*/MLED 301 |
| 4 | Genetics/BIOL 265-266 |
| <u>17</u> | |

Sixth Semester

| | |
|-----------|---|
| 4 | Principles of Ecology/BIOL 298-299 |
| 4 | Invert Zoology/BIOL 223-224 or Vertebrate Zoology/BIOL 325-326 |
| 3 | Fine Arts Series/LFIN |
| 3 | Philosophy II Series/LPHI |
| 3 | Meet Need Stu Excp: 7-12/SPED 340* |
| <u>17</u> | |

Summer

| | |
|----------|--------------------------------|
| 4 | College Physics 1/PHYS 105-106 |
| 4 | College Physics 2/PHYS 108-109 |
| <u>8</u> | |

SENIOR

Seventh Semester

| | |
|-----------|---|
| 4 | Biol Electives (200 or higher)/BIOL |
| 3 | Assessment/Evaluation/EDCR 330 |
| 3 | Meth/Mat for Teaching: ESL/ELL*/EDCR 420 |
| 3 | Concepts/Meth of Ntr Sci/MLED 302 |
| 0 | Sec Educ Field Exp III+/EDFL103 |
| 4 | Microbiology/BIOL 331-332 |
| <u>17</u> | |

Eighth Semester

| | |
|-----------|------------------------------|
| 3 | Prof Seminar/EDCR 401 |
| 12 | Student Teaching/EDFL 410 |
| 3 | The Bible: An Intro/LTHE 201 |
| <u>18</u> | |

* *Field experience embedded throughout semester (6-15 hours)*

+ *Field experience embedded throughout semester (60 hours)*

Field experiences require a grade of P (pass).

Bachelor of Arts Degree**Biology/Secondary Education 7-12 Curriculum**

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|------------------------------------|
| 4 | Molecular & Cell Biol/BIOL 122-123 |
| 4 | General Chemistry I/CHEM 111-112 |
| 2 | First-Year Seminar*/EDCR 104 |
| 3 | College Composition/LENG 111 |
| 3 | Mathematics/MATH 111, 112, or 140 |
| <u>16</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 4 | Animal Form & Func/BIOL 124-125 |
| 4 | General Chemistry II/CHEM 114-115 |
| 1 | Foundations of Teaching/EDCR 103 |
| 3 | Psyc of Learn/Teach/EDCR 101 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Mathematics/MATH 112, 141, or 213 |
| <u>18</u> | |

SOPHOMORE

Third Semester

| | |
|-----------|--|
| 4 | Ecosystem Bio & Evol/BIOL 126-127 |
| 4 | Organic Chemistry I/CHEM 221-222 |
| 3 | Instr Design & Classroom Mgmt/ EDCR 105 |
| 0 | Sec Educ Field Exp I+/EDFL 101 |
| 3 | Critical Analysis/LENG 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>17</u> | |

Fourth Semester

| | |
|-----------|--|
| 4 | Genetics/BIOL 265-266 |
| 4 | Invert Zoology/BIOL 223-224 <i>or</i> Vertebrate Zoology/BIOL 325-326 |
| 1 | Leadership Seminar/LHES 240 |
| 3 | LPHI 237 <i>or</i> any LTHE 300 course |
| 3 | History without Borders/LHST 111 |
| 3 | Overview of Special Educ/SPED 101 |
| <u>18</u> | |

JUNIOR

Fifth Semester

| | |
|-----------|----------------------------------|
| 4 | Microbiology/BIOL 331-332 |
| 1 | Meth/Mat for Instr Sem/EDCR 321 |
| 0 | Sec Educ Field Exp II+/EDFL 102 |
| 3 | Lit Dev, Strat, Assmts*/MLED 301 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Philosophy II Series/LPHI |
| 4 | College Physics 1/PHYS 105-106 |
| <u>18</u> | |

Sixth Semester

| | |
|-----------|--|
| 4 | Principles of Ecology/BIOL 298-299 |
| 4 | Invert Zoology/BIOL 223-224 <i>or</i> Vertebrate Zoology/BIOL 325-326 |
| 3 | Literature Series/LENG |
| 2 | Science Elective |
| 3 | Meet Need Stu Excp: 7-12/SPED 340* |
| <u>16</u> | |

SENIOR

Seventh Semester

| | |
|-----------|--|
| 2 | Biology Research/BIOL 487-489 <i>or</i> Special Topics in Biol/BIOL 490-495 |
| 3 | Assessment/Evaluation/EDCR 330 |
| 3 | Meth/Mat for Teaching: ESL/ELL*/EDCR 420 |
| 3 | Fine Arts Series/LFIN |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Conc/Methods of Ntr Sci/MLED 302 |
| 0 | Sec Educ Field Exp III+/EDFL 103 |
| <u>17</u> | |

Eighth Semester

| | |
|-----------|---------------------------|
| 3 | Prof Seminar/EDCR 401 |
| 12 | Student Teaching/EDFL 410 |
| <u>15</u> | |

* *Field experience embedded throughout semester (6-15 hours)*

+ *Field experience embedded throughout semester (60 hours)*

Field experiences require a grade of P (pass).

† *Students should work with their academic advisor to determine which science elective course suits their career goals.*

BIOLOGY MINOR

A total of 24 credits of biology is required for a minor. Completion of the following courses will satisfy the requirements for a minor in biology: BIOL 122-123, BIOL 124-125, BIOL 126-127, and 12 credits above BIOL 200.

THE NEXT-STEP PROGRAM

In order to complete the Next Step Program to earn a B.S. degree in Biology, the following courses must be transferred into Gannon or completed in addition to the required courses for the Next Step Program in Biology. Other courses (i.e. chemistry, physics or upper level courses in biology) may also be transferred and used to meet the requirements of the program.

4 Molecular & Cellular Biology/BIOL 122-123
 4 Animal Form & Function/BIOL 124-125
 6 Mathematics/MATH 111, 112, 135, 140, 141, 213*
 39-40 General Electives†
 53-54

JUNIOR

| | |
|--|--|
| 4 Ecosystem Biology & Evolution/ BIOL 126-127 | 4 Biology Electives (200-level or higher)# |
| 4 General Chemistry I/CHEM 111-112 | 4 General Chemistry II/CHEM 114-115 |
| 4 Biology Electives (200-level or higher)# | 4 Genetics/BIOL 265-266 |
| 3 Foundations of Theology/LTHE 101 | 1 Leadership Seminar† |
| | 3 Philosophy of Ethical Responsibility/ LPHI 237 or any LTHE 300 course |
| <hr/> 15 | <hr/> 16 |

SUMMER

4 College Physics 1/PHYS 105-106
 4 College Physics 2/PHYS 108-109
 3 Introduction to Philosophy/LPHI 131

11

SENIOR

| | |
|--|--|
| 2 Biology Research/BIOL 487-489 or Special Topics in Biology/BIOL 490-495 | 6-8 Biology Electives (200-level or higher)# |
| 6-8 Biology Electives (200-level or higher)# | 3 Fine Arts Series/LFIN† |
| 4 Organic Chemistry I/CHEM 221-222 | 3 Senior Seminar/LBST 383† |
| 3 Literature Series/LENG† | 4 Organic Chemistry II/CHEM 224-225 |
| <hr/> 15-17 | <hr/> 16-18 |

* Students interested in pursuing graduate school (M.S. or Ph.D. programs) are strongly encouraged to complete MATH 140 and MATH 213 to fulfill the math requirements.

Please refer to Gannon University's Undergraduate Catalog for course options. Students must meet all prerequisites and/or corequisites to register for a course. Students must complete a total of 21 credits of biology electives (200-level or higher) including 3 labs to graduate with a B.S. in Biology. Please refer to the Biology Department's policy on laboratories associated with upper level (BIOL 200-level) courses. Please refer to notes listed within curriculum matrix in the undergraduate catalog.

† Please refer to Gannon University's Undergraduate Catalog for course options.

BIOLOGY NEXT STEP PROGRAM

| | | | |
|---|----------------|--|----------------|
| LIBERAL STUDIES CORE | (19) | BIOLOGY | (18) |
| ____ LTHE 101 Foundations of Theology | (3) | ____ BIOL 122 Molecular & Cellular Biology | (3) |
| ____ LPHI 131 Introduction to Philosophy | (3) | ____ BIOL 123 Molecular & Cell Lab | (1) |
| ____ LENG Literature Series * | (3) | ____ BIOL 124 Animal Form and Function | (3) |
| ____ LFIN Fine Arts Series * | (3) | ____ BIOL 125 Animal Form and Function Lab | (1) |
| ____ Leadership Seminar | (1) | ____ BIOL 126 Ecosystem Biol. and Evolution | (3) |
| ____ LPHI 237 or any LTHE 300 course | (3) | ____ BIOL 127 Ecosystem Biol. and Evol. Lab | (1) |
| ____ LBST 383 Senior Seminar | (3) | ____ BIOL 265 Genetics | (3) |
| MATHEMATICS | | ____ BIOL 266 Genetics Lab | (1) |
| (choose from courses below) | (6) | One of the following: | (2) |
| ____ MATH 111 College Algebra | (3) | ____ BIOL 487/488/489 | |
| ____ MATH 112 Trigonometry | (3) | ____ Biology Research | |
| ____ MATH 135 Pre-calculus | (3) | ____ BIOL 490-495 Special Topics | |
| ____ MATH 140 Calculus I | (3) | | |
| ____ MATH 141 Calculus II | (3) | | |
| ____ MATH 213 Applied Statistics | (3) | | |
| PHYSICS | (8) | CHEMISTRY | (16) |
| ____ PHYS 105 College Physics 1 | (3) | ____ CHEM 111 General Chemistry I | (3) |
| ____ PHYS 106 College Physics 1 Lab | (1) | ____ CHEM 112 General Chemistry I Lab | (1) |
| ____ PHYS 108 College Physics 2 | (3) | ____ CHEM 114 General Chemistry II | (3) |
| ____ PHYS 109 College Physics 2 Lab | (1) | ____ CHEM 115 General Chemistry II Lab | (1) |
| GENERAL ELECTIVES * | (39-40) | ____ CHEM 221 Organic Chemistry I | (3) |
| ____ LENG 111 College Comp. (opt) | (3) | ____ CHEM 222 Organic Chemistry I Lab | (1) |
| ____ LENG 112 Critical Analysis & Comp. (opt) | (3) | ____ CHEM 224 Organic Chemistry II | (3) |
| ____ LHST 111 History Without Borders (opt) | (3) | ____ CHEM 225 Organic Chemistry II Lab | (1) |
| ____ LTHE Theology II Series * (opt) | (3) | BIOLOGY ELECTIVES | |
| ____ LPHI Philosophy II Series * (opt) | (3) | (Above 200 Level) *†# | (21-22) |
| ____ Social Science Elective * (opt) | (3) | (CHEM 366/367 Structural Biochemistry and CHEM 368 Biochemical Pathways are also options to fulfill the Biology Electives) | |
| ____ SPCH 111 or 113 Public Speaking (opt) | (3) | | |

Note: No more than 4 credits of BIOL 487-489 may be used to fulfill the 21-22 biology electives.

† Note: Students are required to complete a minimum of 3 labs associated with biology electives.

The Next Step program guarantees acceptance of up to 64 credits and allows students to enter Gannon with junior-level status. Only courses in which a grade of "C" (2.0) or higher has been earned are eligible for transfer. At least two years of upper-division, full-time study is required to obtain the Baccalaureate Degree.

Minimum Total Credits: 128

CHEMICAL ENGINEERING

KEITH KRISE, Ph.D., *Program Director*

The Department of Chemistry and Biochemistry offers a cooperative program in Chemical Engineering with the University of Pittsburgh.

This program requires five years of study for completion: three years at Gannon University followed by two years of study at the University of Pittsburgh. Upon completion, the student is awarded two degrees, a B.S. in Chemistry from Gannon University and a B.S. in Chemical Engineering from the cooperating university.

During the period spent at Gannon, the student will take specified courses in Chemistry, Mathematics and Liberal Studies Core and will have the advantage of beginning college-level work in small classes where there is a strong commitment to effective teaching. Upon transfer to the cooperating university, a wide range of professional specializations are available, including the opportunity to participate in a cooperative/work study program. Eligibility requirements for acceptance at the cooperating university are no grades below "C" and a grade point average above 3.0.

Students must complete a transfer application to the cooperating university (<http://www.oafa.pitt.edu/transadm.aspx>). A recommendation from the Chemical Engineering Program Director at Gannon University is required and should be sent along with the application materials. Further information and career counseling are available from the Program Director.

Chemical Engineering Curriculum

(Numerals in front of course indicate credits)

FRESHMAN

Fall

| | |
|-------|-----------------------------------|
| 2 | First-Year Seminar |
| 3 | CHEM 111: General Chemistry I |
| 1 | CHEM 112: General Chemistry I Lab |
| 3 | MATH 140: Calculus I |
| 3 | LENG 111: College Composition |
| 3 | LHST 111: History Without Borders |
| 2 | ME 207: Engineering Graphics |
| 1 | ME 208: Engineering Graphics Lab |
| <hr/> | |
| 18 | |

Spring

| | |
|-------|--------------------------------------|
| 3 | CHEM 114: General Chemistry II |
| 1 | CHEM 115: General Chemistry II Lab |
| 3 | MATH 141: Calculus II |
| 3 | PHYS 210: Fund. of Physics I |
| 1 | PHYS 211: Fund. of Physics I Lab |
| 3 | LTHE 101: Foundations of Theology |
| 3 | LPHI 131: Introduction to Philosophy |
| <hr/> | |
| 17 | |

SOPHOMORE

Fall

| | |
|-------|--------------------------------------|
| 3 | CHEM 221: Organic Chemistry I |
| 1 | CHEM 222: Organic Chemistry I Lab |
| 3 | MATH 242: Calculus III |
| 3 | ME 315: Materials Science |
| 3 | LENG 112: Critical Analysis & Comp |
| 3 | LTHE 201: The Bible: An Introduction |
| <hr/> | |
| 16 | |

Spring

| | |
|-------|------------------------------------|
| 3 | CHEM 224: Organic Chemistry II |
| 1 | CHEM 225: Organic Chemistry II Lab |
| 3 | MATH 243: Calculus IV |
| 3 | PHYS 212: Fund. of Physics II |
| 1 | PHYS 213: Fund. of Physics II Lab |
| 3 | LFIN: Fine Arts Series |
| 3 | LPHI: Philosophy II Series |
| <hr/> | |
| 17 | |

JUNIOR
Fall

| | |
|-----------|---------------------------------------|
| 3 | CHEM 331: Physical Chemistry I |
| 1 | CHEM 332: Physical Chemistry I Lab |
| 3 | CHEM 366: Structural Biochemistry |
| 3 | MATH 312: Statistics |
| 1 | Leadership Seminar |
| 3 | LPHI 237 or any LTHE 300-level course |
| 3 | SPCH 111: Public Speaking |
| <u>17</u> | |

Spring

| | |
|-----------|--|
| 3 | CHEM 334: Physical Chemistry II |
| 1 | CHEM 335: Physical Chemistry II Lab |
| 3 | CHEM 336: Intro to Analytical Chem |
| 2 | CHEM 337: Intro to Analytical Chem Lab |
| 3 | MATH 304: Differential Equations |
| 3 | LENG: Literature Series |
| 3 | LBST 383: Senior Seminar |
| <u>18</u> | |

To complete degree requirements, the following courses are to be taken at the University of Pittsburgh: Social Science, plus additional credits to complete 128 credits total.

CHEMISTRY

KEITH KRISE, Ph.D., *Chairperson*

FACULTY: Professors: Weslene Tallmadge, Lisa Nogaj. *Associate Professors:* Ria Betush, Matthew Heerboth, Keith Krise, Timothy Laher, Christine Saber. *Assistant Professors:* Betty Jo Chitester., *Associate Teaching Professor:* Natalie Stano.

Aims and Objectives

Chemistry is required for a wide range of careers as a result of the technology that permeates our society. Science personnel at all levels, from the technician to the creative researcher, rely heavily on the fundamental principles of chemistry. In addition, careers in the many biological and physical sciences require a background in chemistry. Consequently, students at Gannon University take chemistry courses for different reasons. Some are motivated to pursue careers in chemistry such as research, management and sales. Others take both basic and advanced courses in preparation for work in fields such as medical, engineering, law, and environmental science. For example, chemistry is one of the most commonly chosen majors nationally for students wishing to enter medical and health professional schools. Also, students with an interest in forensic science may take criminal justice courses as technical electives (see advisor).

Essentially, a student at Gannon will follow a sequence of chemistry courses in line with his or her interests, abilities, and vocational goals. There are several credit hours of elective courses in the chemistry degree program, which allows the student to strengthen his or her background in allied sciences such as physics, biology, computer, and mathematics.

The Department occupies the fourth floor of the Zurn Science Center. These spacious facilities contain modern equipment typically found in industrial, academic, and research laboratories. The student, for example, uses the atomic absorption spectrometers, polarograph, refractometer, gas chromatograph, infrared and ultraviolet spectrophotometers, nuclear magnetic resonance and mass spectrometers housed in the Department. Chemistry students have access to computers capable of extensive molecular modeling.

The Department offers to its students the advantages of small classes, individual attention, and frequent contact with staff members. Upper-level chemistry students are required to participate in independent research and study under the guidance of a faculty member.

COURSE DESCRIPTIONS

Courses numbered CHEM 102, 103, 104, 105, 106, 107, 108, 121, or 166 may not be used to fulfill the requirements for a Chemistry major.

CHEM 102: Introduction to Organic Chemistry and Biochemistry

This one-semester course for Occupational Therapy students provides an introduction to the major classes of organic molecules and biomolecules for increased understanding of molecular events in living organisms. Students study the major organic functional groups and learn to draw, name, and identify physical and chemical properties of organic molecules. Students apply this knowledge to the study of biochemistry by interpreting how the molecular structure of carbohydrates, lipids, proteins, enzymes and nucleic acids influences their diverse functions in the body.

3 credits, Fall

CHEM 103: Chemistry of Life I

The course, designed for health professional majors, covers general chemical principles including atomic structure, chemical bonding, properties of the three states of matter, classes of chemical reactions, stoichiometry, acid-base chemistry, thermodynamics, kinetics, and solution chemistry. This course is limited to students enrolled in certain health professional programs, including physician assistant, sport & exercise science and nutrition & human performance.

3 credits, Fall

CHEM 104: Chemistry of Life I Laboratory

Experiments are designed to reinforce the concepts taught in Chemistry of Life I (CHEM 103). Emphasis is on developing safe laboratory technique and proper recording and processing of data.

Corequisite: CHEM 103

1 credit, Fall

CHEM 106: Chemistry of Life II

This course was designed for students in the health sciences. The course will provide students with knowledge of the introductory organic and biological chemistry that is fundamental to understanding molecular events in living organisms. Each class of organic compounds is studied in terms of structure, nomenclature and physical/chemical properties. The portion of the course devoted to biological chemistry emphasizes structural, physical and chemical properties of the major classes of biomolecules including amino acids and proteins, carbohydrates, and lipids.

Prerequisite: CHEM 103

3 credits, Spring

CHEM 107: Chemistry of Life II Laboratory

Experiments are designed to reinforce the concepts taught in CHEM 106 and to acquaint the student with the physical and chemical properties of the major organic functional group compounds as well as biochemically important compounds including proteins, carbohydrates and lipids. Emphasis is on developing safe laboratory technique and understanding concepts.

Corequisite: CHEM 106

Prerequisite: CHEM 104

1 credit, Spring

CHEM 105: Physiological Chemistry

The course provides an introduction to the structure and chemical reactivity of the major organic functional groups pertinent to the study of biological chemistry, structure and function of the major classes of biomolecules including carbohydrates, proteins, lipids and nucleic acids and an overview of the underlying chemical principles and recurring themes of the major metabolic pathways. Course enrollment is limited to nursing and nutrition & human performance majors.

Prerequisite: High school chemistry

3 credits, Fall

CHEM 108: Physiological Chemistry Lab

The course consists of twelve three-hour laboratory periods. Experiments complement the material covered in the lecture course CHEM 105 Physiological Chemistry.

1 credit, Fall

CHEM 111: General Chemistry I

This course represents a study of the fundamental theories and general principles of chemistry. The course is primarily designed as an introductory course for science majors and is a basic prerequisite for additional course work in chemistry. In this course the structure of matter, the relation of chemical structure to chemical and physical behavior of matter, the qualitative and quantitative aspects of chemical reactivity and associated energy changes are studied. In addition, selected topics are covered which illustrate the social relevance of the chemist/scientist and the historical significance of the field of chemistry.

Prerequisite: High School Algebra

3 credits, Fall and Spring

CHEM 112: General Chemistry I Laboratory

Experiments are designed to reinforce the concepts taught in General Chemistry I (CHEM111). Emphasis is on developing safe and proper laboratory technique, as well as proper recording and processing of data. Included in the course are syntheses, analyses (both qualitative and quantitative), instrumental techniques and computational experiments.

Corequisite: CHEM 111

1 credit, Fall and Spring

CHEM 114: General Chemistry II

This course emphasizes basic chemical principles that underlie a more advanced study of the broad field of chemistry. These topics include kinetics, thermodynamics, electrochemistry, acid base chemistry, equilibria, and solution properties.

Prerequisite: CHEM 111

3 credits, Fall and Spring

CHEM 115: General Chemistry II Laboratory

Experiments are designed to reinforce the concepts taught in General Chemistry II (CHEM 114). Emphasis is on developing safe, proper laboratory technique, and proper recording and processing of data. Included in the course are syntheses, analyses (both qualitative and quantitative), instrumental techniques and computational experiments.

Prerequisite: CHEM 112

Corequisite: CHEM 114

1 credit, Fall and Spring

CHEM 121: Introduction to Nanotechnology

This course presents an overview of the field of nanotechnology, the study of objects 1nm-100nm in size. The topics include what nanotechnology is, the basic science for nanotechnology, the properties of nano materials, characterizing nano materials and societal/ethics/business/legal issues in nanotechnology. Nanotechnology is a multi-disciplinary field drawing on physics, chemistry, biology and engineering. How the topics in these diverse fields impact nanotechnology will be presented. The course will also cover how nanotechnology will change society based on the impact on the environment, ethics, law, health and business.

Prerequisite: The ability to perform high school algebra is required.

3 credits

CHEM 166: Issues in Science and Technology

Designed to present the principles of science, particularly chemistry, to enable one to better understand the world. It is also designed to not only improve the student's ability to understand current problems, but also provide the basis for understanding future developments in the area of science and technology as they relate to the environment. *3 credits*

CHEM 221: Organic Chemistry I

In this course, the student will study hydrocarbons, both aliphatic and aromatic compounds. Emphasis is placed upon the structures, properties, syntheses, reactions and uses of these compounds.

Prerequisite: CHEM 114

3 credits, Fall and occasionally Spring

CHEM 222: Organic Chemistry Laboratory I

This course provides the student with an introduction to the laboratory methods and techniques of organic chemistry. Emphasis is placed upon the purification and characterization of organic molecules

Prerequisite: CHEM 115

Corequisite: CHEM 221

1 credit, Fall and occasionally Spring

CHEM 224: Organic Chemistry II

In this course the student will study many monofunctional families of compounds. Emphasis is placed upon the structures, properties, syntheses, reactions and the uses of these compounds.

Prerequisite: CHEM 221

3 credits, Spring

CHEM 225: Organic Chemistry Laboratory II

This course involves experimental studies of the reactions of organic molecules and identification of molecules using infrared and nuclear magnetic resonance spectroscopy.

Prerequisite: CHEM 222

Corequisite: CHEM 224

1 credit, Spring

CHEM 325: Organic Spectroscopic Methods

This course emphasizes theory, interpretation and synthesis of complex proton and carbon nuclear magnetic resonance spectroscopy, including two-dimensional techniques, infrared spectroscopy and qualitative mass spectrometry.

Prerequisite: CHEM 224

3 credits, Fall

CHEM 326: Organic Spectroscopic Methods Laboratory

Application of advanced experimental techniques utilizing modern chemical instrumentation including infrared spectroscopy, nuclear magnetic resonance spectroscopy and mass spectrometry for the determination of organic unknowns. Emphasis is placed on independent research, problem solving, data analysis and interpretation.

Prerequisite: CHEM 225

Corequisite: CHEM 325

1 credit, Fall

CHEM 331: Physical Chemistry I

An introduction to physical chemistry, focusing on the sub-discipline of thermodynamics.

Students examine the behavior of gases and the laws of classical thermodynamics. These concepts are used to interpret chemical and phase equilibria and to develop solution theory.

The course concludes as students connect macroscopic thermodynamic properties to microscopic particle behavior using elementary statistical mechanics.

Prerequisites: MATH 141 and CHEM 221

3 credits, Fall

CHEM 332: Physical Chemistry Laboratory I

A suite of experimental studies to accompany CHEM 331, with an emphasis on developing data processing and report-writing skills.

Prerequisite: CHEM 222

1 credit, Fall

CHEM 334: Physical Chemistry II

An introduction to physical chemistry, focusing on the sub-disciplines of kinetics and quantum mechanics. The course provides an overview of the kinetic theory of reaction rates, reaction dynamics and catalysis. Students then delve into the historical development of quantum theory, examine wave-particle duality and learn the mathematics of wave mechanics. These concepts are applied to simple systems like the particle in a box, harmonic oscillator, rigid rotor and the hydrogen atom. The discussion advances to atomic and molecular structure, chemical bonding and implications for spectroscopic analysis.

Prerequisite: CHEM 331

3 credits, Spring

CHEM 335: Physical Chemistry Laboratory II

A suite of experimental studies to accompany CHEM 334, with an emphasis on developing data processing and report-writing skills.

Prerequisite: CHEM 332

1 credit, Spring

CHEM 336: Introduction to Modern Analytical Chemistry

Introduction to the methods of analysis in modern analytical chemistry. Application of general chemistry principles in the systematic analysis of materials. Classical methods of analysis examined include titrimetry and gravimetry. Instrumental methods include potentiometry, electrolytic deposition, spectrophotometry and chromatography.

Prerequisite: CHEM 114

3 credits, Spring

CHEM 337: Modern Analytical Chemistry Laboratory

Experimental studies utilizing techniques used in modern analytical chemistry laboratories. Emphasis in precise measurements and use of instrumental methods.

Laboratory: Six hours per week.

Corequisite: CHEM 336

Prerequisite: CHEM 115

2 credits, Spring

CHEM 356: Chemical Literature

Designed to acquaint the student with the various sources of literature available today including periodicals and the classical works of reference.

Lecture: One hour per week.

Prerequisite: CHEM 224

1 credit, Spring

CHEM 360: Polymer Science

An overview of polymer science including synthesis, characterization, properties, nomenclature and industrial processing of polymers. Thermodynamics and kinetics will be utilized to describe certain aspects of polymers.

Prerequisites: MATH 140 and CHEM 224

3 credits, Spring

CHEM 361: Advanced Inorganic Chemistry

An advanced study of inorganic chemistry concepts including atomic structure, molecular symmetry and group theory, bonding theories, the solid state, acids and bases, coordination chemistry, organometallic chemistry, and bioinorganic chemistry. The course connects the chemistry of inorganic compounds to their current and emerging applications and presents physical techniques commonly used to study inorganic materials. Recent primary literature articles and reviews are integrated to demonstrate the modern and interdisciplinary nature of inorganic chemistry.

Prerequisite: CHEM 331 or concurrent enrollment

3 credits, Fall

CHEM 362: Advanced Inorganic Laboratory

Preparation techniques of inorganic chemistry.

Laboratory: Three hours per week.

1 credit

CHEM 366: Structural Biochemistry

A systematic study of the biologically important compounds including the amino acids, proteins, nucleic acids, enzymes, carbohydrates and lipids. Emphasis is placed upon the structure, properties, syntheses, reactions and functions of these compounds.

Prerequisite: CHEM 224 or permission of instructor

3 credits, Fall and Spring

CHEM 367: Biochemical Laboratory

An introduction to the laboratory methods and techniques utilized for the isolation, characterization and syntheses of the biologically important compounds. *Priority registration is reserved for students majoring in Biochemistry and Medical Laboratory Science. All others should email the department chair to be added to a wait list and enrolled as space permits.*

Prerequisite: CHEM 225

1 credit, Fall

CHEM 368: Biochemical Pathways

A continuation of the systematic study of the biologically important compounds including amino acids, proteins, enzymes, carbohydrates and lipids. Emphasis is placed upon biochemical pathways and energetics involving these compounds.

Prerequisite: CHEM 366

3 credits, Fall

CHEM 380, 381, 382: Undergraduate Research

Selected topics in the field of chemistry to be solved by the student with advice from the staff.

Prerequisite: Permission of the Instructor

Corequisite: Senior Status

1-3 credits, Fall

CHEM 383, 384, 385: Undergraduate Research

Continuation of CHEM 380, 381, 382.

1-3 credits, Spring

CHEM 402: Advanced Organic Chemistry

A study of topics specialized or current interest in the area of Organic Chemistry.

Prerequisite: CHEM 224

3 credits

CHEM 408: Advanced Instrumental Analysis

An in-depth examination of the major instrumental methods used in analytical chemistry.

Application of advanced chemical principles and fundamental instrumental concepts focusing on how they influence the precision and accuracy of the measurement aspect of analysis.

Techniques examined include Spectrophotometry, Chromatography and Electrochemistry.

The role computers play in modern instruments is examined.

Lecture: Three hours per week.

Prerequisite: CHEM 336

3 credits, Spring

CHEM 409: Advanced Instrumental Analysis Laboratory

Advanced experimental techniques utilizing modern chemical instrumentation. Emphasis in on verifying the chemical principles underlying the method and investigating factors influencing the validity of the analysis.

Laboratory: Three hours per week.

Prerequisite: CHEM 336

1 credit, Spring

CHEM 412: Industrial Internship

Selected students spend an extended period, usually 10-12 weeks during the summer, working in a chemistry laboratory under the direct supervision of a chemist. Where possible, a member of the Gannon faculty will meet regularly with the student and his supervisor to conduct a continuing evaluation of the student's work and progress. At the conclusion of the work period, the student is to write a paper on some phase of his project or experience for submission to his supervisor and faculty advisor and a presentation at a departmental seminar.

Prerequisite: Permission of the Department of Chemistry and Biochemistry and the cooperating laboratory

1-3 credits

CHEM 414: Computational Chemistry

Computational chemistry is a field in the science of chemistry in which chemists use computers and computer software as tools to examine the effect of chemical structure at the molecular and atomic levels on the chemical and physical properties of chemical substances. Computational methods provide powerful tools for the prediction of properties or substances, designing new compounds that have a certain desirable property, examining reaction mechanisms, conformational analysis, examining how structure affects physiological properties of pharmaceuticals, and many other applications. In this course, the student will be presented with a hands-on opportunity to explore the various techniques and use of computational equipment and characterizes the field of computational chemistry.

Prerequisites: CHEM 224; and either CHEM 331 or CHEM 366

are a corequisite or prerequisite.

2 credits, Fall

CHEM 418, 419: Special Topics in Chemistry

Topics of special and/or current interest in all areas of chemistry will be covered. Three topics will normally be covered in depth during the course of a semester. Typical topics include: organosulfur chemistry, organometallic chemistry, heterocyclic chemistry, polymer chemistry, catalysis, chromatography, natural products, photochemistry, nuclear chemistry, clinical chemistry, etc.

1-3 credits

Chemistry Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|-----------|-----------------------------------|
| 3 | CHEM 111: General Chemistry I |
| 1 | CHEM 112: General Chemistry I Lab |
| 3 | MATH 140: Calculus I* |
| 3 | LENG 111: College Composition |
| 2 | First-Year Seminar |
| 4 | Technical Electives** |
| <u>16</u> | |

Spring

| | |
|-----------|--------------------------------------|
| 3 | CHEM 114: General Chemistry II |
| 1 | CHEM 115: General Chemistry II Lab |
| 3 | MATH 141: Calculus II |
| 3 | LENG 112: Cit Analysis & Composition |
| 3 | LTHE 101: Foundations of Theology |
| 4 | Technical Electives** |
| <u>17</u> | |

SOPHOMORE

Fall

| | |
|-----------|--------------------------------------|
| 3 | CHEM 221: Organic Chemistry I |
| 1 | CHEM 222: Organic Chemistry I Lab |
| 3 | PHYS 210: Fund. of Physics I |
| 1 | PHYS 211: Fund. of Physics I Lab |
| 3 | LHST 111: History Without Borders |
| 3 | LPHI 131: Introduction to Philosophy |
| 3 | Social Science |
| <u>17</u> | |

Spring

| | |
|-----------|-------------------------------------|
| 3 | CHEM 224: Organic Chemistry II |
| 1 | CHEM 225: Organic Chemistry II Lab |
| 3 | PHYS 212: Fund. of Physics II |
| 1 | PHYS 213: Fund. of Physics II Lab |
| 3 | LENG: Literature Series |
| 3 | SPCH 111: Public Speaking <i>or</i> |
| | SPCH 113: Human Communication |
| 4 | Technical Electives** |
| <u>18</u> | |

JUNIOR

Fall

| | |
|-----------|--------------------------------------|
| 3 | CHEM 325: Organic Spec Methods |
| 1 | CHEM 326: Organic Spec Methods Lab |
| 3 | CHEM 331: Physical Chemistry I |
| 1 | CHEM 332: Physical Chemistry I Lab |
| 3 | LPHI: Philosophy II Series |
| 3 | LTHE 201: The Bible: An Introduction |
| 3 | Technical Elective** |
| <u>17</u> | |

Spring

| | |
|-----------|--|
| 3 | CHEM 334: Physical Chemistry II |
| 1 | CHEM 335: Physical Chemistry II Lab |
| 3 | CHEM 336: Intro to Analytical Chem |
| 2 | CHEM 337: Intro to Analytical Chem Lab |
| 1 | CHEM 356: Chemical Literature |
| 3 | LPHI 237 <i>or</i> any LTHE 300-level course |
| 1 | Leadership Seminar |
| <u>14</u> | |

SENIOR

Fall

| | |
|-----------|-----------------------------------|
| 3 | CHEM 361: Adv Inorganic Chemistry |
| 4 | Chemistry Electives |
| 1 | CHEM 380–383: Undergrad. Research |
| 3 | LFIN: Fine Arts Series |
| 1 | General Elective |
| 3 | Technical Electives** |
| <u>15</u> | |

Spring

| | |
|-----------|-----------------------------------|
| 7 | Chemistry Electives |
| 1 | CHEM 380–383: Undergrad. Research |
| 3 | LBST 383: Senior Seminar |
| 3 | Technical Electives** |
| <u>14</u> | |

Total credits: 128

* If necessary, students may take MATH 111 and MATH 112 before taking MATH 140 and MATH 141.

** Technical electives are courses listed outside of the Chemistry Department that provide opportunities for students to deepen their knowledge in related fields. The choice of technical electives depends upon the career goal. Your academic advisor can provide guidance in choosing electives.

Upper-level courses in these departments are accepted (i.e., 200-level and higher).

BIOL, BME, CIS, ECE, ENG, ENVR, MATH, ME, PHYS

The following selected courses are also accepted.

BIOL 122/123 (Molecular & Cellular Biology); BIOL 124/125 (Animal Form & Function); BIOL 126/127 (Ecosystem Biology and Evolution); BCOR 111 (Principles of Microeconomics); BCOR 112 (Principles of Macroeconomics); BCOR 214 (Principles of Accounting I); BCOR 215 (Principles of Accounting II); BCOR 240 (Marketing in the Global Environment); BCOR 250 (Management Theory and Practice); BCOR 303 (Legal Environment of Business); CRJS 310 (Investigative Concepts); CRJS 321 (Criminal Evidence); CRJS 325 (Culture Diversity in Criminal Justice); and all CIS courses.

Students may petition the Department Chair with requests outside of this list.

THE NEXT STEP

Baccalaureate Degree Program for Graduates of Two Year Colleges

Chemistry

(Numerals in front of courses indicate credits)

PRE-SENIOR YEAR

- 3 CHEM 221: Organic Chemistry I
- 1 CHEM 222: Organic Chemistry I Lab
- 3 CHEM 224: Organic Chemistry II
- 1 CHEM 225: Organic Chemistry II Lab
- 3 CHEM 336: Intro to Modern Analytical Chemistry
- 2 CHEM 337: Intro to Modern Analytical Chemistry Lab
- 3 PHYS 210: Fundamentals of Physics I
- 1 PHYS 211: Fundamentals of Physics I Lab
- 3 PHYS 212: Fundamentals of Physics II
- 1 PHYS 213: Fundamentals of Physics II Lab
- 3 MATH 140: Calculus I (required)
- 3 MATH 141: Calculus II (required)
- 3 LPHI 131: Introduction to Philosophy
- 3 LTHE 101: Foundations of Theology

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SENIOR YEAR

- 3 CHEM 325: Organic Spectroscopic Methods
- 1 CHEM 326: Organic Spectroscopic Methods Lab
- 3 CHEM 331: Physical Chemistry I
- 1 CHEM 332: Physical Chemistry I Lab
- 3 CHEM 334: Physical Chemistry II
- 1 CHEM 335: Physical Chemistry II Lab
- 1 CHEM 356: Chemical Literature
- 11 Chemistry Electives
- 3 LBST 383: Senior Seminar
- 3 LENG: Literature Series
- 3 LFIN: Fine Arts Series
- 3 LPHI 237 or any LTHE 300-level course
- 1 Leadership Seminar

37

Recommended: Calculus III

Prerequisites

- One year of General Chemistry
- One semester of Calculus

Students will be permitted to take other courses in substitution for any course listed above that they have satisfactorily completed prior to admission into the Next Step program. Students are required to complete 7-19 credits in the Liberal Studies Core. Students may transfer courses equivalent to Foundations of Theology, Introduction to Philosophy, the Literature Series and/or the Fine Arts Series. Students must take the Leadership Seminar, the Theology/Philosophy III Series, and the Senior Seminar or approved capstone at Gannon.

CHEMISTRY MINOR

Students interested in a chemistry minor should follow the matrix below (24 credits total):

| | | |
|------------------|------------------------------|-----------|
| CHEM 111 and 112 | General Chemistry I and Lab | 4 credits |
| CHEM 114 and 115 | General Chemistry II and Lab | 4 credits |
| CHEM 221 and 222 | Organic Chemistry I and Lab | 4 credits |
| CHEM 224 and 225 | Organic Chemistry II and Lab | 4 credits |

An additional 8 credits of upper-level chemistry courses selected from the following list must be completed successfully:

| | | |
|------------------|---|-----------|
| CHEM 325 and 326 | Organic Spectroscopic Methods and Lab | 4 credits |
| CHEM 331 and 332 | Physical Chemistry I and Lab | 4 credits |
| CHEM 334 and 335 | Physical Chemistry II and Lab | 4 credits |
| CHEM 336 and 337 | Introduction to Modern Analytical Chemistry and Lab | 5 credits |
| CHEM 361 and 362 | Advanced Inorganic Chemistry and Lab | 4 credits |
| CHEM 366 and 367 | Structural Biochemistry and Biochemical Lab | 4 credits |
| CHEM 414 | Computational Chemistry | 2 credits |

Students may petition the Department Chair with requests outside of this list.

CHEM 356: Chemical Literature and CHEM 380–385: Undergraduate Research are not accepted toward the chemistry minor.

COMMUNICATION SCIENCES AND DISORDERS

MARY MCDERMOTT, Ed.D., CCC-SLP, *Chair*

Speech Language Pathologists are medical professionals that prevent, assess, diagnose, and treat speech, language, social communication, cognitive communication, and swallowing disorders in children and adults. The Bachelor of Science degree in Communication Sciences and Disorders (CSD) at Gannon University is established as a baccalaureate program that involves a theoretical and practical professional curriculum consisting of liberal core studies, introductory and advanced courses in CSD, and clinical experiences relevant to the discipline and required to achieve the baccalaureate degree in this profession. This curriculum is carefully aligned with the necessary foundation to pursue an advanced degree in speech-language pathology and audiology and licensure requirements for the American Speech-Language and Hearing Association (ASHA).

The Communication Sciences and Disorders undergraduate program prepares students to become health care professionals and educators who provide the highest standard of evidenced-based clinical and person-centered service to a multicultural and diverse population. This undergraduate program provides an academically comprehensive curriculum that prepares students with the theoretical foundation, scientific research, and ethical issues to become compassionate clinicians, critical thinkers, and developing servant leaders.

Gannon's undergraduate 4-year Communication Sciences and Disorders curriculum follows the Liberal Studies core courses and the necessary pre-requisite standard courses for admission to an accredited graduate program in speech-language pathology as qualified by the American Speech-Language and Hearing Association and the Council on Academic Accreditation in Audiology and Speech-Language Pathology.

The 3 + 2 program in Communication Sciences & Disorders/Speech-Language Pathology involves the undergraduate study of Communication Sciences and Disorders with direct admission to the Master of Science degree in Speech-Language Pathology at the Ruskin campus. This track enables a student to fulfill their undergraduate Liberal Studies core courses and the pre-requisite courses for direct admission into the graduate program in Year 1, Year 2, and Year 3. At the end of the spring semester in Year 4, with completion of the first two semesters of the graduate curriculum, they will have successfully acquired the necessary 128 credits to graduate with the B.S. degree in Communication Sciences and Disorders. With successful completion of all six semesters of the graduate curriculum, the student will achieve the Master of Science degree in Speech-Language Pathology.

4-Year Bachelor of Science Admission Requirements

- Overall high school GPA of 3.0 or higher
- SAT Score of 1090 or higher or ACT score of 21 or higher
- Completion of math, biology, and chemistry courses in high school
- Complete application

3 + 2 BS CSD/MS Speech-Language Pathology Admission Requirements

- An overall high school GPA of 3.0 or higher.
- SAT score of 1120 or higher with an ACT score of 24 or higher.
- Minimum of one Letter of Recommendation
- A demonstrated interest through personal essay or experiential education in the field of speech-language pathology.
- Demonstrated proficiency in high school biology and chemistry coursework.

The student's overall GPA will be reviewed at the end of Freshman and Sophomore year. The pre-requisite GPA will be reviewed at the end of the Junior year for admittance to the graduate program.

COURSE DESCRIPTIONS

CSD 202: Introduction to Communication Disorders

Students will learn the various aspects of typical and disordered communication, including speech, language and hearing across the lifespan. The main goal of this course is to increase your understanding of basic communication processes and the challenges faced by individuals with communication disorders. *3 credits*

CSD 302: Anatomy & Physiology of the Speech-Language, Hearing & Swallowing Mechanism

This course will provide a comprehensive overview of the skeletal, muscular, and neurological mechanisms underlying speech motor control, swallowing function, and the hearing mechanism. Students will learn coordinating respiration and upper vocal tract movements through nervous system control for speech and swallowing and the physiological and neural systems for hearing.

Prerequisites: BIOL 115, BIOL 116, BIOL 117, BIOL 118, CSD 202

3 credits

CSD 305: Phonetics

In this course, students learn the production of sounds in general American English speech while learning the acoustic and articulatory properties of place, manner and voicing for each sound. Students will also gain practical skills in transcribing sounds in isolation and in contexts

using the International Phonetic Alphabet, understand dialectal differences, speech rates across the lifespan, and listening and classifying normal speakers. *3 credits*

CDS 308: Normal Speech & Language Development

This course will introduce students to normal speech and language development from the fundamentals of language acquisition theories, building blocks of language, brain and language, genetic and environmental factors that impact speech and speech development, developmental timelines for receptive and expressive communication, and phonological awareness. The course will also provide exposure to research on literacy and language development. *3 credits*

CSD 312: Speech & Hearing Science

Basic science principles such as the evolution of speech production and the physical characteristics of speech sounds, acoustics of vowels and consonants, hearing science, and speech perception are covered in this course. Sound waves, resonance, decibels, and spectrogram readings are included in this course.

Prerequisites: CSD 202, CSD 305 *3 credits*

CSD 315: Introduction to Audiology

In this course, students are introduced to the scope of practice, anatomy & physiology of peripheral and central auditory system, hearing science, air and bone conduction, audiometers and test environments, pure-tone and speech audiometry. Students will also learn the methods and techniques for the assessment, diagnosis, evaluation, and rehabilitation of hearing disorders and the impact of hearing loss on the quality of life. *3 credits*

CSD 418: Communication Disorders in Children and Adults

This course will involve the study of the genetics, etiologies, diagnosis, and interventions for speech, language, and swallowing disorders in adults and children. Students will learn the concepts of prevention, education, advocacy, and treatment of disorders across the lifespan. Prerequisites: CSD 202, CSD 305, CSD 315, CSD 302, CSD 308 *3 credits*

CSD 421: Counseling Individuals & Families with Communication Disorders

This course will involve the didactic review of human responses to loss and counseling techniques. Unique challenges to various communication disorders are covered to provide students with the underlying content needed to prepare for counseling behaviors in practice as a speech-language pathologist.

Prerequisites: CSD 202, CSD 305, CSD 315, CSD 302, CSD 308, CSD 312 *3 credits*

CSD 424: Psychology of Communication

Students will learn how we communicate and the consequences of communication difficulty, dialects of English, the relationship between language and thought, culture, and society, and the relationship between language and the brain and mind, and the difference between listening and hearing.

Prerequisites: CSD 202, CSD 305, CSD 315, CSD 302, CSD 308, CSD 312 *3 credits*

CSD 425: Introduction to Clinical Methods in Speech-Language Pathology

In this course, students will learn the principles and methods to plan and implement diagnostic and intervention procedures for individuals with speech, voice, language, and/or swallowing disorders. During this course, students will understand the case management, documentation, communication, and family/caregiver involvement for a comprehensive therapeutic plan in speech-language therapy that prepares for the transition to clinical practicum.

Prerequisites: CSD 202, CSD 305, CSD 315, CSD 302, CSD 308, CSD 312 *3 credits*

CSD 428: Practicum

This course provides students with an introduction to the skills, competencies, and responsibilities related to the clinical practice of speech-language pathology. Students will gain an understanding of the principles of therapeutic intervention and procedure. Students will develop an increased understanding of the professional issues and clinical responsibilities in providing speech language pathology across the lifespan and within a diverse society. Students will earn 25 supervised, clinical observation hours. *1 credit*

GGSLP 602: Clinical Methods Lab I: Pediatrics

This course provides the introductory knowledge and skills in clinical methods for diagnosis and treatment in communication and/or swallowing disorders in pediatric populations. General principles of clinical observation, assessment, and establishment of treatment goals, report writing, documentation, service delivery in various settings, and client admission and discharge criteria are emphasized. Topics on federal, state, and local laws, guidelines, and statutes in school settings, including FERPA, FAPE, IEPs, and RTI are presented. Goal writing in educational and other settings is highlighted including SMART goals and alternatives. Students will also become familiar with the University clinic and clinical handbook. Multicultural considerations in intervention of children with communication and/or swallowing disorders will also be addressed. *1 credit*

GGSLP 605/607: Speech Sound Disorders & Lab

This course is designed to give students a foundation in the prevention, assessment, and treatment of speech sound disorders in children, emphasizing articulation and phonological delays. Students will initially learn foundation material such as normal acquisition of speech production skills in childhood, and characteristics of the speech sounds of English. Specific approaches and techniques for the remediation of the disorders will be presented. Multicultural issues in the assessment and treatment of sound speech disorders will also be addressed, as well as counseling strategies. *3 credits*

GGSLP 608: Language Disorders in Children

This course introduces basic principles of prevention, assessment, and intervention for children with language impairments at the prelinguistic, emerging and developing language phases. Language differences versus language disorders will be addressed as well as complex medical concerns, etiologies, co-morbidities, and counseling strategies. Multicultural issues in the assessment and treatment of language disorders will be addressed as well. *2 credits*

GGSLP 610: Diagnostic Methods in Speech-Language Pathology

This course is designed to provide students with a general understanding of the principles of diagnosis and evaluation of speech and language disorders. Students will gain experience in taking case histories, formulating an assessment battery, evaluating patients, writing the diagnostic reports, and interpreting the data to parents and/or involved disciplines. Students will be acquainted with fundamental principles and pitfalls to consider when making psychometric decisions in the assessment of speech and language skills. Multicultural issues will also be addressed, as well as counseling strategies. *3 credits*

GGSLP 612: School-Age Language Disorders

This course will provide instruction in language disorders in school-age children and adolescents. Topics include assessment, collaborative intervention, and social, cultural, and linguistic implications for individuals with language disorders. Emphasis will be placed on the development of curriculum-based literacy skills and collaborative services delivery models. *2 credits*

GGSLP 615: Neuroscience for Speech Language Pathology

This course is an intensive analysis and study of neuroanatomy and neurology for speech language pathology. It will cover the anatomy and neurological function of the central and peripheral nervous systems, embryology of the nervous system, completion of a neurological exam, taxonomy, anatomy of the diencephalon, basal ganglia, and ventricles, and neurology of speech, language, hearing, and cognition. *3 credits*

GGSLP 618: Clinic I

This course provides students with their first clinical experiences with children and adults with communication disorders. The clinical experience will be supervised by program faculty in the University clinic or local sites. *1 credit*

GGSLP 621/622: Adult-Cognitive Communicative Disorders & Lab

In this course, students learn about the evaluation and management of adult-cognitive communication disorders including concussion, TBI, CVA, aphasia, Parkinson's disease, and dementia. The lab will involve the use of diagnostic tools and protocols, application of evidence-based interventions, and management of adult cognitive-linguistic disorders.

3 credits

GGSLP 623/626: Motor Speech Disorders & Lab

This course is designed to provide a comprehensive overview of acquired and developmental motor speech disorders in child and adult populations. The students will learn to differentiate the characteristics of disorders such as apraxia and dysarthria of speech from cognitive-linguistic, neurological non-organic disorders such as apraxia. The lab will involve critical-thinking skills as students will be introduced to the clinical applications to differentially diagnose neuro-motor speech disorders, learn to provide interventions, and understand the management of motor speech disorders in children and adults.

3 credits

GGSLP 624: Fluency Disorders

This course introduces fluency and fluency disorder terminology, classification, psychosocial impact, nature of stuttering, assessment, and treatment across the lifespan.

2 credits

GGSLP 625: Clinical Methods Lab II: Adults

This course is designed to advance the student's clinical skills for greater independence taking patient history, selection of diagnostic tools, critical thinking for differential diagnosis of speech disorders in children and adults, writing comprehensive evaluations, and presenting case studies to peers to enhance verbal skills for all settings served by speech-language pathologists.

1 credit

GGSLP 627/629: Voice & Velopharyngeal Disorders & Lab

This course builds upon foundational courses and introduces students to cleft lip and palate, assessing and treating velopharyngeal function and speech resonance, feeding concerns, anatomy and physiology of phonation, structural, neurologic, and psychogenic voice disorders, voice assessment, voice treatment, laryngectomy, tracheostomy, and singing. The lab addresses assessment, evaluation, and therapy.

3 credits

GGSLP 628: Clinic II

This course is the second in a series of early clinical experiences with children and adults with communication disorders. The clinical experience will be supervised by program faculty in the University clinic or local sites.

1 credit

GGSLP 630: Principles of Research & Evidence Based Practice

This course is the foundation for the research thread throughout the curriculum and will prepare the student for the synthesis and application of research within the scope of practice of speech-language pathology. This course will cover the topics of the scientific method, types of research, idea generation and innovation, identifying and locating relevant resources, how to read scientific literature, research ethics, statistics, formatting references, and literature review.

2 credits

GGSLP 632: Disorders in Special Populations

This course is designed for graduate level clinicians to gain knowledge in the medical, neurological, anatomical, and cognitive disorders of patients with specialized communication needs including patients with craniofacial anomalies, genetic syndromes, autism, central auditory processing, and current issues facing speech-language pathologists.

2 credits

GGSLP 638: Clinic III

This course is the third in a series of early clinical experiences with children and adults with communication disorders. The clinical experience will be supervised by program faculty in the University clinic or local clinical sites.

2 credits

GGSLP 733: Aural Rehabilitation

This course covers the topics related to aural rehabilitation including the impact of childhood hearing loss on families, family counseling, hearing aids and ear molds, cochlear implants, classroom acoustics, assistive listening devices, communication options, education of children with hearing loss, developing listening, literacy, and speaking skills, adults with hearing loss, speechreading, communication strategies training, and co-morbidities. *2 credits*

GGSLP 736/737: Swallowing Disorders and Lab

This course builds on prior courses with a focus on swallowing disorders. The course begins with examination of the upper aero-digestive tract developmental anatomy and physiology and neurogenic and structural dysphagia, and continues to instrumental and bedside evaluation, treatment strategies, ethical issues, and classification of swallowing disorders. The lab will provide students with an overview of the diagnostic protocols, medical assessments, bed-side evaluations, radiological evaluations, and evidence-based interventions for adult and child populations with swallowing disorders. *3 credits*

GGSLP 739: Hearing Disorders

This course is designed to focus on hearing disorders and will cover the topics of incidence and impact of conductive and sensorineural hearing loss, screening hearing impairment and disability, screening middle ears, comprehensive aural rehabilitation, screening and treating auditory processing disorder, interpreting audiograms, genetic and non-genetic etiologies, counseling and healthy coping strategies, and classroom acoustics/amplification. *3 credits*

GGSLP 743: Augmentative and Alternative Communication

This course is designed to expose students to augmentative and alternative forms of communication used to support or treat patients with communication disorders. The types of communication covered in this course include messages, symbols, rate enhancement, low-tech devices, high-tech devices, programming devices, training users and communication partners, toting and mounting communication devices, and report writing. *3 credits*

GGSLP 746: Professional Issues

This course is designed to build the student's professional competency, preparation for certification/licensure, and future employment. Topics covered within the course include professional ethics, certification/licensure requirements, accreditation process, clinical fellowship, continuing education, tele-practice, billing and coding, advocacy, marketing, private practice, doctoral education, scope of practice, and best practices to seek employment. *3 credits*

GGSLP 748: Clinic IV

This course is the fourth in a series of clinical experiences with children and adults with communication and/or swallowing disorders. This course is a more intensive and progressive experience supervised by clinical educators off-site. *4 credits*

GGSLP 758: Clinic V

This course is the fifth in a series of clinical experiences with children and adults with communication and/or swallowing disorders. This is a more intensive and progressive experience supervised by clinical educators off-site. *4 credits*

GGSLP 768: Clinic VI

This is the final clinical experience with children and adults with communication and/or swallowing disorders. This experience is a more intensive and progressive experience supervised by clinical educators off-site. *4 credits*

GGSLP 780: Capstone

This course is designed to serve as the final culminating experience within the curriculum. The student will integrate their didactic, clinical, research, and other experiential learning into a final portfolio and presentation. *2 credits*

COMMUNICATION SCIENCES AND DISORDERS
Recommended Schedule of Courses
(Numerals in front of courses indicate credits)
FRESHMAN
Fall

- 2 First Year Seminar/FYS
- 3 College Composition/LENG 111
- 4 Human A&P I and Lab/BIOL 115 & 116
- 3 Found. of Theo. & Christ. Moral./LTHE 101
- 3 Introduction to Philosophy/LPHI 131

 15

Spring

- 3 History without Borders/LHST 111
- 3 Critical Analysis & Composition/LENG 112
- 4 Human A& P II and Lab/BIOL 117 & 118
- 4 Chemistry of Life I and Lab/CHEM 103 & 104
- 3 Speech/SPCH*

 17

SOPHOMORE
Fall

- 3 Introduction to Communication Disorders/CSD 202
- 3 Concepts in Physics/PHYS 101
- 3 Intro to Psychology/PSYC 111
- 3 The Bible: An Introduction/LTHE 201
- 3 Philosophy II Series/LPHI*

 15

Spring

- 3 Phonetics/CSD 305
- 3 Introduction to Audiology/CSD 315
- 3 Applied Statistics/MATH 213 *or* Psych Statistics/PSYC 211
- 3 Literature Series/LENG*
- 6 General Electives

 18

JUNIOR
Fall

- 4 Research Methods and Lab/PSYC 303
- 3 Fine Art Series/LFIN*
- 3 Anat. & Physiology of Communication/CSD 302
- 6 General Electives

 16

Spring

- 1 Leadership Seminar*
- 3 LTHE III* *or* LPHI 237 Ethical Responsibility
- 3 Normal Speech & Language Development/CDS 308
- 3 Speech & Hearing Science/CSD 312
- 6 General Electives

 16

SENIOR
Fall

- 3 Comm. Disorders in Children & Adults/CSD 418
- 3 Counseling Individuals & Families/CSD 421
- 3 Psychology of Communication/CSD 424
- 6 General Electives

 15

Spring

- 3 Intro. To Clinical Methods in SLP/CSD 425
- 1 Practicum in SLP/CSD 428
- 3 Senior Capstone*
- 9 General Electives

 16

* Please refer to the undergraduate catalog for course options.

COMMUNICATION SCIENCES AND DISORDERS**Recommended Schedule of Courses with a Study Abroad Semester***(Numerals in front of courses indicate credits)***FRESHMAN***Fall*

- 2 First Year Seminar/FYS
- 3 College Composition/LENG 111
- 4 Human A&P I and Lab/BIOL 115 & 116
- 3 Found. of Theo. & Christ. Moral./LTHE 101
- 3 Introduction to Philosophy/LPHI 131

15*Spring*

- 3 History without Borders/LHST 111
- 3 Critical Analysis & Composition/LENG 112
- 4 Human A&P II and Lab/BIOL 117 & 118
- 4 Chemistry of Life and Lab I/CHEM 103 & 104
- 3 Speech/SPCH*

17**SOPHOMORE***Fall*

- 3 Introduction to Communication Disorders/CSD 202
- 3 Concepts in Physics/PHYS 101
- 3 Intro to Psychology/PSYC 111
- 3 The Bible: An Introduction/LTHE 201
- 3 Literature Series/LENG*

15*Spring*

- 3 Phonetics/CSD 305
- 3 Introduction to Audiology/CSD 315
- 3 Applied Statistics/MATH 213 *or* Psych. Statistics/PSYC 211
- 3 Anat. & Physiology of Communication/CSD 302
- 6 General Electives

18**JUNIOR***Fall – Recommended Study Abroad Semester†*

- 3 Philosophy II Series/LPHI*
- 3 Fine Art Series/LFIN*
- 3 LTHE III* *or* LPHI 237 Ethical Responsibility
- 6 General Electives

15*Spring*

- 1 Leadership Seminar*
- 4 Research Methods and Lab/PSYC 303
- 3 Normal Speech & Language Development/CDS 308
- 3 Speech & Hearing Science/CSD 312
- 6 General Electives

17**SENIOR***Fall*

- 3 Comm. Disorders in Children & Adults/CSD 418
- 3 Counseling Individuals & Families/CSD 421
- 3 Psychology of Communication/CSD 424
- 6 General Electives

15*Spring*

- 3 Intro. To Clinical Methods in SLP/CSD 425
- 1 Practicum in SLP/CSD 428
- 3 Senior Capstone*
- 9 General Electives

16

3 + 2 CSD/MASTER IN SPEECH-LANGUAGE PATHOLOGY**Recommended Schedule of Courses***(Numerals in front of courses indicate credits)***FRESHMAN (YEAR 1)***Fall*

- 2 First Year Seminar/FYS
- 3 College Composition/LENG 111
- 4 Human A&P I and Lab/BIOL 115 & 116
- 4 Chemistry of Life I and Lab/
CHEM 103 & 104
- 3 Intro. to Communication Disorders/
CSD 202

16*Spring*

- 3 Introduction to Audiology/CSD 315
- 3 Critical Analysis & Composition/
LENG 112
- 4 Human A& P II and Lab/BIOL 117 & 118
- 3 Found. of Theo. & Christ. Moral./
LTHE 101
- 3 Speech/SPCH* (SPCH 111 *or* SPCH 113)

16**SOPHOMORE (YEAR 2)***Fall*

- 3 History without Borders/LHST 111
- 3 Concepts in Physics/PHYS 101
- 3 Intro to Psychology/PSYC 111
- 3 The Bible: An Introduction/LTHE 201
- 3 Introduction to Philosophy/LPHI 131
- 3 Phonetics/CSD 305

18*Spring*

- 3 Literature Series/LENG*
- 3 Applied Statistics/MATH 213 *or*
Psych. Statistics/PSYC 211
- 3 Philosophy II Series/LPHI*
- 3 Anatomy & Physiology of
Communication/CSD 302
- 3 Fine Art Series/LFIN*
- 3 General Electives

18**SUMMER (YEAR 2)**

- $\frac{1}{1}$ Practicum/CSD 428

JUNIOR (YEAR 3)*Fall*

- 4 Research Methods and Lab/PSYC 303
- 3 General Electives
- 3 Normal Speech & Language
Development/CSD 308
- 3 Speech & Hearing Science/CSD 312
- 3 General Electives
- 1 Leadership Seminar *

17*Spring*

- 3 General Electives
- 3 LTHE III* *or*
LPHI 237 Ethical Responsibility
- 3 Comm. Disorders in Children & Adults/
CSD 418
- 3 Counseling Individuals & Families/
CSD 421
- 3 Introduction to Clinical Methods in SLP/
CSD 425
- 3 Senior Capstone*

18

SENIOR (YEAR 4)

Fall

- 2 School-Age Lang. Disorders/GGSLP 612
- 3 Speech Sound Disorders & Lab/
GGSLP 605 & 607
- 2 Language Disorders in Children/
GGSLP 608
- 3 Diagnostic Methods in SLP/GGSLP 610
- 1 Clinical Methods Lab I: Pediatrics/
GGSLP 602
- 1 CLINIC I/GGSLP 618

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Spring

- 3 Motor Speech Disorders & Lab/
GGSLP 623 & 626
- 3 Neuroscience for Speech Pathology/
GGSLP 615
- 3 Voice & Velopharyngeal Disorders &
Lab/GGSLP 627 & 629
- 2 Fluency Disorders/GGSLP 624
- 2 Principles of Research & EBP/
GGSLP 630
- 1 CLINIC II/GGSLP 628

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SUMMER (YEAR 4)

- 3 Adult Cognitive & Comm. Disorders/
GGSLP 621 & 622
- 1 Clinical Methods Lab II: Adults/
GGSLP 625
- 2 Disorders in Special Populations/
GGSLP 632
- 2 CLINIC III/GGSLP 638

8

YEAR 5

Fall

- 2 Aural Rehabilitation/GGSLP 733
- 3 Swallowing Disorders & Lab/
GGSLP 736 & 737
- 3 Hearing Disorders/GGSLP 739
- 4 CLINIC IV/GGSLP 748

12

Spring

- 3 Augmentative & Alternative
Communication/GGSLP 743
- 3 Professional Issues/GGSLP 746
- 4 CLINIC V GGSLP 758

10

SUMMER

Fall

- 2 Capstone/GGSLP 780
- 4 CLINIC VI/GGSLP 768

6

FORENSIC SCIENCE

TBA, *Chairperson*

FACULTY: TBA

Aims and Objectives

The Forensic Science major at Gannon University allows students to focus their training in the area of biology or chemistry. Students who complete a degree in Forensic Science will be prepared for direct placement in the field or to continue their education in graduate or professional programs.

There are 15 semester hours of upper-level forensic science courses beyond the foundational courses in chemistry, biology, physics and math. The foundational courses include four semesters of chemistry with labs, two semesters of biology with labs, two semesters of physics with labs, two semesters of calculus, and one semester of statistics.

Students in the Forensic Science major will gain practical experience through the completion of a required research project or internship. This practical experience will facilitate employment opportunities following graduation. The employment opportunities within the northeast region of the U.S. for forensic technicians are particularly optimistic, and employment for forensic technicians is expected to grow by 6% from 2012 through 2022. Employment opportunities, especially in a consulting or full-time position, are also available in rapidly developing countries which are establishing forensic labs and programs.

Beyond entering the forensic field directly after graduation, there are many other vocational opportunities or opportunities for continuation into graduate degree programs. The comprehensive curriculum is particularly suited to provide Gannon University students with the ability to pursue diverse career or educational options after graduation. Successful graduates may enter Master's or Ph.D. programs, medical school, dental school, or law school. Alternatively, students may prepare for certification as a Crime Scene Investigator.

Forensic Science Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First Year Seminar/CRJS 108
- 3 College Composition/LENG 111
- 4 General Chemistry I and Lab/
CHEM 111 & 112
- 3 Calculus I/MATH 140
- 4 Mol & Cellular Biology and Lab/
BIOL 122 & 123

16

Spring

- 3 Critical Analysis & Comp/LENG 112
- 4 General Chemistry II and Lab/
CHEM 114 & 115
- 3 Foundations of Theology/LTHE 101
- 3 Calculus II/MATH 141
- 4 Animal Form & Function & Lab/
BIOL 124 & 125

17

SOPHOMORE

Fall

- 4 Organic Chemistry I and Lab/
CHEM 221 & 222
- 4 Fund of Physics I: Mechanics & Lab/
PHYS 210 & 211
- 3 Intro to Psyc/PSYC 111
- 3 Intro to Philosophy/LPHI 131
- 3 Criminalistics I/CRJS 210

17

Spring

- 4 Organic Chemistry II and Lab/
CHEM 224 & 225
- 4 Fund of Physics II: Fluids &
Thermodynamics & Lab/
PHYS 212 & 213
- 3 SPCH 111 or SPCH 113*
- 4 Forensic Biology and Lab/
FRSC 261 & 262
- 3 Applied Statistics/MATH 213

18

JUNIOR

Fall

- 3 Investigative Concepts/CRJS 310
- 4 Specialized Science Elective
- 4 Specialized Science Elective
- 3 Philosophy II Series*/LPHI
- 3 LPHI 237 or any LTHE 300 course

17*Spring*

- 1 Leadership Seminar*
- 5 Intro to Modern Anal Chem & Lab/
CHEM 336 & 337
- 3 Criminal Law and Proc/CRJS 320
- 3 The Bible: An Intro/LTHE 201
- 4 Forensic Chemistry and Lab/
FRSC 361 & 362
- 2 Forensic Microscopy/FRSC 350

18

SENIOR

Fall

- 3 Fine Arts*/LFIN
- 3 Criminal Evidence/CRJS 321 or
Expert Witnessing/CRJS 362
- 4 Structural Biochemistry and Lab/
CHEM 366 & 367
- 4 Specialized Science Elective
- 3 Specialized Science Elective

17*Spring*

- 3 Senior Seminar/LBST 383
- 4 Advanced Forensic Science and Lab/
FRSC 461 & 462
- 4 Specialized Science Elective
- 3 History without Borders/LHST 111
- 3 Literature Series*/LENG

17

* Please refer to the undergraduate catalog for course options.

ADDITIONAL SPECIALIZED SCIENCE ELECTIVES: 19 CREDITS, CHOOSE ONE SET (MUST INCLUDE FRSC 480 AS PART OF CREDITS FOR EACH TRACK)**BIOLOGY TRACK**

Cellular Biochemistry and Lab/
BIOL 373 & 374

Microbiology & Lab/BIOL 331 & 332

Genetics and Lab/BIOL 265 & 266

Cell Biology & Lab/BIOL 375 & 376

Environ Toxicology & Lab/ENV 400 & 401

Human Gross Anatomy & Lab/
BIOL 365 & 366

Undergraduate Research
or Internship/FRSC 480

CHEMISTRY TRACK

Computational Chemistry/CHEM 414

Instrumental Analysis & Lab/
CHEM 408 & 409; **Required in this track**

Inorganic Chemistry/CHEM 361

Physical Chem & Lab/CHEM 331 & 332

Organic Chem & Lab III/CHEM 323 & 324

Chemical Literature/CHEM 356

Polymer Chemistry/CHEM 360

Environmental Toxicology & Lab/
ENV 400 & 401

Undergraduate Research
or Internship/FRSC 480

COURSE DESCRIPTIONS

FRSC 261: Forensic Biology

This course is an introduction to the fundamentals of forensic DNA analysis. Topics will include the basic structure of DNA, sample handling, analysis and quality assurance. The student will gain an understanding of the structural components of DNA, the application of protocols for the collection and storage of forensic samples, the extraction and amplification of DNA from samples, the application of DNA analysis in the legal system, and the utilization of DNA databases in forensics.

Corequisite: FRSC 262

Prerequisites: CHEM 221 & 222; BIOL 122 & 125

3 credits, Spring

FRSC 262: Forensic Biology Lab

This laboratory course consists of experiments designed to complement the material in FRSC 261. Experimental skill sets related to DNA analysis will be emphasized. The student will learn the appropriate use of laboratory notebooks and reports, the use of laboratory protocols surrounding forensic samples involving DNA evidence, and the application of DNA technology in forensic analysis.

Corequisite: FRSC 261

Prerequisites: CHEM 221 & 222; BIOL 122, BIOL 125

1 credit, Spring

FRSC 350: Forensic Microscopy

This course is an introduction to microscopy with a focus on practical applications in forensics. Topics will include basic optics, behavior of electromagnetic radiation, components of microscopes, and applications of forensic microscopy. The course will be lecture-based with a hands-on component.

Prerequisites: BIOL 122-125; CHEM 224; PHYS 210, 211, 212, 213,
or permission of instructor

2 credits, Spring

FRSC 361: Forensic Chemistry

A study of the application of analytical, chemical principles to the forensic science field. Topics include quality control, laboratory protocol, basic instrumentation, matrix effects, and quantitative/qualitative analysis. The students will demonstrate an understanding of the application of analytical principles to forensic samples, the use of laboratory protocols surrounding forensic samples, the use of calibration, quality control and method validation for forensic samples, the principles and application of chromatography, immunoassays, and spectroscopy in forensic analysis, and analytical techniques for drug analysis of acidic drugs.

Corequisite: FRSC 362

Prerequisite: CHEM 224 & 225

3 credits, Spring

FRSC 362: Forensic Chemistry Lab

This laboratory course consists of experiments designed to complement the material in FRSC 361. Experimental skill sets will be emphasized, and will focus on handling, processing, and interpretation of results of common forensic samples analyzed for chemical content. Particular focus will be placed on chromatographic and spectroscopic techniques, but other techniques may also be considered in both a hands-on and simulated setting. By the completion of the course, students will have the necessary skillset for basic chemical analysis of commonly encountered forensic samples. The student will demonstrate an understanding of the appropriate use of laboratory notebooks and reports, the use of laboratory protocols surrounding forensic samples, the use of calibration, quality control and method validation for forensic samples, the application of chromatography and spectroscopy in forensic analysis, and analytical techniques for drug analysis of acidic drugs.

Corequisite: FRSC 361

Prerequisite: CHEM 224 & 225

1 credit, Spring

FRSC 461: Advanced Forensic Science

This course continues the study of forensic biology and forensic chemistry at the advanced level. Topics include the forensic analysis and the underlying principles associated with drugs, synthetic polymers, natural polymers (including DNA), and colorants. Textbooks and primary journal articles will be used as resources in this course. The student will gain an understanding of advanced principles of polymers and nucleic acids, the application of instrumental analysis to the quantitative, qualitative and comparative analysis of drugs, polymers and colorants, the challenges, solutions, and the future of forensic DNA analysis, analytical techniques for drug analysis of basic drugs, and the primary literature and its use in research and forensic science advancement.

Corequisite: FRSC 462

Prerequisite: FRSC 261, 350, 361; BIOL 345; CHEM 408

3 credits, Spring

FRSC 462: Advanced Forensic Science Lab

This laboratory course consists of experiments designed to complement the material in FRSC 461. Advanced application of experimental skill sets in combustion, DNA analysis, serological testing, and drug analysis, including reporting, will be emphasized. Additionally, data collection and professional reporting of results to the scientific and forensic community will be reviewed and required. The student will demonstrate an understanding of analysis of combustibles, advanced-level application and interpretation of results for serological and DNA testing of forensic samples, advanced-level application and interpretation of results for drug analysis, and how to construct lab reports in a professional science format relevant to the forensic field.

Corequisite: FRSC 461

Prerequisites: FRSC 261, 350, 361; BIOL 345; CHEM 408

1 credit, Spring

FRSC 480: Forensic Research/Internship

This course is meant to provide the students with an individualized, hands-on learning experience in a mentored setting. Students will be exposed to selected topics in the field of forensic biology or chemistry to be solved by the students with advice and oversight from the faculty, with mentorship from the staff, or professional supervisor. Settings could include crime laboratories, research laboratories, federal or state agencies, or other sites approved by staff overseeing the course.

Prerequisite: Sophomore standing or higher; permission of instructor

1-3 credits

MATHEMATICS

GEOFFREY DIETZ, *Chairperson*

FACULTY: *Professors:* Michael Caulfield, Geoffrey Dietz, David Prier. *Associate Professor:* Patrick Headley. *Assistant Professors:* Christine Cedzo, Richard Ligo.

Aims and Objectives

Mathematics majors at Gannon must satisfactorily complete a minimum of forty-eight credits ranging over such areas as discrete mathematics, calculus, abstract algebra, mathematical analysis, probability, statistics, linear algebra, differential equations, and mathematical modeling. In addition, mathematics majors will receive a significant career-enhancing experience through placement in an appropriate internship position or through a challenging undergraduate research project.

The Mathematics curriculum is designed to allow students to develop a strong secondary interest in allied fields such as business, computer science, economics, physics, biology, chemistry, engineering or education. There is ample opportunity to select the most beneficial combination of courses to achieve the student's goals. The content of a particular student's curriculum requires department approval to ensure proper competency by graduation.

Mathematics majors receive preparation for the first Actuarial Exam administered by the Society of Actuaries. Students who pursue a concentration in Actuarial Science will receive preparation for two additional exams.

This competency required of students in mathematics has resulted in careers in research, in education at all levels, and in technical positions in industry and government. Mathematicians are increasingly in demand in today's employment market. Mathematics majors, by satisfying additional requirements of the School of Education, can earn Teacher Certification in Secondary Education for the State of Pennsylvania.

COURSE DESCRIPTIONS

MATH 055: Algebra Refresher

Exponents, polynomial and rational expressions, factoring, linear equations and inequalities, rational equations, graphing, functions, and applications. This course will meet 4 hours per week during a regular semester, but will count as 3 credits of load for student financial aid and quality point average considerations. It may not be used to satisfy any graduation requirements in any degree program.

Prerequisite: One year of high-school algebra

3 credits (see description)

MATH 100: First Year Seminar

This course is a discussion/experience-based course to orient the new students to Gannon University, to introduce the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life and to encourage development of academic, personal and spiritual aspects of the student's life.

2 credits

MATH 101: Mathematics in Human Progress

Most of the mathematics discussed has been developed in the last century. Topics covered are based on down-to-earth, real-life problems and will include: Mathematics of social choice including group decision making and democratic voting methods; Management science including methods for solving problems involving organization and management of complex activities; Growth and symmetry including population growth, geometrical patterns of biological growth and fractals.

Prerequisite: Two years of high-school algebra or MATH 055

3 credits, Spring

MATH 103: Quantitative Literacy

This course covers a broad array of practical mathematical topics found in everyday life. Topics include: number sense, charts and graphs, basic probability and statistics, linear and exponential models, financial mathematics, geometry, and logic.

Prerequisite: Two years of high school algebra or MATH 055

3 credits, Fall

MATH 105: Fundamentals of Mathematics

This course investigates the nature of mathematical relationships through problem solving. Topics include basic number theory, algebraic topics, geometry, and systems of numeration.

Prerequisite: Two years of high school algebra.

3 credits, Spring

MATH 111: College Algebra

Polynomial, rational, radical, exponential, and logarithmic functions and equations; systems of equations; matrices and determinants; sequences and series; binomial theorem.

Prerequisite: Two years of high school algebra or MATH 055

3 credits, Fall, Spring, online

MATH 112: Trigonometry

Trigonometric functions, radian measure, trigonometric identities and equations, solution of triangles, vectors.

Prerequisite: MATH 111, or concurrently with MATH 111 or equivalent competency.

3 credits, Fall, Spring

MATH 115: Applied Mathematics for Business

The course provides a mathematical foundation for students majoring in business. Topics include linear, quadratic, exponential, and logarithmic functions; mathematics of finance; limits; differentiation; and applications of differentiation. Applications to business and economics are emphasized throughout the course.

Prerequisite: Two years of high school algebra. *3 credits, Fall, Spring*

MATH 135: Precalculus

The course addresses concepts in algebra and trigonometry through the use of functions. The relationship between functions and their graphs is examined in detail. The course also covers topics in the mathematics of functions such as composition and inverses. Rates of change are studied with a view toward calculus.

Prerequisite: Two years of high school algebra. *3 credits*

MATH 140: Calculus 1

Limits; derivatives of algebraic and trigonometric functions; graphing; related rates; optimization problems.

Prerequisite: Trigonometry. *3 credits, Fall, Spring*

MATH 141: Calculus 2

The definite and indefinite integrals; applications of integration; techniques of integration; calculus of the exponential, logarithmic, and other transcendental functions.

Prerequisite: MATH 140 *3 credits, Fall, Spring*

MATH 213: Applied Statistics

Introduction to statistics and probability designed for all majors. Topics include measures of central tendency and dispersion, combinations and permutations, discrete and continuous probability distributions, normal probability distributions, sampling distributions, testing hypotheses, Chi-Square applications, linear regression and correlation.

Prerequisite: High school algebra *3 credits, Fall, Spring*

MATH 222: Discrete Mathematics 1

Logic, sets, methods of mathematical proof, functions, mathematical induction, counting methods, recurrence relations, graphs.

Prerequisite: MATH 111, MATH 115 or MATH 140 *3 credits, Fall*

MATH 223: Discrete Mathematics 2

Algorithms, relations, topics in graph theory, tree traversal, spanning trees, Boolean algebra, logic gates, circuits, automata, Turing machines.

Prerequisite: MATH 222 *3 credits, Spring*

MATH 226: Geometry

Synthetic, analytic, metric, and transformational approaches to geometry, emphasizing the importance of definitions, axioms, and proof in geometry. Ancient and modern approaches to axioms, Euclid's Elements, triangle concurrences, plane isometries, and symmetry groups. Coordinate, taxicab, and hyperbolic geometries including the Poincare disk model. Use of geometric software.

Prerequisite: MATH 222 *3 credits, Fall, even years*

MATH 242: Calculus 3

Infinite sequences and series; power series; Taylor series and polynomials; parametric equations; polar coordinates; vectors in the plane and space; vector-valued functions.

Prerequisite: MATH 141 *3 credits, Fall, Spring*

MATH 243: Calculus 4

Partial differentiation; multiple integration; vector calculus.

Prerequisite: MATH 242 *3 credits, Fall, Spring*

MATH 252: Linear Algebra

Systems of linear equations; matrix algebra; determinants; vector spaces; linear transformations; eigenvalues and eigenvectors; inner products.

Prerequisite: MATH 242

3 credits, Spring

MATH 260: History of Mathematics

Survey of the development of mathematics from the earliest historic times to the present.

A true appreciation of mathematics is developed through the knowledge of the history of mathematics. The cultural and historical significance of mathematics will be discussed.

Prerequisite: MATH 140

3 credits, Spring, odd years

MATH 301: Mathematical Analysis 1

Elementary set theory; properties of the real numbers; topology of the real line; sequences of functions; limits of functions; continuity; uniform continuity; differentiation of real-valued functions; integration.

Prerequisite: MATH 243

3 credits, Fall, even years

MATH 302: Mathematical Analysis 2

Additional topics in real analysis: integration; infinite series; differentiation of vector-valued functions; integration of vector-valued functions.

Prerequisite: MATH 301

3 credits

MATH 304: Differential Equations

Ordinary differential equations (ODEs) with applications to science and engineering. Solution methods for first-order ODEs, linear ODEs, and systems of ODEs; Laplace transforms; numerical methods; and critical point behavior.

Prerequisite: MATH 242

3 credits, Fall, Spring

MATH 308: Applied Complex Variables

A study of complex algebra, analytic functions, integration in the complex plane. Taylor and Laurent expansions, singularities, calculus of residues and meromorphic functions.

Prerequisite: MATH 243

3 credits, Spring, odd years

MATH 309: Abstract Algebra

Fundamentals of groups, rings, fields, and homomorphisms.

Prerequisite: MATH 222 and MATH 243

3 credits, Fall, odd years

MATH 310: Number Theory and Cryptography

Introduction to the theory of integers and basic cryptography. Topics include: primes, divisibility, unique factorization, congruences, applications to cryptography (including RSA and Diffie-Hellman), primitive roots, and quadratic reciprocity.

Prerequisite: MATH 222

3 credits, Spring

MATH 312: Probability and Statistics 1

Enumeration, probability, independence, probability distributions, random variables, expectation, mean, variance, moment generating functions, Central Limit Theorem, sampling distributions, and other selected topics.

Prerequisite: MATH 141

3 credits, Fall

MATH 313: Probability and Statistics 2

Point and interval estimations, hypothesis testing, Neyman-Pearson lemma, likelihood ratio tests, tests concerning means, proportions and variances, Chi-square tests, analysis of variance, regression, correlation analysis, nonparametric methods.

Prerequisite: MATH 312

3 credits, Spring, odd years

MATH 314: Numerical Analysis

Taylor polynomials, machine representation of numbers, computational error, interpolation, root finding, systems of linear equations, curve fitting, numerical differentiation and integration.

Prerequisites: MATH 141 and CIS 180

3 credits, Spring, odd years

MATH 320: Mathematical Modeling

Construction and analysis of mathematical models for the solution of ‘real-world’ problems.

Topics discussed may include genetics, predator-prey problems, population growth, spread of disease, finance, etc.

Prerequisite: MATH 304

3 credits, Fall

MATH 331: Financial Mathematics 1

A course in the mathematical theory of interest. Time value of money; annuities; loan repayment; bonds; general cash flows and portfolios; immunization. This course follows the syllabus for the Interest Theory segment of actuarial exam FM.

Prerequisite: MATH 242

3 credits, Fall, odd years

MATH 332: Financial Mathematics 2

A course in financial economics and derivatives markets. General derivatives; forwards and futures; swaps; hedging and risk management; European, American, and exotic options; Brownian motion; valuation of derivatives including binomial and Black-Scholes models; Monte-Carlo simulation; binomial interest rate models. This course follows the syllabus for the Financial Economics segment of actuarial exam FM and for exam IFM.

Prerequisite: MATH 331, Corequisite: MATH 304

3 credits, Spring, even years

MATH 341: Methods of Teaching Secondary Mathematics

This course is designed to prepare students to teach mathematics in secondary schools. It includes an examination of theories, research, and methods related to student learning and achievement in mathematics. Students will teach a variety of mathematics lessons as well as analyze the strategies of others. Students will also gain experience with graphing calculators and Geometer’s Sketchpad.

Prerequisite: MATH 243

3 credits, Fall, odd years

MATH 375: Internship

Student obtains professional work experience in a position involving substantial use of mathematics.

Prerequisite: Permission of advisor.

3 credits

MATH 380: Undergraduate Mathematics Research

Student obtains an introduction to the nature and methods of modern mathematics research after selection of an appropriate project under the guidance of a faculty mentor.

3 credits

MATH 391-394: Directed Study in Mathematics

Supervised reading in selected subjects approved by a three-person department committee. May be taken more than once for a total of at most four credits.

Prerequisite: Approval of faculty supervisor.

1-3 credits

MATH 395-399: Special Topics in Mathematics

Topics which are not covered by regularly scheduled courses but have the approval of a department committee. At most six credits of Special Topics may be used toward meeting departmental requirements for mathematics electives.

Prerequisite: Consent of the department chair.

3 credits

Mathematics Curriculum (128 credits)*(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

| | |
|-------|--|
| 3 | College Composition/LENG 111 |
| 3 | History Without Borders/LHST 111 |
| 3 | Calculus 1/MATH 140 |
| 3 | Prob Solv & Comp Prog with Lab/ CIS 180/181 |
| 3 | Intro to Philosophy/LPHI 131 |
| 2 | First-Year Seminar |
| <hr/> | |
| 17 | |

Second Semester

| | |
|-------|--|
| 3 | Critical Analysis & Composition/ LENG 112 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Calculus 2/MATH 141 |
| 3 | CIS 182/183 or CIS 255 |
| 3 | Foundations of Theology/LTHE 101 |
| <hr/> | |
| 15 | |

SOPHOMORE*First Semester*

| | |
|-------|---------------------------------|
| 3 | Calculus 3/MATH 242 |
| 3 | Discrete Mathematics 1/MATH 222 |
| 3 | Philosophy II Series/LPHI |
| 4 | Science with lab *1 |
| 3 | Literature Series/LENG |
| <hr/> | |
| 16 | |

Second Semester

| | |
|-------|------------------------------|
| 4 | Science with lab *1 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Linear Algebra/MATH 252 |
| 3 | Calculus 4/MATH 243 |
| 3 | Fine Arts Series/LFIN |
| 1 | Leadership Seminar |
| <hr/> | |
| 17 | |

JUNIOR*First Semester*

| | |
|-------|-------------------------------------|
| 3 | Cognate Elective *3 |
| 3 | Social Science |
| 3 | Probability & Statistics I/MATH 312 |
| 3 | MATH 301 or MATH 309 *2 |
| 3 | General Elective |
| <hr/> | |
| 15 | |

Second Semester

| | |
|-------|-----------------------------------|
| 3 | Public Speaking/SPCH 111 |
| 3 | Differential Equations 1/MATH 304 |
| 3 | Mathematics Elective *3 |
| 3 | 300 level Mathematics *4 |
| 3 | Cognate Elective *3 |
| 3 | LPHI 237 or any LTHE 300 course |
| <hr/> | |
| 18 | |

SENIOR*First Semester*

| | |
|-------|--------------------------------|
| 3 | Senior Seminar/LBST 383 |
| 3 | MATH 301 or MATH 309 *2 |
| 3 | Mathematical Modeling/MATH 320 |
| 3 | Cognate Elective *3 |
| 3 | General Elective |
| <hr/> | |
| 15 | |

Second Semester

| | |
|-------|-------------------------------------|
| 3 | 300 level Mathematics *4 |
| 3 | Internship/Research/MATH 375 or 380 |
| 3 | Mathematics Elective *3 |
| 3 | Cognate Elective *3 |
| 3 | General Elective |
| <hr/> | |
| 15 | |

*1 Complete an 8-credit sequence of courses and labs: BIOL 122-125, CHEM 111/112 & 114/115, PHYS 210/211 & 212/213, or PHYS 210/211 & 214/215. (PHYS is recommended.)

*2 Required Mathematics: MATH 301 (Fall, even years) and MATH 309 (Fall, odd years)

*3 All mathematics and cognate electives must be approved by the Mathematics advisor.

*4 Complete two MATH sequences by taking two of MATH 308, 310, 313, or 332.

Mathematics Curriculum with Secondary Education (139 credits)

Students majoring in Mathematics qualify for Teacher Certification in Mathematics/Secondary Education.

Aims and Objectives

The objectives of the program are: (1) to give the students an opportunity to become broadly educated in the areas of Mathematics, and (2) to provide a program of teacher education which promotes growth, development, professionalism and expertise for successful teaching. Students who wish to prepare themselves as secondary Mathematics teachers must make formal application to the teacher education program through the School of Education. For a detailed explanation of all requirements refer to the catalog portion under Education.

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

- 3 College Composition/LENG 111
- 3 Introduction to Philosophy/LPHI 131
- 3 Public Speaking/SPCH 111
- 1 Foundations of Teach/EDCR 103
- 2 First-Year Seminar/EDCR 104^
- 3 Prob Solv & Comp Prog w/lab/
CIS 180/181
- 3 Calculus 1/MATH 140
- 18

Second Semester

- 3 Critical Analysis & Composition/
LENG 112
- 3 Psych of Learn & Teach/EDCR 101
- 3 Overview of Special Educ/SPED 101
- 3 CIS 182/183 or CIS 255
- 3 Applied Statistics/MATH 213
- 3 Calculus 2/MATH 141
- 18

SOPHOMORE YEAR

First Semester

- 3 Literature Series/LENG
- 3 Instr Design & Classroom Mgmt/
EDCR 105
- 0 Secondary Educ Field Experience I/
EDFL 101+
- 4 Science with lab *2
- 3 Calculus 3/MATH 242
- 3 Discrete Mathematics 1/MATH 222
- 16

Second Semester

- 3 Foundations of Theology/LTHE 101
- 3 Adolescent Development/MLED 202
- 3 History of Math/MATH 260 or
DiffEq1/MATH 304 *1
- 3 Calculus 4/MATH 243
- 3 Linear Algebra/MATH 252
- 3 Philosophy II Series/LPHI
- 18

JUNIOR YEAR

First Semester

- 3 The Bible: An Intro/LTHE 201
- 1 Leadership Seminar/LHES 240
- 3 Probability & Statistics 1/MATH 312
- 3 MATH 226 or MATH 341 *3
- 3 MATH 301 or MATH 309 *4
- 4 Science with lab *2
- 1 Methods/Materials for
Instr Seminar/EDCR 321
- 0 Secondary Educ Field Experience II/
EDFL 102+
- 18

Second Semester

- 3 LPHI 237 or any LTHE 300 course
- 3 History Without Borders/LHST 111
- 3 Fine Arts Series/LFIN
- 3 History of Math/MATH 260
or DiffEq1/MATH 304 *1
- 3 MATH 308 or MATH 310 *5
- 3 Meet Lrn Need Stud Exceptionalities
7-12/SPED 340 ^
- 18

SENIOR YEAR

First Semester

| | |
|-----------|---|
| 0 | Sec Educ Field Experience III +/- EDFL 103 |
| 3 | Assessment/Evaluation/EDCR 330 |
| 3 | Literacy Dev, Strat, Assessments/MLED 301^ |
| 3 | Methods/Materials: ESL/ELL/ EDCR 420* |
| 3 | Mathematical Modeling/MATH 320 |
| 3 | MATH 226 or MATH 341 *3 |
| 3 | MATH 301 or MATH 309 *4 |
| <u>18</u> | |

Second Semester

| | |
|-----------|-------------------------------|
| 3 | Professional Seminar/EDCR 401 |
| 12 | Student Teaching/EDFL 410 |
| <u>15</u> | |

^ Field experience embedded throughout semester (6-15 hours)

+ Field experience embedded throughout semester (60 hours)

*1 Required Mathematics: MATH 260 (Spring, odd years) and MATH 304 (Spring, even years)

*2 Required Science: BIOL 122-125, CHEM 111/112 & 114/115, PHYS 210/211 & 212/213, or PHYS 210/211 & 214/215. (PHYS is recommended.)

*3 Required Mathematics: MATH 226 (Fall, even years) and MATH 341 (Fall, odd years)

*4 Required Mathematics: MATH 301 (Fall, even years) and MATH 309 (Fall, odd years)

*5 Required Mathematics: MATH 308 (Spring, odd years) OR MATH 310 (Spring, even years)

Mathematics Curriculum with Concentration in Actuarial Science (128 credits)

This concentration augments the mathematics curriculum with courses in Economics, Finance, Risk Management, and Financial Mathematics. It provides preparation for three exams administered by the Society of Actuaries and the Casualty Actuarial Society: P/1 (Probability), FM/2 (Financial Mathematics), and MFE/3F (Financial Economics). In addition, the curriculum has been approved by the actuarial societies as satisfying Validation by Educational Experience (VEE) requirements in Economics and Corporate Finance.

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|--|
| 3 | College Composition/LENG 111 |
| 3 | Principles of Microeconomics/BCOR 111 |
| 3 | Calculus 1/MATH 140 |
| 3 | Prob Solv & Comp Prog with lab/ CIS 180/181 |
| 3 | Intro to Philosophy/LPHI 131 |
| 2 | First-Year Seminar |
| <u>17</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Critical Analysis and Composition/ LENG 112 |
| 3 | Prin of Macroecon/BCOR 112 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Calculus 2/MATH 141 |
| 3 | Database Mgmt Sys/CIS 255 |
| <u>15</u> | |

SOPHOMORE

First Semester

| | |
|-----------|----------------------------------|
| 3 | Prin of Accounting I/BCOR 214 |
| 3 | Calculus 3/MATH 242 |
| 3 | Discrete Mathematics 1/MATH 222 |
| 3 | Foundations of Theology/LTHE 101 |
| 4 | Science with lab *1 |
| <u>16</u> | |

Second Semester

| | |
|-----------|--------------------------------|
| 3 | The Bible: An Intro/LTHE 201 |
| 4 | Science with lab *1 |
| 3 | Linear Algebra/MATH 252 |
| 3 | Calculus 4/MATH 243 |
| 3 | Prin of Accounting II/BCOR 215 |
| 1 | Leadership Seminar |
| <u>17</u> | |

JUNIOR*First Semester*

| | |
|-------|----------------------------------|
| 3 | Literature Series/LENG |
| 3 | History Without Borders/LHST 111 |
| 3 | Financial Management I/BCOR 311 |
| 3 | MATH 312 or MATH 331 *3 |
| 3 | MATH 301 or MATH 309 *2 |
| 3 | Cognate Elective *5 |
| <hr/> | |
| 18 | |

Second Semester

| | |
|-------|----------------------------------|
| 3 | Public Speaking/SPCH 111 |
| 3 | Differential Equations/MATH 304 |
| 3 | MATH 313 or MATH 332 *4 |
| 3 | Philosophy II Series/LPHI |
| 3 | Financial Management II/FINC 312 |
| <hr/> | |
| 15 | |

SENIOR*First Semester*

| | |
|-------|---------------------------------|
| 3 | Senior Seminar/LBST 383 |
| 3 | MATH 312 or MATH 331 *3 |
| 3 | MATH 301 or MATH 309 *2 |
| 3 | Mathematical Modeling/MATH 320 |
| 3 | LPHI 237 or any LTHE 300 course |
| <hr/> | |
| 15 | |

Second Semester

| | |
|-------|---|
| 3 | Cognate Elective *5 |
| 3 | Internship/Research/MATH 375 or 380 *1 |
| 3 | MATH 313 or MATH 332 *4 |
| 3 | Fine Arts Series/LFIN |
| 3 | Mathematics Elective |
| <hr/> | |
| 15 | |

*1 Complete an 8-credit sequence of courses and labs: BIOL 122-125, CHEM 111/112 & 114/115, PHYS 210/211 & 212/213, or PHYS 210/211 & 214/215. (PHYS is recommended.)

*2 Required Mathematics: MATH 301 (Fall, even years) and MATH 309 (Fall, odd years)

*3 Required Mathematics: MATH 312 (Fall, even years) and MATH 331 (Fall, odd years)

*4 Required Mathematics: MATH 313 (Spring, odd years) and MATH 332 (Spring, even years)

*5 Cognate electives must be approved by the Mathematics advisor. Preferred cognates are RISK 300, RISK 321, RISK 325, or RISK 425.

MATHEMATICS MINOR

A total of 24 credits is required for a minor in mathematics, including MATH 140, 141, 242, and 243; and 12 credits chosen from among any MATH courses at the 200-level or higher.

STATISTICS MINOR

A total of 24 credits in mathematics is required for a minor in statistics, including MATH 140, 141, 242, 243, 252, 213, 312, and 313.

MEDICAL LABORATORY SCIENCE

MELANIE GUSTAFSON-ROPSKI, M.A., *Program Director*

Program Goals

The goal of the Medical Laboratory Science Program is to provide a solid program of study that qualifies students for admission to a hospital-based program for clinical laboratory education. The program involves three years of undergraduate study at Gannon and a fourth year of clinical education at a hospital-based program accredited by the National Accrediting Agency for Clinical Laboratory Science (NAACLS). Currently, Gannon is affiliated with the medical laboratory science programs of Saint Vincent Hospital, Erie, Pennsylvania; UPMC Chautauqua WCA, Jamestown, New York; and Conemaugh Memorial Medical Center, Johnstown, Pennsylvania. Students may also apply to other accredited hospital-based programs even though these programs are not affiliated with Gannon.

The Medical Laboratory Science Program prepares students to become competent medical laboratory professionals for entry-level work, which is a solid steppingstone to diverse careers in health care and other settings. Grounded in the liberal arts, sciences and professional specialization, the rigorous comprehensive curriculum is designed to promote the development not only of the technical skills inherent in the field but also critical, analytical, and problem-solving skills. It articulates the mission of Gannon University.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.0 or higher on a 4.0 scale
- Minimum SAT score of 1090 or ACT composite score of 21

Curriculum Overview

The curriculum draws heavily on biology and chemistry and provides an opportunity for students to minor in either discipline. The hands-on experience during the clinical laboratory education in the senior year provides students intensive experiential learning, which allows them to further understand and apply their science education. Many medical preventive, diagnostic and therapeutic decisions involve testing and analyzing laboratory test results. By performing these responsibilities behind the scene, medical laboratory scientists are important members of the healthcare team.

Graduates' Competencies

Graduates' entry-level career competencies meet the accreditation standards of the medical laboratory science profession. General and specific competencies pertain to professional and ethical considerations, professional laboratory skills, communication, computerization and instrumentation, management, and education. The course content and clinical laboratory experience encourage excellence, independence, and confidence in the application of skills, clinical theory, and problem solving. Students provide service to patient care during their clinical internship. Graduates are well prepared to pass the national Medical Laboratory Scientist (MLS) certification exam required by the American Society for Clinical Pathology (ASCP) Board of Certification (BOC).

Career Opportunities

Medical laboratory scientists are problem-solvers, dealing with the complexities and outcomes of medicine and science. They provide invaluable service to patient care by performing a wide range of laboratory tests, confirming the accuracy of test results, and reporting the test results to pathologists and other physicians. Medical laboratory scientists work in blood banking, chemistry, hematology, immunology, and microbiology. They apply their solid foundation in the sciences and medical laboratory education to the screening, diagnosis, and treatment of diseases.

Practice settings for medical laboratory scientists include hospitals, independent laboratories, clinics, public health agencies, and industries. Molecular diagnostics, molecular biotechnology companies, and other specialized laboratories offer additional career opportunities.

Experienced medical laboratory scientists have opportunities to advance their career by specializing in certain areas, such as cell marker technology, bioengineering and cancer research, drug testing, therapeutic drug monitoring and biogenetics. Industry offers career opportunities in product development, marketing, sales, and quality assurance.

Currently, the demand for medical laboratory scientists far exceeds the supply of qualified laboratory professionals. With continued population growth and medical advances, the need for medical laboratory scientists is expected to increase.

Application for Clinical Internship and Degree Completion

In general, students apply for admission to hospital-based programs at the start of the fall semester in their junior year, and upon acceptance, begin their clinical education the following summer. Students will have completed all their prerequisite courses prior to their clinical education. Because each hospital-based program has a different calendar, it is important for students to obtain information about individual programs as early as possible. The program director at Gannon assists students with the application process; however, the University does not guarantee admission of students to the hospital-based programs. These programs conduct their own selection process. Selection of students for admission to the hospital laboratory program is based primarily on grade point average (GPA), typically a 3.0 or higher. In addition, hospital-based programs typically require a science GPA of 2.8 or higher. Therefore, students with a low GPA, especially in the sciences, may not be accepted by the hospitals for the laboratory portion of the program. Students should know the requirements of each program they are considering.

While students are completing their laboratory education, they are considered students of that program and do not register at Gannon. They are governed by the academic policies of their laboratory education program. They should still adhere to certain university deadlines that affect their degree completion. For example, they are responsible for applying for May graduation by early November.

Directors of affiliated hospital-based programs send students' grades to Gannon to be recorded on the students' transcripts.

Students who complete Gannon's three-year academic requirements and successfully complete their fourth year of studies (approximately 12 months) at an accredited medical laboratory science program will be awarded the Bachelor of Science degree with a major in medical laboratory science. Students graduate in the summer following completion of their laboratory education. Graduates are eligible to take a national certification test given by the Board of Certification of the American Society for Clinical Pathology (ASCP). Those who pass the exam may use the initials, MLS (ASCP)CM after their name, showing proficiency in Medical Laboratory Science.

The following course descriptions are for the courses offered by hospital-based medical laboratory science programs. Hospital programs may have different course titles.

COURSE DESCRIPTIONS

MDTC 410: Hematology and Coagulation

The course includes a study of the blood and blood forming tissues and their relation to the care of patients as they are correlated with the entire clinical condition. *6 credits*

MDTC 420: Clinical Chemistry (includes instrumentation and RIA)

This course includes a brief review of analytical chemistry and qualitative analysis and stresses the chemistry of proteins, lipids, carbohydrates, endocrinology, vitamins, hormones, enzymes, etc., and the physiology, metabolisms, and methodologies used in the study of these substances in relation to biologic processes as found in health and pathologic states. Clinical correlation is made with the various situations in which the substances are altered. *8 credits*

MDTC 430: Immunohematology and Blood Banking

Immunohematology emphasizes the application of principles of red cell antigens which are detectable only by the reactivity of red cells with antibodies corresponding to the antigens. Topics include ABO groupings, Rh factor, and numerous other blood group systems. These are all correlated with the compatibility of transfused blood and the various procedures needed to test for this compatibility. *4 credits*

MDTC 440: Urinalysis

The course considers the examination of urine and all other body fluids, such as cerebral spinal

fluid, feces, gastric fluid, seminal fluid, amniotic fluid, etc. Emphasis is placed on anatomy and physiology of the kidney and urinary system, methodologies, clinical correlation, kidney function tests, microscopic examination and urinary calculi. *2 credits*

MDTC 450: Microbiology (includes mycology, parasitology, virology and microbiology)

The course includes the study of various microorganisms, i.e. bacteria, fungi, rickettsia, parasites, and viruses recovered in clinical material. The critical identifying characteristics of the organisms, the diseases with which they are commonly associated, and the sites from which they are commonly isolated are presented. Fluorescent microscopy and its application to identification of microorganisms are presented. *8 credits*

MDTC 460: Immunology and Serology

The course encompasses the serologic reactions employed in the diagnosis of bacterial, parasitic, rickettsial, and viral diseases. The principles of antigen-antibody reactions are developed and the various procedures including agglutination, flocculation, precipitation, and complement fixation are stressed. *4 credits*

MDTC 470: Medical Technology Education

Basic principles of education to include lecture presentation and preparation, writing behavioral objectives, taxonomy levels, curriculum development, and evaluation procedures are presented. Each student is required to give one lecture to include outline, objectives, and some form of evaluation. *0 credit*

MDTC 480: Management and Supervision

Principles of management techniques, budget, personnel practices, laboratory supplies, and procurement of equipment. Federal and State Regulations, lab safety, medical/legal matters, and psychology of management are presented. *0 credit*

Medical Laboratory Science Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|---|
| 3 | Molecular Cellular Biology/BIOL 122 |
| 1 | Molecular Cellular Biology Lab/BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | College Algebra/MATH 111 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | History Without Borders/LHST 111 |
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Microbiology I/BIOL 331 |
| 1 | Microbiology Lab/BIOL 332 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Computer Science Series/CIS 170-174 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Introduction to Psychology/PSYC 111 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Philosophy II Series/LPHI |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Parasitology/BIOL 354 |
| 1 | Parasitology Lab/BIOL 355 |
| <u>17</u> | |

JUNIOR

First Semester

- 3 Structural Biochemistry/CHEM 366
- 1 Biochemical Laboratory/CHEM 367
- 3 Fine Art Series/LFIN
- 3 LPHI 237 or any LTHE 300 course
- 3 Concepts in Physics/PHYS 101
- 1 Leadership Seminar

14*Second Semester*

- 3 Genetics/BIOL 265
- 1 Genetics Lab/BIOL 266
- 3 Literature Series/LENG
- 3 Statistics/MATH 213 or PSYC 211
- 3 Senior Seminar/LBST 383
- 3 Immunology/BIOL 338
- 1 Immunology Lab/BIOL 339

17**Hospital Phase (12 months):**

SENIOR

First Semester

- 6 Hematology & Coagulation/MDTC 410
- 8 Clinical Chemistry/MDTC 420
- 4 Immunohematology/MDTC 430

18*Second Semester*

- 2 Urinalysis/MDTC 440
- 8 Microbiology/MDTC 450
- 4 Immunology & Serology/MDTC 460

14*Summer*

- 0 Medical Technology Education/MDTC 470
- 0 Management & Supervision/MDTC 480

Total credits: 130**THE NEXT-STEP PROGRAM**

The major goal of the Next-Step Program is to provide Medical Laboratory Technician (MLT) graduates the opportunity to earn their bachelor's degree at Gannon. The curriculum meets the academic requirements for a bachelor's degree, includes courses required by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), and prepares students for graduate studies.

The Next-Step Program provides for a blanket transfer of 32 credits from a Medical Laboratory Technician program, 33 other credits to be evaluated for transfer (or a total of 65 transfer credits), and 83 credits earned from Gannon (including 32 credits from a NAACLS accredited hospital program). The program requires 148 credits to complete.

Next-Step Curriculum

(Numerals in front of courses indicate credits)

- 32 Blanket transfer
- 33 Other credits for transfer evaluation
- 30 Additional science and math courses
 - 2 Electives
 - 19 Liberal Studies
- 32 Hospital

Blanket transfer from MLT Program: 32 credits

Other credits for transfer evaluation from Associate Degree Program: 33 credits

- 4 Molecular Cellular Biology/Lab BIOL 122/123
- 4 Animal Form & Function/Lab BIOL 124/125
- 4 General Chemistry I/Lab/CHEM 111/112
- 4 General Chemistry II/Lab/CHEM 114/115
- 4 Organic Chemistry I/Lab/CHEM 221/222

-
- 4 Microbiology/Lab/BIOL 331/332
 - 3 Math (Algebra/Trig/Calculus)
 - 3 Computer Science Series
 - 3 Introduction to Psychology/PSYC 111
-

Courses above that have not been completed will be additional degree requirements.

Additional Science and Math Courses: 30 credits

- 4 Immunology/Lab/BIOL 338/339
 - 4 Genetics/Lab/BIOL 265/266
 - 4 Parasitology/Lab/BIOL 354/355
 - 4 Organic Chemistry I/Lab/CHEM 221/222
 - 4 Organic Chemistry II/Lab/CHEM 224/225
 - 3 Structural Biochemistry/CHEM 366
 - 1 Biochemical Lab/CHEM 367
 - 3 Concepts in Physics/PHYS 101
 - 3 Applied Statistics/MATH 213 *or*
Psychological Statistics/PSYC 211
-

Electives: 2 credits

Liberal Studies for Next Step: 19 credits

- 3 Foundations of Theology/Morality/LTHE 101
- 3 Introduction to Philosophy/LPHI 131
- 3 Literature Series/LENG
- 3 Fine Arts Series/LFIN
- 3 Theo/Phil III/LTHE 300-level *or* LPHI 237
- 1 Leadership Seminar
- 3 Senior Seminar *or* approved capstone/LBST 383

Students are required to complete 19 credits in Liberal Studies. Students may transfer courses equivalent to Foundations of Theology/Morality, Introduction to Philosophy, the Literature Series and/or the Fine Arts Series. Students must take the Leadership Seminar, the LTHE 300-level or LPHI 237 Theo/Phil III Series, and the Senior Seminar or approved capstone at Gannon. Students will be permitted to take other courses in substitution for any course listed above which they have satisfactorily completed prior to admission into the Next-Step program.

NAACLS accredited hospital-based program: 32 credits

Total = 148 credits

(Numerals in front of courses indicate credits)

FIRST YEAR (JUNIOR YEAR)

First Semester

- 3 Organic Chemistry I/CHEM 221
- 1 Organic Chemistry I Lab/CHEM 222
- 3 Foundations of Theology/LTHE 101
- 3 Intro to Philosophy/LPHI 131
- 3 Concepts in Physics/PHYS 101

13

Second Semester

- 3 Organic Chemistry II/CHEM 224
- 1 Organic Chemistry II Lab/CHEM 225
- 3 Fine Arts/LFIN
- 3 LPHI 237 *or* any LTHE 300 level course
Theo/Phil III
- 1 Leadership Seminar

11

SECOND YEAR (SENIOR YEAR)

First Semester

| | |
|-------|--|
| 3 | Structural Biochemistry/CHEM 366 |
| 1 | Biochemical Lab/CHEM 367 |
| 3 | Genetics/BIOL 345 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Literature Series/LENG |
| 3 | Applied Statistics/MATH 213 <i>or</i> Psych Statistics/PSYC 211 |
| <hr/> | |
| 14 | |

Second Semester

| | |
|-------|---------------------------|
| 3 | Immunology/BIOL 338 |
| 1 | Immunology Lab/BIOL 339 |
| 3 | Parasitology/BIOL 354 |
| 1 | Parasitology Lab/BIOL 355 |
| 3 | Senior Seminar/LBST 383 |
| <hr/> | |
| 11 | |

(Electives can be taken if full-time status is needed.)

THIRD YEAR

(HOSPITAL PHASE: 32 CREDITS)

First Semester

| | |
|-------|---------------------------------------|
| 6 | Hematology & Coagulation/ MDTC 410 |
| 8 | Clinical Chemistry/MDTC 420 |
| 4 | Immunohematology/MDTC 430 |
| <hr/> | |
| 18 | |

Second Semester

| | |
|-------|--------------------------------|
| 2 | Urinalysis/MDTC 440 |
| 8 | Microbiology/MDTC 450 |
| 4 | Immunology & Serology/MDTC 460 |
| <hr/> | |
| 14 | |

Summer Semester

| | |
|---|---------------------------------------|
| 0 | Medical Technology Education/MDTC 470 |
| 0 | Management & Supervision/MDTC480 |

Total: 148 credits**NURSING (VILLA MARIA SCHOOL OF) – BSN**DAWN JOY, Ph.D., R.N., C.N.E., *Associate Dean and Director*

FACULTY: *Associate Professor:* Lisa Quinn. *Assistant Professors:* Carol Amann, Lorraine Gdanetz, Dawn Joy, Patricia Marshall, Lisabeth Searing. *Associate Teaching Professors:* Valerie Baker, Melissa Lund. *Assistant Teaching Professors:* Diann Cooper, Antonio Malito, Janet Minzenberger, Brenda Snyder. *Instructors:* Stephanie McElhaney, Amber Mecca, Charlotte Riddle, Emilee Rotko, Shannon Scully.

The Villa Maria School of Nursing undergraduate and graduate programs and certificates are approved by the Pennsylvania State Board of Nursing and accredited by the Commission on Collegiate Nursing Education (CCNE) <http://www.ccneaccreditation.org>.

Applicants to Gannon University Morosky College of Health Professions and Sciences, Villa Maria School of Nursing are admitted to the undergraduate nursing major based on established admission criteria. The study of professional nursing starts in the freshman year with clinical nursing courses beginning at the sophomore level. The curriculum is composed of three distinct but interrelated elements: (1) a common liberal core, which is the same for all baccalaureate students in the University, and which reflects the parent institutions' concepts concerning a liberal education; (2) supportive courses, which are required prerequisites for the development of the major; and (3) professional nursing courses, which prepare the student to earn a Bachelor of Science in Nursing. Of the total 128 credits required for graduation at Gannon University, the nursing field of concentration comprises 60 credits or 46.8 % of the total program of study.

All students must meet the Liberal Core requirements as well as prerequisite, support and required courses as established by the Villa Maria School of Nursing faculty to earn a Bachelor of Science in Nursing. The nursing curriculum is arranged in three sequential levels that build in complexity from simple to complex.

All nursing curriculum level one courses (Freshman and Sophomore years) must be completed before the student progresses to level two of the nursing curriculum. The level one support courses include: BIOL 106, 107, 115, 116, 117, 118, 122 and 123 or their equivalents; CHEM 105 and 108 or their equivalents; DIET 202 or its equivalent; PSYC 222 or its equivalent; SOCI 110 or its equivalent; statistics (e.g. PSYC 211, SOCI 351 or MATH 213) or its equivalent. Level two courses (Junior year) must be successfully completed prior to student progression to level three courses (Senior year). Exceptions in progression will be reviewed by the Director (See Villa Maria School of Nursing Handbook for complete listing of Policies and Procedures).

Upon successful completion of the prescribed program of study, Gannon University awards the Bachelor of Science in Nursing degree. The student is eligible, upon certification by the Villa Maria School of Nursing to take the NCLEX-RN licensing exam. Upon successfully passing the NCLEX-RN licensing exam the title Registered Nurse (R.N.) can be used.

The purpose of the professional nursing program is to prepare students for entry into professional practice and provide an academic foundation for graduate study. The community-based baccalaureate program helps students acquire competencies, knowledge, values and roles that prepare them as professional nurses who provide safe, high quality care to diverse populations, in and across all environments. The program also prepares students for advanced study and to value life-long learning. The baccalaureate program in nursing provides for a balanced study of natural and social sciences in addition to humanities within the context of professional education to promote critical thinking, effective communication, caring, respect, and concern for individuals, groups, and communities.

The State Board of Nursing shall not issue a license or certificate to an applicant who has been convicted of a felonious act as identified in the Nurse Practice Act No. 1985-109. See complete policy in Villa Maria School of Nursing Handbook.

Proof of current health records including a physical and specific healthcare provider testing and immunizations, health insurance, child abuse clearance, criminal clearance, finger printing, American Heart Association Healthcare Provider CPR certification, and the ability to meet the nursing student performance standards are required.

Policies specific to nursing standards and the Villa Maria School of Nursing are published and distributed annually in the Villa Maria School of Nursing Handbook.

COURSE DESCRIPTIONS

NURS 150: First Year Seminar

This seminar explores the history and evolution of nursing as a profession, basic health delivery models in the United States, human services agencies, and key concepts that underscore the nursing profession. Students are introduced to key concepts that underlie professionalism and emphasize nursing's expertise in: caring, teaching and learning, health promotion, and the legal and ethical principles that guide professional practice. The necessity of on-going reflection and self-evaluation as tools to developing critical thinking, as well as service learning and its role in personal and professional development, the impact of culture, ethnicity and personal values on health behaviors, and the impact of personal and professional values are included.

2 credits – Fall

NURS 204: Pharmacology and Nursing Implications of Medication Administration

This course is designed to focus on nursing pharmacology by presenting a firm theoretical foundation and a practical approach to drug therapy applicable in community-based settings. The course presents general principles, theories, and facts about drugs. General characteristics

of major classifications of medications are discussed. Specific information regarding action, dosage, side effects, adverse reactions, and contraindications of selected medications within each classification is addressed. Practical information is presented on how the nursing process is integrated with pharmacology. Specific drug information is discussed in relation to assessment, nursing diagnoses, client monitoring, interventions, client education, and evaluation of safe and effective drug therapy.

Corequisites: NURS 205, NURS 207, BIOL 117, 118.

Prerequisites: CHEM 105, 108, BIOL 106, 107, 115, 116, 122, 123, PSYC 222, Math Competency Exam.

2 credits, Spring

NURS 205: Nursing Practice Competencies

This course focuses on the acquisition and use of nursing practice competencies required for the delivery of nursing care. Emphasis is placed on mastery of core scientific principles that underlie all competencies. It is not within the scope of this course to cover every skill encountered by the professional nurse. Strategies are employed which help the student identify those competencies essential for baccalaureate nursing practice and understand the scientific principles that underpin the application of those competencies. Students are expected to apply concepts and assessment techniques learned during previous courses. Supervised on-campus and off-campus labs are scheduled for student learning.

Corequisites: NURS 204, NURS 207, BIOL 117, BIOL 118.

Prerequisite: NURS 206, BIOL 115, BIOL 116, PSYC 222, Math Competency Exam.

2 clinical laboratory credits, Spring

NURS 206: Health Assessment I

This is the first course in a two-course sequence in health assessment for the professional nursing student. Successful completion of this course will provide the student a nursing approach for conducting and documenting a comprehensive health assessment. The student will learn to consider normal variations specific to gender, age, developmental level, and culture. A major expectation is that the student applies appropriate health promotion strategies to members of the peer group and to identified populations within the community. Health Assessment I focuses on concepts specific to the nursing process, the environment, and safety, as well as physical assessment techniques, interviewing and communication skills, the taking of health histories, vital signs and physical measurements, including height, weight, and body mass index.

In addition, specific health assessment data collection strategies are stressed, including general health, nutritional, mental status, pain, spiritual, and sexual. Expected findings across the lifespan are identified. The student learns documentation requirements, medical terminology and abbreviations, and begins the application of the principles of teaching and learning. Students are expected to identify appropriate health assessment data collection strategies and to apply appropriate health promotion strategies as outlined by course faculty. Supervised on-campus and off-campus clinical laboratory sessions are scheduled to enhance student learning. Corequisites: BIOL 115, BIOL 116.

Prerequisites: PSYC 222, two approved sciences per VMSON curriculum.

1 clinical laboratory credit, Fall

NURS 207: Health Assessment II

This is the second course in a two-course sequence in health assessment for the professional nursing student. Successful completion of this course will enhance the student's approach for conducting and documenting a comprehensive health assessment. The student will add to the knowledge gained in the first course in this series. A major expectation is that the student applies appropriate health promotion strategies to identified populations within the community.

Health Assessment II builds on all concepts learned in Health Assessment I, concepts specific to the nursing process, the environment, and safety, as well as physical assessment techniques, interviewing and communication skills, the taking of health histories, vital signs and physical measurements, including height, weight, and body mass index.

The student is expected to incorporate specific health assessment data collection strategies, including general health, nutritional, mental status, pain, spiritual, and sexual, as well as expected findings across the lifespan into nursing care strategies. In addition, the student is expected to document appropriately, use medical terminology and abbreviations correctly, and apply the principles of teaching and learning effectively.

Systems are introduced to increase physical assessment capabilities. Systems presented during this semester include integumentary; head, eye, ear, nose, and throat [HEENT]; cardiovascular; respiratory; gastrointestinal [GI]; genitourinary [GU]; musculoskeletal; reproductive; neurological; peripheral vascular; lymphatic; and endocrine.

Students are expected to use concepts learned in Health Assessment I and add knowledge gained in Health Assessment II to increase competency in health assessment. Students are required to conduct a comprehensive health assessment and to apply appropriate health promotion strategies as outlined by course faculty. Supervised on-campus and off-campus clinical laboratory sessions are scheduled to enhance student learning.

Corequisites: NURS 204, NURS 205, BIOL 117, BIOL 118.

Prerequisites: NURS 206, BIOL 115, 116, Math Competency Exam.

1 clinical laboratory credit, Spring

NURS 308: The Research Process in Nursing

Using a comprehensive approach, this course is designed to stimulate student interest in the research process, theory development, and translation of findings to nursing practice. Students learn the components, principles, and methods of scientific research to become discerning consumers of research.

Prerequisites: PSYC 211, SOCI 351 or MATH 213

3 credits, Fall or Spring

NURS 309: Influences on Health and Disease

This course enables the student to explore values that underlie health seeking behaviors and the provision of care. Students explore various behaviors that influence health, wellness, and motivation to seek health care. The influences of family, culture, lifestyle choices, and at-risk behaviors are considered. The course enables the student to understand the basic concepts of biological, psychological, and spiritual processes and how these affect the health of an individual across the life span. The concepts of homeostasis, mechanisms of disease, and crisis and stress related to acute or chronic illness are explored specific to how these concepts affect the patient and the patient's family. An overview of shock, inflammation, infection, altered immune response, oncology, and fluid and electrolyte balance is presented. In addition, the student will learn the nursing responsibilities associated with care of the patient during the perioperative period. This course must be taken in the fall semester, at the beginning of the Junior level of nursing courses.

Prerequisites: BIOL 115, BIOL 116, BIOL 117, BIOL 118, CHEM 105, CHEM 108, DIET 202, NURS 204, NURS 205, NURS 206, NURS 207.

2 credits, Fall

NURS 310: Promoting Healthy Childbearing

In this course students will have the opportunity to participate in the excitement, wonder, and mystery of birth – a learning experience that will forever influence the way they see themselves, the world, and the future. They also have the opportunity to examine theoretical and clinical experiences from a personal perspective and to explore their beliefs and values about childbirth and parenting.

Maternal-newborn nursing focuses on the health needs and responses of women, their partners and their families. The practice of maternal-newborn nursing is directed toward improving the quality of life for infants and the adults who assume primary responsibility for the infants well-being. Nursing not only involves direct care to the childbearing family, but also includes health teaching and counseling. Pre or Co-Req: 309.

Prerequisite or Corequisite: NURS 309.

Prerequisites: PSYC 222, NURS 204, NURS 205, NURS 206, NURS 207, DIET 202.

5 credits (3 theory, 2 clinical laboratory), Fall or Spring

NURS 311: Promoting Health and Health Restoration of Older Adults

This course is designed to assist the student to adopt the behaviors inherent in the role of the professional nurse. Through lectures and planned clinical experiences, the student applies concepts of health promotion, risk reduction, disease prevention and health restoration for older adults. The student will work with older adults in a variety of community-based settings as they assess and manage physical, psychological, social and spiritual needs of older adults. Prerequisite or Corequisite: NURS 309.

Prerequisites: PSYC 222, NURS 204, NURS 205, NURS 206, NURS 207, DIET 202.

5 credits (3 theory, 2 clinical laboratory) Fall or Spring

NURS 312: Promoting Health in Childrearing Families

This course provides students with the opportunity to apply the nursing process in promoting the health of pediatric populations. Three levels of prevention are addressed with students providing anticipatory guidance, wellness care, age-appropriate screenings and illness care. Health promotion strategies are applied in such a manner as to recognize the family as the primary caregiver. Clinical experiences are community-based and include ambulatory clinics, educational and in-patient sites.

Prerequisite or Corequisite: NURS 309.

Prerequisites: PSYC 222, NURS 204, NURS 205, NURS 206, NURS 207, DIET 202.

5 credits (3 theory, 2 clinical laboratory), Fall or Spring

NURS 313: Promoting Health and Health Restoration in Adults I

This course is designed to assist the student to gain an understanding of the health care needs of the acute or chronically ill adult. The course incorporates principles of developmental needs of adults, who have socially and culturally diverse backgrounds, in a variety of settings. Collaboration of the client and health care team in promoting and maintaining an optimal level of functioning are addressed. Health promotion, risk reduction, disease prevention and illness care in the adult client are emphasized. Pre or Co-Req: NURS 309.

Prerequisite or Corequisite: NURS 309.

Prerequisites: PSYC 222, NURS 204, NURS 205, NURS 206, NURS 207, DIET 202.

5 credits (3 theory, 2 clinical laboratory), Fall or Spring

NURS 320: Leadership Seminar

The Leadership seminar introduces students to a three dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for the students' leadership development as reflected both in this course. This course, while housed in the Villa Maria School of Nursing, is open to all University students and meets the Liberal Core requirement for Leadership Seminar.

1 credit, Fall or Spring

NURS 404: Nurse Power Politics (Capstone)

This capstone Liberal Studies course is a seminar experience designed to provide the student with an opportunity to explore contemporary health care issues, to analyze these issues within the historical, professional context as well as the context of his or her value system, and to adopt a position regarding such issues. The student is engaged in an active exploration of his/her own philosophy of nursing. Students are guided through this analysis by faculty who facilitate open discussions and exchange of ideas. Students develop skill in formulation of a position, consideration of others' viewpoints and defense of such a position, as well as to realize the potential impact and power of political activity. Students also realize the importance of individual action and commitment. Service learning is a required component of the course.

Prerequisites: Senior standing in nursing major

3 credits (seminar), Spring

NURS 406: Promoting Health and Health Restoration in Adults II

This course provides the student with knowledge and nursing strategies that can be applied to clients with complex health concerns including chronic, multisystem, life threatening, and end of life care. The focus is on strategies that recognize the quality of life and maintain optimal level of functioning. Students build upon concepts learned in previous courses and apply concepts from concurrent courses. Adult critical care nursing is emphasized.

Prerequisites: NURS 308, NURS 309, NURS 310, NURS 311, NURS 312, NURS 313.

5 credits (3 theory, 2 clinical laboratory), Fall or Spring

NURS 407: Promoting and Restoring Mental Health

This course incorporates nursing care of persons who are mentally healthy as well as those with known psychiatric disorders. The course provides students with an opportunity to explore a broad range of nursing interventions to promote optimal mental health. The emphasis is placed on the use of advanced therapeutic communication techniques.

Prerequisites: NURS 308, NURS 309, NURS 310, NURS 311, NURS 312, NURS 313.

5 credits (3 theory, 2 clinical laboratory), Fall or Spring

NURS 414: Promoting Healthy Communities

This course provides students a perspective of professional nursing at the community level of practice. Course content will provide an overview of specific issues and societal concerns that affect community health nursing practice; epidemiological applications in community health nursing; educational theories, models, and principles applied in community health nursing; risk factors and health problems for defined populations across the lifespan; issues and approaches in providing for the health care of defined populations in the community; specific health care needs and issues for populations at risk; communicable disease risk and prevention; and the diversity in the role of the community health nurse. Students apply previous knowledge and the nursing process in maximizing the health status of individuals, families, and defined populations within the community.

Prerequisites: NURS 308, NURS 309, NURS 310, NURS 311, NURS 312, NURS 313.

5 credits (3 theory, 2 clinical laboratory), Fall or Spring

NURS 415: Comprehensive Nursing Practicum

This senior nursing practicum facilitates the students' ability to synthesize knowledge, skills, and experiences in selected health care settings. This experience enables the student to develop independence in professional practice. Individual goals and objectives are mutually determined by faculty and student to evaluate success in the practicum. Students are paired with an agency preceptor to attain individualized course objectives. A faculty-facilitated seminar is conducted weekly. Last semester of the Senior year.

Prerequisite or Corequisite: NURS 420.

Prerequisites: NURS 406.

6 clinical laboratory credits (16 hours clinical and 2 hours seminar per week), Fall or Spring

NURS 420: Management and Leadership Strategies for Professional Nursing

This course focuses on the knowledge and skills related to the delivery of health care services within a professional nursing leadership context. Concepts, introductory knowledge related to fiscal management, quality care concepts, and staffing models are presented which provide the student a basic knowledge base required for effective management, organizational behavior, and assuming or assisting others in a leadership role in professional nursing practice. Additionally, this course provides skill acquisition necessary to apply principles in planning and delegating nursing care and discusses developing creative roles for managing and leading in professional nursing.

Prerequisites: NURS 308, NURS 309, NURS 310, NURS 311, NURS 312, NURS 313, or Senior standing in nursing major.

2 credits, Fall

Elective Courses

The following courses are offered as electives to provide the student with the opportunity to investigate a specific area of interest in more detail.

NURS 343/GNURS 543: Palliative Care

This course provides an examination of the theory of palliative care focusing on the complexities of caring for terminally ill and dying patients as well as those with life-threatening or chronic illness. This course is designed for students from a variety of health care disciplines. Aspects of the interdisciplinary team in providing a comprehensive approach to palliative care are emphasized. The physical, psychosocial, cultural and spiritual needs of patients and families as well as ethical and legal issues concerning care are explored. Open to all majors. A minimum of junior standing as an undergraduate student is recommended.

Prerequisites: LTHE 121, LPHI 131.

3 credits, Fall or Spring

NURS 302: Test-Taking Strategies

This course is designed to assist the student to adopt behaviors that will guide comprehension and successful attainment of course examinations ultimately leading up to the positive achievement of the National Council Licensure Examination (NCLEX). Through lectures, class participation, assignments, and the application of clinical judgment the student will apply concepts of wellness, health promotion, risk reduction, disease prevention, education, and health restoration as presented in the testing format.

1 credit, Fall or Spring

NURS 416: Special Topics in Nursing

Special topic courses are developed by faculty around a specific area of interest. Objectives may be defined by faculty or mutually identified by students and faculty.

1-3 credits, Fall or Spring

NURS 417: Elective Clinical Practicum

The Elective Clinical Practicum provides senior professional nursing majors with learning experiences to expand the student's understanding of the professional nurse role in a chosen clinical area. The course is limited to seniors who have a demonstrated ability to work independently. The student must follow the School of Nursing guidelines for practicum courses.

1-3 clinical laboratory credits, Fall or Spring

NURS 419: Basic Dysrhythmia and 12 Lead EKG Interpretation

This course is designed for professional nursing majors who desire to develop skills in dysrhythmia interpretation. Identification of EKG features, predisposing conditions and treatments, role of the nurse in patient care, and current ACLS interventions are emphasized. Cross-listed with SPRT 425.

Prerequisites: BIOL 115, BIOL 116, BIOL 117, BIOL 118 or BIOL 365, BIOL 366, BIOL 368, BIOL 369.

3 credits, Fall or Spring

NURS 423/GNURS 523: Women's Health Issues

This course will provide the student an understanding of health issues affecting women. Major health promotion strategies and their theoretical models will be presented. Analysis of case studies will enhance student understanding of effective methods of promoting positive health-seeking behaviors among women of all ages across cultural, ethnic, and socioeconomic backgrounds. The influence of social, economic and political issues on women's health will be stressed. Open to all university students.

3 credits, Fall or Spring

NURS 435/GNURS 535 Fundamentals of Forensic Nursing

This introductory course provides the student with knowledge and nursing strategy to better meet the needs of those affected by forensic related health care situations and ultimately improve patient outcomes. The course explores the history and development of forensic nursing as a scientific sub-specialty of nursing; the forensic nursing process; application of the forensic nursing role (e.g. sexual assault management, death investigation, child death review, abuse/neglect, emergency department, etc.); violence and victimology; injury identification and interpretation; evidence recognition, collection, preservation, and documentation; and forensic nursing and the law/legal interface.

3 credits, Fall or Spring

BSN Nursing Curriculum and Suggested Course Sequence

(Numerals in front of courses indicate credits)

LEVEL ONE:

FRESHMAN YEAR

Fall

- 3 Phys. Chemistry /CHEM 105
- 1 Phys. Chemistry Lab /CHEM 108
- 3 Intro to Psychology /PSYC 111
- 3 College Composition /LENG 111
- 3 Foundations of Theology /LTHE 101
- 2 First Year Seminar /NURS 150

15

(clinical time: 0 hrs/wk
& science labs 3 hrs/wk)

Spring

- 3 Mol/Cell Bio/BIOL 122
- 1 Mol/Cell Bio Lab/BIOL 123
- 3 Psyc of Hu Develop/PSYC 222
- 3 Crit Analysis & Comp/LENG 112
- 3 Basic Sociology/SOCI 110
- 3 Intro to Philosophy/LPHI 131

17

(clinical time: 0 hrs/wk
& science labs 3 hrs/wk)

SOPHOMORE YEAR

Fall

- 3 Intro to Micro/BIOL 106
- 1 Intro to Micro Lab/BIOL 107
- 3 Hu Anat & Phys 1/BIOL 115
- 1 Hu Anat & Phys 1 Lab/BIOL 116
- 3 English Literature Series
- 3 Fine Art Series
- 1 Health Assessment I/NURS 206+
- 3 Statistics/PSYC or SOCI or MATH

18

(clinical time: 3 hrs/wk
& science labs 6 hrs/wk)

Spring

- 3 Nutrition/DIET 202*
- 3 Hu Anat & Phys 2/BIOL 117
- 1 Hu Anat & Phys 2 Lab/BIOL 118
- 3 The Bible: An intro/LTHE 201
- 3 Philosophy 2 Series
- 2 Pharm & Nsg/NURS 204 ++
- 2 NSG Pract Comp/NURS 205++
- 1 Health Assessment II NURS 207++

18

(clinical time: 9 ½ hrs/wk
& science labs 3 hrs/wk)

LEVEL TWO:

JUNIOR YEAR

Fall

- 3 The Research Proc in Nsg/NURS 308
- 2 Influences/Hlth & Disease/NURS 309+
- 5 PHHR Older Adults/NURS 311
- 5 PH Childrearing Families/NURS 312

15

(clinical time 13 hrs/wk)

Spring

- 3 History without Borders/LHST 111
- 3 LPHI 237 or LTHE 300 level course
- 5 PHHR Adults 1/NURS 313
- 5 PH Childbearing/NURS 310
- 1 Leadership Seminar/NUR 320

17

(clinical time 13 hrs/wk)

LEVEL THREE:

SENIOR YEAR

Fall

- 2 Mgmt. & Ldrshp Strat Nsg./NURS 420+
- 5 PHHR Adults 2/NURS 406
- 5 PHHR Mental Health/NURS 407
- 2 Elective of student choice

14

(clinical time 13 hrs./wk)

Spring

- 3 Nurse Power Politics/NURS 404++
- 5 PH Communities/NURS 414
- 6 Comp Nsg. Practicum/NURS 415

14

(clinical time 24 hrs/wk)

+ represents Fall only course

++ represents Spring only course

Clinical time = time in application of nursing role performance

PHHR = (Promoting Health and Health Restoration); PH = (Promoting Healthy)

* Nutrition/DIET 202 must be taken at Gannon University

Progression Requirements

- Students must maintain a QPA (cumulative grade point average) of 2.70 to progress to the next semester.
- Students must achieve a minimum letter grade of C in all NURS courses AND all Science courses & labs.
- The curriculum is sequential; student's complete level one courses before level two courses, and level two courses before level three courses.

BSN-NURS Next-Step Program

The BSN-NURS Next-Step Program may be offered to students admitted to Gannon with a non-Nursing Associate's degree, Bachelor's degree, or equivalent international degree. Refer to the Liberal Studies section to learn more about Next-Step Programs.

NURSING (VILLA MARIA SCHOOL OF) – RN TO BSN OPTION – ONLINE PROGRAM

DAWN C. JOY, PhD, RN, CNE, *Associate Dean and Director*

The Villa Maria School of Nursing, in agreement with the Pennsylvania Nursing Articulation Model, believes that a common core of knowledge exists between accredited basic nursing programs and should be recognized without the requirements of special testing. The goal of the Pennsylvania Nursing Articulation Model is to provide an appropriate path of articulation between RN and BSN programs, which eliminates duplication of content. Villa Maria School of Nursing has created an option including the use of transfer credits, articulation credits, challenge exams and validation by portfolio which all aid in eliminating duplication of content. Transfer credits are awarded in accordance with the University guidelines and policies. Villa Maria School of Nursing provides articulation credits for basic nursing knowledge gained from an accredited RN program. Up to thirty-two (32) credits of nursing coursework are granted, during the final semester of study, for articulation credit.

Nursing knowledge gained through professional experience, which demonstrates attainment of professional nursing course outcomes may be validated through portfolio. Students admitted to the RN to BSN Option may choose to create a portfolio for qualifying professional nursing courses. The process for creation and validation of course outcomes by portfolio is presented, practiced, and refined in the Transition to Professional Nursing course (NURS 203).

The student, who believes that specific required courses would involve repetitive learning, may have an opportunity to challenge the course by examination. Students may also earn credits through the College Level Examination Program (CLEP). Students must receive academic advisement regarding course credits approved for challenge examinations and CLEP exams from their advisor. CLEP exams and transfer credits do not qualify as meeting the 30 institutional credits that must be completed to meet graduation requirements.

NLN Achievement testing may demonstrate a student's knowledge in specific subjects, such as nutrition.

NLN Achievement testing may be required for students who have not graduated from an accredited nursing program.

All RN to BSN Option students must earn 128 credits to graduate with the BSN. All RN to BSN option students must complete 30 institutional credits. Credits earned by CLEP and transfer credits are NOT qualified as institutional credits.

Registered Nurses with an Associate Degree in Nursing (ADN) may qualify to obtain the BSN through the BSN-NURS Next-Step Program.

NEXT-STEP PROGRAM

BSN Option for Graduates of Two-Year Colleges (ADN)

- I. Acceptance of transfer credits from the accredited ADN program, including a maximum of 32 nursing articulation credits.
- II. The student must take 19 credits of the Liberal Studies Core after completion of the Associate of Science in Nursing degree.

(Numerals in front of courses indicate credits)

- 3 Foundations of Theology/LTHE 101
 - 3 Introduction to Philosophy/LPHI 131
 - 3 Literature Series/LENG
 - 3 Fine Art Series/LFIN
 - 3 LPHI 237 or any LTHE 300 course
 - 1 Leadership Seminar/NURS 320
 - 3 Capstone Seminar: Nurse Power Politics/NURS 404 (validation by portfolio available)
-
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Students may transfer course equivalents to Foundations of Theology, Introduction to Philosophy, Literature Series, and/or Fine Arts Series. Students must take the Leadership Seminar, the Theology/Philosophy III Series, and NURS 404: Nurse Power Politics at Gannon.

- III. Completion or transfer equivalent of 31 credits of nursing prerequisites:

- 8 Human Anatomy & Physiology I and II/BIOL 115, 116, 117, 118
 - 4 Physiologic Chemistry and Lab/CHEM 105 and 108
 - 4 Microbiology/BIOL 106 & 107
 - 3 Human Growth and Development/PSYC 222
 - 3 Nutrition/DIET 202
 - 3 Statistics/PSYC 211 or SOCI 351 or MATH 213
 - 3 Introduction to Psychology/PSYC 111
 - 3 Basic Sociology/SOCI 110
-
- 31

- IV. Nursing credits required:

- 5 Transition to Professional Nursing/NURS 203 (required)
 - 3 Nursing Research/NURS 308 (required)
 - 5 Promoting Healthy Communities/NURS 414 (validation by portfolio available)
 - 3 Management and Leadership in Nursing/NURS 408 (validation by portfolio available)
-
- 16

- V. Elective Credits:

To achieve the required total of 128 credits and/or the 30 institutional credits required to graduate with a Bachelor of Science in Nursing degree, the following credits may be required:

- 21 Free electives
- 9 Nursing electives (e.g. must have NURS prefix)

The student must earn 128 credits to complete the Bachelor of Science in Nursing degree. The RN to BSN student will have a total of 60 credits in nursing through the combination of articulation credits and nursing courses taken at Gannon.

Registered Nurses with a hospital diploma in nursing may qualify to obtain the BSN through the completion of the following courses. (BSN-RNBS-PIP-OL)

I. Acceptance of an articulation agreement per institutional contract.

II. The student must take the entire Liberal Studies Core.

(Numerals in front of courses indicate credits)

English:

- 3 College Composition/LENG 111
- 3 Critical Analysis and Comp/LENG 112
- 3 Literature Series/LENG

Theology:

- 3 Foundations of Theology/LTHE 101
- 3 The Bible: An Intro/LTHE 201

Philosophy:

- 3 Introduction to Philosophy/LPHI 131
- 3 Philosophy II Series

Ethics:

- 3 LPHI 237 *or* any LTHE 300 course

Social Science:

- 3 Intro to Psychology/PSYC 111
- 3 Basic Sociology/SOCI 110

Fine Arts:

- 3 Fine Art Series/LFIN

Speech:

- 3 SPCH 111 *or* SPCH 113 *or* SPCH 115

Liberal Studies:

- 3 History Without Borders/LHST 111
- 3 Capstone Seminar/NURS 404 (validation by portfolio available)
- 1 Leadership Seminar/NURS 320

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III. Completion of 25 credits of nursing prerequisites:

- 8 Human Anatomy & Physiology I and II/BIOL 115, 116, 117, 118
- 4 Physiologic Chemistry and Lab/CHEM 105 and 108
- 4 Microbiology/BIOL 106 & 107
- 3 Human Growth and Development/PSYC 222
- 3 Nutrition/DIET 202
- 3 Statistics/PSYC 211 *or* SOCI 351 *or* MATH 213

25

 IV. Nursing credits required:

| | |
|-----------|---|
| 5 | Transition to Professional Nursing/NURS 203 (required) |
| 3 | Nursing Research/NURS 308 (required) |
| 5 | Promoting Healthy Communities/NURS 414 (validation by portfolio available) |
| 3 | Management and Leadership in Nursing/NURS 408 (validation by portfolio available) |
| <u>16</u> | |

V. Elective Credits:

To achieve the required total of 128 credits and/or the 30 institutional credits required to graduate with a Bachelor of Science in Nursing degree, the following credits may be required:

- 3 Free electives
- 9 Nursing electives (e.g. must have NURS prefix)

The student must earn 128 credits to complete the Bachelor of Science in Nursing degree.

COURSE DESCRIPTIONS

NURS 203: Transition to Professional Nursing

This course is designed to provide learning opportunities for RN to BSN students to broaden their perspectives of the professional nursing role in health care delivery. This course introduces the major concepts of Person, Society, Health, and Nursing. The process for creation of and validation of course outcomes by portfolio is presented, practiced and refined.

Prerequisites: PSYC 222, CHEM 105, CHEM 108 *5 credits, Fall, Spring or Summer*

NURS 320: Leadership Seminar

The Leadership seminar introduces students to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for the students' leadership development as reflected both in this course and the corequisite Theology or Philosophy Series III courses. This course, while housed in the Villa Maria School of Nursing, is open to all University students.

1 credit, Fall, Spring or Summer

NURS 400: Portfolio for NURS 404

Students ready to complete a portfolio for NURS 404 Nurse Power Politics register for this portfolio course in the semester the portfolio is to be completed. Portfolio process and criteria are published in the Villa Maria School of Nursing Handbook. The assigned course (NURS 404) credits may be included in the student's credit load and applied toward financial aid. The credits for the course are posted to the transcript upon completion of the portfolio and payment of appropriate fees.

Prerequisite: NURS 203 *3 credits, Fall, Spring or Summer*

NURS 401: Portfolio for NURS 408

Students ready to complete a portfolio for NURS 408 Management and Leadership in Nursing register for this portfolio course in the semester the portfolio is to be completed. Portfolio process and criteria are published in the Villa Maria School of Nursing Handbook. The assigned course (NURS 408) credits may be included in the student's credit load and applied toward financial aid. The credits for the course are posted to the transcript upon completion of the portfolio and payment of appropriate fees.

Prerequisite: NURS 203 *3 credits, Fall, Spring or Summer*

NURS 402: Portfolio for NURS 414

Students ready to complete a portfolio for NURS 414 Promoting Healthy Communities register for this portfolio course in the semester the portfolio is to be completed. Portfolio process and criteria are published in the Villa Maria School of Nursing Handbook. The assigned course (NURS 414) credits may be included in the student's credit load and applied toward financial aid. The credits for the course are posted to the transcript upon completion of the portfolio and payment of appropriate fees.

Prerequisite: NURS 203

5 credits, Fall, Spring or Summer

NURS 404: Nurse Power Politics (Capstone)

This capstone Liberal Studies course is a seminar experience designed to provide the student with an opportunity to explore contemporary health care issues, to analyze these issues within the historical, professional context as well as the context of his or her value system, and to adopt a position regarding such issues. The student is engaged in an active exploration of his/her own philosophy of nursing. Students are guided through this analysis by faculty who facilitate open discussions and exchange of ideas. Students develop skill in formulation of a position, consideration of others' viewpoints and defense of such a position, as well as to realize the potential impact and power of political activity. Students also realize the importance of individual action and commitment. Service learning is a required component of the course.

Prerequisite: Senior standing in nursing major.

Validation by portfolio is available.

3 credits, Fall, Spring or Summer

NURS 408: Management and Leadership in Nursing

This course focuses on the knowledge and skills related to the delivery of health care services within a nursing management context. Theories, concepts and models are presented which give the student an understanding of the knowledge base required for effective management and assuming a leadership role in professional nursing practice. The course provides the knowledge and skills necessary to apply principles in planning and delegating nursing care and discusses developing creative roles for managing and leading in nursing.

Prerequisite: NURS 203

Validation by portfolio is available.

3 credits, Fall, Spring or Summer

NURS 414NU: Promoting Healthy Communities

This course provides RN to BSN students a perspective of professional nursing at the community level of practice. Course content will provide an overview of specific issues and societal concerns that affect community health nursing practice; epidemiological applications in community health nursing; educational theories, models, and principles applied in community health nursing; risk factors and health problems for defined populations across the lifespan; issues and approaches in providing for the health care of defined populations in the community; specific health care needs and issues for populations at risk; communicable disease risk and prevention; and the diversity in the role of the community health nurse. Students apply previous knowledge and the nursing process in maximizing the health status of individuals, families, and defined populations within the community. Adult learning teaching strategies are employed in this course. The RN student participates in faculty guided-independent clinical experiences.

Prerequisite: NURS 203

Validation by portfolio is available.

5 credits, Fall, Spring or Summer

NURSING (VILLA MARIA SCHOOL OF) – SCHOOL NURSE CERTIFICATION

SHANNON SCULLY, MSN, RN, *Program Advisor*

The Villa Maria School, in cooperation with the School of Education, offers a post-baccalaureate degree in nursing (BSN) certificate for school nursing. The school nurse certificate program is open to registered nurses who have earned a BSN. Students who are currently enrolled in Gannon University's Villa Maria School of Nursing's BSN program may take the courses for the certificate during their undergraduate program, but do not qualify for enrollment in the certification until licensed as a registered nurse in the Commonwealth of Pennsylvania.

The purpose of this post-BSN certificate is to prepare nurses to meet the health care needs of children of all ages in diverse school settings. Health promotion, risk reduction, and health education are emphasized. The program is approved by the Pennsylvania Department of Education.

Please note that current PDE standards and regulations take precedence over any information described in this document. Should these standards and regulations change, Gannon University will change its requirements.

Admission Requirements:

- A. Licensed Registered Nurse
 - a. Completed application to Gannon University's Villa Maria School of Nursing's School Nurse Certificate Program.
 - b. Proof of licensure as a registered nurse in the Commonwealth of Pennsylvania.
 - i. Submit photocopy of RN license.
 - c. Currently hold a Bachelor of Science in Nursing (BSN) degree from an accredited program with a cumulative grade point average of 3.0 in undergraduate course work.
 - i. Submit official BSN transcript.
- B. Current RN students enrolled in the RN-BSN program.
 - a. Current overall QPA of 3.0 or higher
 - i. Submit request to Program Advisor for the School Nursing Certificate Program.
 - ii. Submit copy of current transcript.
 - b. Proof of licensure as a registered nurse in the Commonwealth of Pennsylvania.
 - i. Submit photocopy of RN license.

Program and Certification Requirements:

- 1. Admission, progression and graduation requirements from the Pennsylvania Department of Education (Chapter 354) for School Nurse Certification require an overall GPA of at least 3.0 in all undergraduate and certificate course work.
- 2. 5 credits of NURS 428 School Nursing which contains 100 hours of supervised clinical experience with a certified school nurse.
 - a. For admission to NURS 428 School Nursing the following are required
 - i. Holds a BSN, enrolled in the RN to BSN program, or is a senior student in the BSN program. *
 - ii. Proof of valid CPR certification
 - iii. Proof of current PPD (tuberculin testing).
 - iv. Proof of completed health records.

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- v. Proof of Act 33 and 34 clearances (child abuse and criminal)
 - vi. Complete all finger-printing requirements.
3. Support course requirement
 - a. 3 credit hours of SPED 101 Special Education Overview
 - b. 3 credit hours of EDCR 414 Sociology of Education
 4. Proof of Licensure in the Commonwealth of Pennsylvania as a registered nurse exempts the student from taking the PRAXIS I exams.
- * Gannon University students enrolled in the BSN-NURS or RN-BSN programs may be eligible to pursue this certificate. Students must declare their intent to obtain the certification to the Program Advisor for the School Nurse Certificate program and complete appropriate paperwork. Upon completion of the BSN program and proof of licensure as a registered nurse in the Commonwealth of Pennsylvania, the student must file a certification approval form with the School of Nursing to initiate the formal School Nurse Certification Process.

Permanent Certification

Pennsylvania offers permanent certification as a School Nurse when a graduate of a School Nurse Certification program has accumulated a minimum of 24 post-baccalaureate credit hours within 6 years of initial certification. In most cases, courses taken toward School Nurse Certification count toward permanent certification as long as they have been taken after the date on which the initial BSN degree was granted.

NUTRITION AND HUMAN PERFORMANCE

Program Director: SUZANNE E. KITTS, Ph. D.

The Nutrition and Human Performance program offers a Bachelor of Science degree through the Morosky College of Health Professions and Sciences. The mission of the Nutrition and Human Performance program is to promote understanding of the scientific background of nutrition as it translates to effective practice that builds future leaders in dietetics and nutrition. Students who choose to pursue Nutrition and Human Performance can expect to have significant hands on opportunities for both in exercise testing and prescription as well as nutritional assessment and dietary programming. The Nutrition and Human Performance program focuses on the preparation and development of students to become competent leaders who empower their patients, clients, employees and communities.

In general, students in the program take courses in the basic sciences (biology and chemistry) during the first two years of the program, in addition to the humanities and social sciences (to satisfy the University's liberal arts requirements). During the final two years of study, majors take advanced sequences of courses in physiology, kinesiology, nutrition, exercise physiology, psychology of sport and exercise, motor development, learning and performance.

Admission into the Undergraduate program:

Recommended standards for high school students for consideration for acceptance to the undergraduate Sport and Exercise Science Department include:

1. Overall high school GPA of 3.0 or higher.
2. SAT score of 1000 or higher or ACT score of 21 or higher.
3. Completion of college prep biology and chemistry with labs and three years of college prep mathematics.

COURSE DESCRIPTIONS

DIET 101: Nutrition Today: Contemporary Issues and Insights

This course is designed for students who are not health science majors and focuses on consumer issues related to foods and nutrition. In discussing the role of nutrients in health promotion and disease prevention, it includes critical information which will help consumers sort out nutrition advice; concepts, principles, and strategies which will enable consumers to personalize their food choices; and questions that people often ask; i.e., vegetarianism, diets for athletes, "good" foods and "bad" foods, safety of food supply, and fad diets. *3 credits, Varies*

DIET 202: Nutrition

A study of the basic principles of human nutrition; the digestion, absorption, metabolism and utilization, functions, interrelationships, food sources, recommended allowances, and deficiency diseases of the nutrients; nutritional needs during various stages of life cycle, and the problems in the improvement of nutrition of different ethnic and cultural groups, and some community programs providing food and nutrition assistance to eligible recipients.

An introduction to clinical nutrition (dietary modifications for certain diseases) is included.

Prerequisites: Take one group: (CHEM 106, BIOL 115) or (CHEM 111, BIOL 368) or (CHEM 105, BIOL 115) or (CHEM 106, BIOL 117) or (CHEM 106, BIOL 365) *3 credits, Both Semesters*

DIET 303: Advanced Nutrition

This course includes an in-depth study of the science of human nutrition. Integrating chemistry, physiology, foods, and nutrition, it examines the digestion, absorption, metabolism, and excretion of the nutrients at the cellular and systemic levels and the application of scientific principles to nutritional needs in health and disease. The course also includes nutrition assessment, introduction to research in nutrition and dietetics, observations in selected clinical laboratories and specialized health care units, and evaluation of special nutritional/dietary products. Group research project begins in this course and is carried through four semesters.

Prerequisites: DIET 202 and CHEM 366

4 credits, Fall

NHP 250: Nutrition and Health

This course deals with the basic principles of human nutrition, including the nutrients, food sources and their utilization in the body for growth and health throughout life.

Prerequisite: CHEM 103/104, BIOL 108/109 or consent of instructor

Lecture: 3 hours per week

3 credits, Fall, Odd years

NHP 300: Nutrition in the Life Cycle

This course deals with the changing nutritional needs of individuals throughout the lifespan. Physiological, societal and economic factors and the availability of nutrition services are considered in meeting the nutritional needs of men, women, and children from gestation through adulthood.

Prerequisite: NHP 250 or consent of instructor

Lecture: 3 hours per week

3 credits, Fall, Even years

NHP 310: Science of Obesity and Weight Loss

This course examines the multifactorial aspects of obesity, maintenance of healthy weight, and the relationship of weight status and chronic disease prevention. The student will learn the effects of obesity on health (mental and physical) and the proper ways to intervene with individuals/clients when it comes to weight management. The student will also learn how to assess a client's willingness to change, and techniques to set realistic goals for their client/patient.

Prerequisites: SPRT 130 – Sports Nutrition, DIET 202 – Nutrition or consent of instructor.

Lecture: 3 hours per week

3 credits, Fall, Even years

NHP 350: Advanced Sport Nutrition

This course provides an in-depth study of the nutrients as they relate to sports and fitness and of health-related issues related to human performance. These issues include eating disorders, dietary supplements, and various dietary manipulations.

Prerequisite: NHP 250 or consent of instructor

Lecture: 3 hours per week/Online

3 credits, Fall

NHP 400: Nutritional Assessment

This course emphasizes the systematic process of comprehensive assessment of the individual's nutritional status in health and disease. Anthropometric measurements, laboratory and clinical parameters, family, personal and medical histories, dietary intake, psychosocial factors, and many other factors are examined to draw conclusions for nutritional and other forms of intervention.

Prerequisite: NHP 250 or consent of instructor

Lecture: 3 hours per week

3 credits, Spring, Odd years

NHP 410: Nutrition and Disease

This course studies the pathogenesis of diseases and their dietary or nutritional management. Diseases that are studied include; Cardiovascular diseases, diabetes, obesity and metabolic syndrome, selected gastrointestinal disorders, and renal disorders.

Prerequisite: NHP 250 or consent of instructor

Lecture: 3 hours per week

3 credits, Spring, Even years

Suggested curriculum schedule is offered below.

(Numerals in front of courses indicate credits)

FRESHMAN (33 credits)*Fall*

- 3 Mol and Cell Biology/BIOL 122
 - 1 Mol and Cell Biology Lab/BIOL 123
 - 3 Public Speaking/SPCH 111
 - 3 College Composition/LENG 111
 - 2 First Year Seminar/SPRT 101
 - 3 General Chemistry I/CHEM 111
 - 1 General Chemistry I Lab/CHEM 112
-
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Spring

- 3 Animal Form & Function/BIOL 124
 - 1 Animal Form & Func Lab/BIOL 125
 - 3 General Chemistry II/CHEM 114
 - 1 General Chem II Lab/CHEM 115
 - 3 Sport Nutrition/SPRT 130
 - 3 Foundations of Theology/LTHE 101
 - 3 Critical Analysis & Comp/LENG 112
-
- 17

SOPHOMORE (33 credits)*Fall*

- 3 Nutrition & Health/NHP 250 or
Science of Obesity and Weight
Management/NHP300
 - 3 Microbiology/BIOL 106
 - 1 Microbiology Lab/BIOL 107
 - 3 Organic Chemistry I/CHEM 221
 - 1 Organic Chemistry I Lab/CHEM 222
 - 3 Introduction to Philosophy/LPHI 131
 - 3 The Bible: An Intro/LTHE 201
-
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Spring

- 3 Fine Arts/LFIN
 - 3 Exercise Psychology/SPRT 250
 - 3 Basic Sociology/SOCI 110
 - 3 Philosophy II Series/LPHI
 - 3 Organic Chemistry II/CHEM 224
 - 1 Organic Chem II Lab/CHEM 225
-
- 16

JUNIOR (34 credits)
Fall

- 3 Nutrition & Health/NHP 250 *or*
Science of Obesity and Weight
Management/NHP 310
- 3 Exercise Physiology/SPRT 390
- 1 Exercise Physiology Lab/SPRT 391
- 3 Research Methods in Exercise Science/
SPRT 310
- 3 Motor Development/SPRT 414
- 2 Disordered Eating in Athletics/
SPRT 393 *or* Issues in Cont. in Sport
Nutrition/SPRT 395
- 3 Literature Series/LENG

3

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Spring

- 3 Nutritional Assessment/NHP 400 *or*
Nutrition in Disease/NHP 410
- 3 Statistics/MATH/PSYC
- 3 History without Borders/LHST 111
- 3 Kinesiology/SPRT 360
- 1 Kinesiology Lab/SPRT 361
- 3 Motor Learning & Performance/
SPRT 415

16**SENIOR (31 credits)***Fall*

- 2 Disordered Eating in Athletics/
SPRT 393 *or* Issues & Cont. in Sport
Nutrition/SPRT 395
- 3 Exercise Testing & Prescription/
SPRT 400
- 1 Exercise Testing & Prescription Lab/
SPRT 401
- 3 Independent Study/SPRT 450
- 3 Advanced Sport Nutrition/NHP 350
- 3 LPHI 237 *or* any LTHE 300 course
- 1 Leadership Seminar

1

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Spring

- 3 Nutrition Assessment/NHP 400 *or*
Nutrition in Disease/NHP 410
- 3 Clinical Exercise Physiology/SPRT 425
- 3 Exercise Biochemistry/SPRT 405
- 3 Medical Terminology
- 3 Senior Seminar/LBST 383

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OCCUPATIONAL THERAPY

AMY BRZUZ, OTD, OTR/L, *Chair*

FACULTY: Associate Professors: Bernadette Hattjar, David LeVan, Amy Brzuz. Assistant Professors: Julia Hawkins, Nicole Lavery. Assistant Teaching Professor: Karen Probst. Instructor: Lindsay Church, Stephanie Kubiak

The Occupational therapy program allows opportunities for in-depth study and field practicum experiences with individuals of all ages who have limited capacity to perform in their everyday lives. The goal of occupational therapy is to assist the individual to achieve the maximum level of independent living through remediation of or adaptation to physical, cognitive, perceptual, or mental health impairments.

This program is designed to prepare students for career opportunities in occupational therapy. Gannon's OT Program has two points of entry: a five-year, entry-level masters degree program, beginning at the Freshman year, and a three-year entry level masters degree program for students who enter after obtaining a baccalaureate degree in another field. Students in the five-year program are awarded a baccalaureate degree in health sciences at the end of their fourth year. Upon completion of their fifth year students are awarded a Master of Science degree and are eligible to take the National Certification Examination. Students in the three-year program graduate with the Master of Science degree and are eligible to take the National Certification Examination at the end of the three-year program.

Two three-month clinical fieldwork experiences are required during the summer and fall of the last year of the program. Students must maintain a 3.00 GPA. Space may be available for transfer into the sophomore or junior year for students who began their studies in other majors and for individuals who are Certified Occupational Therapy Assistants.

The Occupational Therapy Program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE). Graduates are eligible to sit for the national certification examination administered by the National Board for Certification in Occupational Therapy. After successful completion of this exam, the individual will be an Occupational Therapist, Registered (OTR). Most states require licensure in order to practice; however, state license eligibility is usually based on the results of the Certification Examination. For further information on accreditation, the address, and web address telephone number for ACOTE are 6116 Executive Boulevard, Suite 200, Bethesda, MD 20852-4929; (301) 652-6611; <https://acoteonline.org/>

Individuals with certain types of criminal records (felonies) may be barred from practicing occupational therapy at the national or state level. Individuals with records should contact NBCOT at the following address: NBCOT, One Bank St., Suite 300, Gaithersburg, MD 20878 or via e-mail at: <http://http:www.nbcot.org>, and the occupational therapy licensing board of the state where they would like to practice prior to applying for admission to any OT program. Both of these organizations will do early evaluations of the record and let the individual know if they would be allowed to practice and any restrictions with might apply.

Admission Requirements

1. Completion of 16 academic units at the high school level, four of which must be English; remainder of units are to be comprised of four units of social sciences, two to four units of mathematics including algebra, two to four units of science including biology and chemistry with labs.
2. Your academic course selection, grades, rank in class, guidance counselor recommendation and SAT/ACT scores will be carefully reviewed for admission consideration.
3. A minimum cumulative grade point average of 3.0
4. An SAT score of 1080 or above (math and critical reading sections only), ACT score of 21 or above (composite score)
5. Demonstrate motivation and curiosity through interests and extracurricular activities.
6. Letters of recommendation are considered, as is a personal essay discussing reasons for choosing occupational therapy.
7. Observation or volunteer hours in occupational therapy clinics are not required for admission, but 40 hours are required for the Introduction to Occupational Therapy course your first semester. Completing these hours ahead of time is recommended; additionally, you then have the possibility of getting letters of recommendation from therapists, which can increase your chances of acceptance.
8. Students must have demonstrated efficiency in using tools common to distance education. This might include a learning platform, special courses, or job experience. Students taking an online course at Gannon University will require internet access to utilize Blackboard for their coursework. Blackboard can be found in the <http://my.gannon.edu> portal. Blackboard supports the latest versions of Internet Explorer, Safari, Mozilla Firefox, and Chrome.

COURSE DESCRIPTIONS

OCCT 108: Occupational Therapy First Year Seminar

The First-Year Seminar is a discussion/experience-based course intended to orient the new student to Gannon University, to introduce the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life, and to encourage development of academic, personal and spiritual aspects of the student's life. Each seminar is unique, depending upon the instructor and/or program in which it is offered. *2 credits*

OCCT 201: Introduction to Occupational Therapy Process

Development of occupational therapy as a profession; concepts of role acquisition and role dysfunction, human competence and adaptation; use of human occupation as therapeutic intervention, exploration of domains of practice of OT; scope of practice of health professionals; health & wellness; healthcare delivery systems; disability; professional behaviors. *3 credits*

OCCT 208: Leadership Seminar

The Leadership Seminar introduces students to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsible in various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social teaching serve as the basis for students' leadership development as reflected in both this course and in the co-requisite Theology or Philosophy Series III course. *1 credit*

OCCT 213: Occupational Role Acquisition

Development across the life span with emphasis on skill acquisition. All aspects of development in human and non-human environmental interaction will be considered including motor, sensory integrative, cognitive, perceptual, social, cultural and religious. Emphasis will be placed on development of performance components and competence in performance areas within a temporal and environmental context. Multicultural factors relating to development of competence will also be addressed.

Prerequisite: OCCT 201 or Per Instructor

Co-requisite: SOCI 120 (recommended)

3 credits

OCCT 315: Occupational Analysis Lab

This lab course will expand on the Occupational Therapy Practice Framework and the concepts contained within this document. This course provides students with hands-on experience in analysis of selected tasks of work, self-care and play/leisure with special emphasis on analysis of arts and crafts as well as the process of adapting and grading.

Prerequisite: OCCT 213 or Per Instructor

1 credit

OCCT 399: Independent Study

An independent study whose objectives are determined collaboratively between student and instructor; designed to enrich a student's depth of study in a specific area.

1 – 3 credits, Fall, Spring, Summer

OCCT 442: Analysis of Human Movement

Analysis of movement from a musculoskeletal orientation with focus on motor, sensory and motor learning components of human movement and their impact on occupations such as work, self-care, and play/leisure. Clinical examples will be provided to connect lecture to real-life application. This course will also discuss the influence of neurological, biomechanical, and human/non-human environments on daily occupations.

Prerequisites: PHYS 101, BIOL 108, BIOL 109, OCCT 315

Corequisite: OCCT 443

3 credits

OCCT 443: Analysis of Human Movement Lab

This course builds upon knowledge acquired in Analysis of Human Movement lecture, providing students with hands-on experiences regarding analysis of movement from a musculoskeletal orientation with focus on motor, sensory and motor learning and the impact on occupations such as work, self-care, and play/leisure.

Prerequisites: PHYS 101, BIOL 108, BIOL 109, OCCT 315

Corequisite: OCCT 442

1 credit

OCCT 461: Theoretical Foundations of Occupational Therapy

Development of philosophy and theory in occupational therapy. Examination of the conceptual models which have shaped occupational therapy since its inception. Analysis of current theories, models and frames of reference which shape practice. In-depth analysis of the concepts underlying occupational behavior, occupational science and clinical reasoning.

Prerequisite: OCCT 315

3 credits

OCCT 486: Occupational Therapy Medical Sciences

Signs, symptoms, medical management and pharmacological management of general medical, neurological, orthopedic and psychiatric conditions relevant to occupational therapy intervention.

3 credits

OCCT 490: Special Topics

A course designed to provide in-depth study of a specific topic; objectives are determined on a course by course basis relative to the expertise of the faculty, needs of the students or relevance to a changing professional environment.

Prerequisite: Enrollment in OT; Specific prerequisites are topic related.

1 – 3 credits

GOCCT 505: Clinical Neuroscience

An in-depth study of the structure and function of the central nervous system relative to human behavior. Peripheral structures involved in sensorimotor function will be included. Clinical conditions and case studies, including their influence on occupational performance components and areas, will be utilized.

Prerequisites: BIOL 108, BIOL 109, OCCT 315 or Per Instructor

4 credits

GOCCT 511: Neurorehabilitation Techniques

Analysis of various theoretical approaches to the treatment of central nervous system motor dysfunction throughout the life span. Topics will include neurodevelopmental, sensorimotor, and kinesiological approaches to motor dysfunction including relevant research findings.

Current research regarding the efficacy of the various theoretical approaches will be explored.

Prerequisites: OCCT 442, OCCT 443, GOCCT 505

Corequisite: GOCCT 512

3 credits

GOCCT 512: Neurorehabilitation Techniques Lab

Laboratory will provide guided experiences in neurorehabilitation handling techniques, application to human occupations, clinical reasoning, case analyses and selected clinical experiences. Current research regarding the efficacy of the various theoretical approaches will be explored.

Prerequisites: OCCT 442, OCCT 443, GOCCT 505

Corequisite: GOCCT 511

1 credit

GOCCT 517: Occupational Therapy Intervention: Psychosocial I

This is an integrated theory and practice course examining occupational therapy models for psychosocial treatment approaches based on the current research body of knowledge. Development of interpersonal skills, group leadership skills, and the therapeutic use of self are introduced. Areas explored include techniques for prevention, understanding of the process of group dynamics, remediation of role dysfunction within various cultures, populations, and diagnosis groups. OT Intervention: Psychosocial I is the first of two courses dealing with psychosocial dysfunction.

Prerequisites: PSYC 232; OCCT 315

Corequisite: GOCCT 518

3 credits

GOCCT 518: Occupational Therapy Intervention: Psychosocial I Lab

This lab course provides students with hands-on experience in examining occupational therapy models for psychosocial treatment approaches based on the current research body of knowledge. Development of interpersonal skills, group leadership skills, and the therapeutic

use of self are fostered. Areas explored include techniques for prevention, understanding of the process of group dynamics, remediation of role dysfunction within various cultures, populations, and diagnosis groups.

Prerequisites: PSYC 232; OCCT 315

Corequisites: GOCCT 517

1 credit

GOCCT 519: OT Intervention: Psychosocial II

This course integrates OT theory and practice and the use of self in a therapeutic manner (the intentional relationship) in relation to occupational therapy evaluations, interventions, and clinical fieldwork experiences. The basis for this course is mental health throughout the lifespan and this represents the course framework. Mental health diagnosis, signs, symptoms, medications, and behaviors will be presented. Fieldwork placements for this course will provide a dynamic and total experience of academic learning placed into clinical action with clients who experience mental health issues either primarily or secondarily in the community. This course includes traditional lecture, student presentations, and community-based fieldwork placements throughout the semester.

Prerequisites: GOCCT 517; GOCCT 518; PSYC 232

Corequisite: GOCCT 520

4 credits

GOCCT 520: OT Intervention: Psychosocial II Lab

This lab course integrates OT theory and practice and the use of self in a therapeutic manner (the intentional relationship) in relation to occupational therapy evaluations, interventions, and clinical fieldwork experiences. Course labs provide hands-on activities to strengthen concepts learned in lecture and provide a format for peer learning of evaluations, screens, and interventions.

Prerequisites: GOCCT 517; GOCCT 518; PSY 232

Corequisite: GOCCT 519

1 credit

GOCCT 527: Fieldwork Seminar

This seminar is designed to facilitate the student's personal and professional growth in preparation for Level I and Level II fieldwork experiences. Throughout the course of this seminar, students will be prepared to effectively incorporate the tenets of professional development to successfully transition to the clinical setting. Content will address the following: the fieldwork process, clinical learning styles, the fieldwork onboarding requirement process, the student/fieldwork educator relationship, communication and development, exploration of the various areas of occupational therapy practice, evaluation of fieldwork performance, and evaluation of fieldwork experience.

1 credit

GOCCT 530: Community-Based Intervention

Therapeutic intervention with concentration on community based practice and populations; special emphasis on the needs of the elderly; health/wellness programs; community centers; homeless populations; and special considerations in home health.

Prerequisites: OCCT 486, GOCCT 511, GOCCT 512, GOCCT 519, GOCCT 520

Corequisites: GOCCT 531, GOCCT 532, GOCCT 537, GOCCT 538

3 credits

GOCCT 531: OT Intervention: Physical Disabilities I

This course examines the Occupational Therapy evaluation and treatment planning process as it relates to individuals with physical disabilities. Students will acquire information regarding evaluation of all areas of the Occupational Therapy domain: occupation; client factors; performance skills; performance patterns; and contexts and environments. Students will also gain knowledge of intervention planning, documentation, and specific intervention practice settings, as they relate to individuals with physical disabilities.

Prerequisites: OCCT 486; GOCCT 511; GOCCT 512; GOCCT 519; GOCCT 520

Corequisites: GOCCT 532

3 credits

GOCCT 532: OT Intervention: Physical Disabilities I Lab

This lab course builds upon the information acquired in OT Intervention: Physical Disabilities I Lecture. Students will gain hands-on experiences related to evaluations, intervention planning, documentation, and specific intervention practice settings, as they relate to individuals with physical disabilities.

Prerequisites: OCCT 486; GOCCT 511; GOCCT 512; GOCCT 519; GOCCT 520

Corequisites: GOCCT 531

1 credit

GOCCT 533: OT Intervention: Physical Disabilities II

This course explores the analysis and adaptation of the human and non-human environments in response to role dysfunction, as well as architectural barriers, orthotics, prosthetics, wheelchair prescription and management, adaptive equipment and assistive technology. OT interventions for specific adult physical disabilities including orthopedic, neurological and general medical conditions are presented. Prevention and treatment interventions are explored as well as the psychosocial aspects of physical dysfunction and application of clinical reasoning through case studies and review of relevant research. Level I fieldwork in an adult Physical Disabilities setting included.

Prerequisites: GOCCT 486; GOCCT 531; GOCCT 532

Corequisite: GOCCT 534

4 credits

GOCCT 534: OT Intervention: Physical Disabilities II Lab

This lab course builds upon the information acquired in OT Intervention: Physical Disabilities II Lecture. Students design and implement OT interventions for specific adult physical disabilities including orthopedic, neurological and general medical conditions. Prevention and treatment interventions are explored as students gain hands-on experience in the analysis and adaptation of the human and non-human environments in response to role dysfunction, as well as architectural barriers, orthotics, prosthetics, wheelchair prescription and management, adaptive equipment and assistive technology.

Prerequisites: GOCCT 486; GOCCT 531; GOCCT 532

Corequisite: GOCCT 533

1 credit

GOCCT 537: OT Intervention: Pediatrics and Developmental Disabilities I

This course involves atypical development resulting in problems in role performance with interventions to address dysfunction in children. Role acquisition, competence, adaptation, and dysfunction from birth through adolescence in the areas of sensory, motor, perceptual, cognitive, and play will be addressed. Students will analyze appropriate use of specific assessments and treatment techniques from a range of theoretical frames of reference.

Prerequisites: OCCT 486; GOCCT 511; GOCCT 512

Corequisites: GOCCT 531; GOCCT 532; GOCCT 538

4 credits

GOCCT 538: OT Intervention: Pediatrics and Developmental Disabilities I Lab

This course builds on information acquired in OT Intervention: Pediatrics and Developmental Disabilities I Lecture. Through hands on learning students analyze and utilize appropriate and specific assessments and treatment techniques from a range of theoretical frames of reference with guided practice along with clinical reasoning through case studies and active lab learning activities. The use of assistive technology will also be incorporated.

Prerequisites: OCCT 486; GOCCT 511; GOCCT 512

Corequisites: GOCCT 531; GOCCT 532; GOCCT 537

1 credit

GOCCT 539: OT Intervention: Pediatrics and Developmental Disabilities II

This course is a continuation in knowledge acquisition of pediatrics and developmental disabilities building off of GOCCT 537 and 538. Students will learn how to provide pediatric O.T. intervention in a variety of settings and models, including educational, early intervention and medical rehab. Further learning surrounding child and adolescent development and specific treatment techniques from a range of theoretical frames of references will be included.

Prerequisites: OCCT 486; GOCCT 537; GOCCT 538

Corequisites: GOCCT 540; GOCCT 533; GOCCT 534

3 credits

GOCCT 540: OT Intervention: Pediatrics and Developmental Disabilities II Lab

This course provides students with the opportunity to apply and practice hands on application of the knowledge acquisition of pediatrics and developmental disabilities building off of GOCCT 537 and 538 and GOCCT 539 lecture. Students will practice assessment strategies, various treatment intervention and discharge planning related to a variety of settings and models, including educational, early intervention and medical rehab. Active learning lab activities including pediatric hand splinting, sensory based interventions and assistive technology/wheelchair procurement will be addressed. Level I Fieldwork in a pediatric setting will be included.

Prerequisites: OCCT 486; GOCCT 537; GOCCT 538

Corequisites: GOCCT 539; GOCCT 533; GOCCT 534

1 credit

GOCCT 551: The Research Process

Using a comprehensive approach, this course is designed to stimulate student interest in the research process, theory development and translations of findings to practice in health sciences. Students learn the components, principles and methods of scientific research to become discerning consumers of research.

3 credits

GOCCT 590: Special Topics

A course designed to provide in-depth study of a specific topic; objectives are determined on a course by course basis relative to the expertise of the faculty, needs of the students or relevance to a changing professional environment.

Prerequisite: Completion of all fourth year courses, Permission of Instructor

1 – 3 credits

GOCCT 620: Leadership and Management in OT

Supervision and management theory and techniques with research review and application; role delineation; COTA and OTR collaborative intervention; quality assurance; program development; financial management; management methods in current healthcare systems and alternative work settings including funding resources; and developing independent small businesses in alternative settings.

Prerequisites: GOCCT 660, GOCCT 661

Corequisites: GOCCT 710, GOCCT 726, GOCCT 727, GOCCT 730

3 credits

GOCCT 630: Intervention Techniques for Gerontology

This course will explore various evidence-based strategies for improving health and functional independence of older adults. Students will be introduced to the various age related changes that occur in the cardiovascular, pulmonary, musculoskeletal, neuromuscular, and information processing systems. Course content will be delivered primarily through lecture, discussions, and article reviews. Case studies and interactive clinical activities will allow students the opportunity to design and implement an occupational therapy screening, evaluation, plan of care, and treatment for individuals with a variety of diagnoses commonly encountered in the aging population.

3 credits

GOCCT 640: Clinical Reasoning Seminar I

The Liberal Studies senior capstone is the culminating experience of the Core curriculum and therefore requires students to integrate knowledge and skills from their major study areas, Liberal Studies courses, and co-curricular experiences. The course emphasizes cultural competence, leadership, ethical reasoning, Catholic social teaching, and LIFECORE. Additionally, the OT capstone covers the analysis of therapeutic intervention as an interpretive process. Application of procedural, interactive, conditional and narrative reasoning to therapeutic intervention through selected case analysis across disabilities and the life span.

Prerequisites: GOCCT 531, GOCCT 532, GOCCT 537, GOCCT 538

Corequisites: GOCCT 533, GOCCT 534, GOCCT 539, GOCCT 540, GOCCT 630

3 credits

GOCCT 650: Research Seminar

This course involves the systematic writing of the research proposal and application of the research process and methodologies as they apply to the field of occupational therapy. Focus is on the methods of research design, with critical analysis of its components including collection, analysis, and interpretation of data. Synthesizing the relationships of the problem, methodology, hypothesis, and data analysis will be pivotal in the course. This course will culminate in the production of an approved proposal which will be the basis of the student's completed thesis.

Prerequisite: GOCCT 550; Senior standing in the OT program.

3 credits

GOCCT 660/661: Fieldwork Experience I & II

Six months full time clinical experience in two different occupational therapy settings; supervised practice of therapeutic assessment and intervention techniques; students will gain experience in a wide variety of clinical conditions and age ranges. Prerequisite: Satisfactory completion of all academic requirements in the fourth year; permission of faculty

8 + 8 credits

GOCCT 710: Emerging Models of Practice

This course will examine emerging models of practice in the field of OT as well as related job opportunities. These will vary, based upon current healthcare systems, Occupational Therapy theories, practice and service delivery models. In-depth exploration and understanding of current health-care policies; social, demographic, and political issues driving the health-care system; influences in delivery of services in OT. Informatics will be utilized as the system for investigation of resources. New methods and settings in which to provide OT intervention will be examined and applied in a local agency or organization. Participants will also evaluate the effectiveness of these services and modify them as needed.

Prerequisites: GOCCT 660, GOCCT 661

3 credits

GOCCT 720: The Occupational Lens

The course explores occupational science and humans as occupational beings, and promotes discussion related to occupational deprivation and its relationship to occupational participation, justice, advocacy and the benefits of engagement in occupation. Students analyze occupation as a life organizer and develop and utilize observational skills, and problem solving approaches to view therapy from an occupational lens.

Prerequisites: GOCCT 660; GOCCT 661

2 credits

GOCCT 727: Advanced Intervention: Theory and Techniques Lab

This lab course introduces students to advanced theories and techniques used in occupational therapy practice. Emphasis is on hands-on application of advanced therapeutic intervention techniques and theories across age ranges, analysis, and adaptation of the human and non-human environments in response to role dysfunction; advanced modalities, refined handling techniques, advanced hand treatment, assistive technology application, and complementary and alternative therapies.

1 credit

GOCCT 730: Professional Issues Seminar

Critical analysis of current professional issues will be examined in this course. Topics will include, but not be limited to: health care delivery systems, professional boundaries, regulatory agencies, specialization, validation of theory; continuing professional competence; contributions to the profession and society.

Prerequisites: GOCCT 660, GOCCT 661

Corequisites: GOCCT 726, GOCCT 727

3 credits

GOCCT 750/751: Thesis I & II

This course builds on GW 650 by further development and completion of the group research project. Systematic investigation of a research problem including gathering and analyzing the data, synthesizing and discussing the information collected, and summarizing the conclusions.

Prerequisite: GOCCT 650, approval of the thesis director

1/3 credits

MS in Occupational Therapy Curriculum Requirements

(Numerals in front of courses indicate credits)

FIRST YEAR

Fall

- 2 First-Year Seminar/OCCT 108
- 3 Intro to Occ Therapy/OCCT 201
- 3 College Composition/LENG 111
- 3 Intro to Psychology/PSYC 111
- 3 Intro to Philosophy/LPHI 131
- 3 Intro Organic & Biochem/CHEM 102

17

Spring

- 3 Occ Role Acquisition/OCCT 213
- 3 Crit Analysis & Comp/LENG 112
- 3 Individual/Culture/Soc/SOCI 120
- 3 Concepts in Physics/PHYS 101
- 3 Foundations of Theology/LTHE 101
- 3 Speech/SPCH 111/113

18

SECOND YEAR

Fall

- 1 OT Leadership Seminar/OCCT 208
- 1 Occ. Analysis Lab/OCCT 315
- 3 History Without Borders/LHST 111
- 3 The Bible: An Intro/LTHE 201
- 3 Applied Statistics/MATH 213
- 4 Human Anatomy and Phys I/
Lab/BIOL 108/109

15

Spring*

- 3 Theoretical Found. of OT/OCCT 461
- 3 Psychopathology/PSYC 232
- 3 Philosophy II
- 3 LPHI 237 Ethics *or* any LTHE 300 course
- 4 BIOL 110/111/Human Anatomy
and Phys II/Lab

16

THIRD YEAR

Fall

- 4 Analysis of Human Move with lab/
OCCT 442 and 443
- 4 Clinical Neuroscience/GOCCT 505
- 4 OT Interven: Psychosocial I with lab/
GOCCT 517 and 518
- 1 Fieldwork Seminar/GOCCT 527
- 3 OT Medical Sci/OCCT 486

16

Spring

- 5 OT Interv: Psychosocial II with lab/
GOCCT 519 and 520**
- 3 The Research Process/GOCCT 551
- 3 Literature Series/LENG
- 3 Neurorehab Tech/GOCCT 511
- 1 Neurorehab Tech Lab/GOCCT 512

15

FOURTH YEAR

Fall

- 4 Interv: Physical Disabil I with lab/
GOCCT 531 and 532
- 5 Interv: Pediatrics & Dev Disab I with
lab/GOCCT 537 and 538
- 3 Community Based Interv/GOCCT 530
- 3 Research Seminar/GOCCT 650
- 3 Fine Arts Series/LFIN

18

Spring

- 5 Interv: Phys Disab II with lab/GOCCT
533 and 534**
- 4 Interv: Pediatrics & Dev Disab II with
lab/GOCCT 539 and 540**
- 3 Clinical Reasoning Sem I/GOCCT 640
- 1 Thesis I/GOCCT 750
- 3 Interv Tech for Gerontology/GOCCT 630

16

FIFTH YEAR

Summer/Fall (Start of graduate phase)

- 8 Field Work Experience IIa/GOCCT 660
8 Field Work Experience IIb/GOCCT 661

Spring

- 3 Emerging Models of Practice/
GOCCT 710
1 Adv Interv: Theory & Techniq lab/
GOCCT 727
3 Professional Issues Sem/GOCCT 730
3 Thesis II/GOCCT 751
2 The Occupational Lens/GOCCT 720
3 Leadership & Mgmt in OT/GOCCT 620

16

15**Total Credits: 162**

* *Study abroad option available this semester (Rome); students must choose the study abroad option after their first semester at Gannon (freshman year) so that course changes can be made as needed.*

** *GIFT (Gannon : Inspired Faculty-led Travel) Courses, see page 65 for GIFT Program specifics.*

PHYSICAL THERAPY

KRISTINE LEGTERS, PT, DSc, NCS, *Chairperson*

CAROLYN GALLEHER, PT, DHS, *Coordinator of Undergraduate Physical Therapy, Associate Program Director*

FACULTY: *Professor:* Kristine Legters. *Assistant Professors:* Carolyn Galleher, Beth Gustafson, Kate MacPhedran, Courtney Roca, Donna Skelly, Kristen Snarski. *Assistant Teaching Professors:* Jillian Caster, Matt Caster, Connie Lewis, Jon Ulrich.

Physical Therapy is a health care profession that primarily focuses on the preservation, development, and restoration of optimal function. Physical therapists provide evaluative, rehabilitative, and preventive health care services designed to alleviate pain, prevent the onset and progression of impairment, functional limitation, disability resulting from injury, disease, or other causes, and restore, maintain and promote overall fitness, health and optimal quality of life. Physical therapists work with individuals of all ages who demonstrate movement dysfunction, or the potential for such dysfunction, of the neurological, musculoskeletal, integumentary, and cardiopulmonary systems.

Physical therapists practice in a hospital setting, or provide services in out-of-hospital settings through home health agencies, in nursing homes, in industrial settings, through public health agencies, in private physical therapy clinics, in public schools, and in a variety of other nontraditional settings.

The job opportunities for physical therapists remain abundant, and according to the *Occupation Outlook Handbook*, are expected to continue to grow during the new millennium. Advances in medical technology continue to allow for the treatment of more severe disabilities. As a result, physical therapists will be needed to care for the aging baby boomers who face heart disease, strokes and arthritis, and to attend to the growing number of newborns who suffer severe birth defects.

Gannon's undergraduate Physical Therapy curriculum assists students in preparing themselves for acceptance into Gannon's Doctor of Physical Therapy program.

Gannon University offers a doctoral degree program in physical therapy which is three years in length. Students entering Gannon's undergraduate physical therapy program have a choice to apply for either the 4 +3 Guaranteed Undergraduate Physical Therapy Track or the 3 +3 Guaranteed Undergraduate Physical Therapy Track. Students completing the

undergraduate physical therapy program will earn a Bachelor of Science in Health Science and, after completing the graduate physical therapy program, will earn a Doctor of Physical Therapy degree.

4 + 3 Guaranteed Undergraduate Physical Therapy Track admission requirements:

A guaranteed position in the Doctor of Physical Therapy program will be reserved for any freshman if the following criteria are met:

1. SAT total of 1090 or higher or ACT score of 21 or higher
2. GPA of 3.00 or higher on a 4.0 scale.
3. Must maintain a GPA of 3.00 or higher in Gannon undergraduate courses.
4. Must maintain a GPA of 3.00 or higher in prerequisite courses; may repeat up to 4 credits of prerequisite courses
5. Overall GPA will be reviewed at the end of the Freshman, Sophomore and Junior year. Overall and prerequisite GPA will be reviewed at the end of the Senior year. GPA's are evaluated as reported by the Registrar's Office.

3 + 3 Guaranteed Undergraduate Physical Therapy Track admission requirements:

Gannon also offers the opportunity to participate in a 3 + 3 program. This program has been designed for qualified students to earn the Bachelor of Science in Health Science and a Doctor of Physical Therapy degree in six years rather than seven. A guaranteed position in the Doctor of Physical Therapy program will be reserved for any freshman if the following criteria are met:

1. SAT total of 1170 or higher or ACT score of 24 or higher
2. A high school GPA of 3.40 or better.
3. Must maintain a GPA of 3.40 or higher in Gannon undergraduate courses.
4. Must maintain a GPA of 3.40 or higher in prerequisite courses with no repeated courses.
5. Overall GPA will be reviewed at the end of the Freshman, Sophomore, and Junior Year. Prerequisite GPA will be reviewed at the end of the Junior Year. GPA's are evaluated as reported by the Registrar's Office.

Additional Admission Opportunities for Gannon Undergraduates:

Students who do not enter as freshman into the undergraduate physical therapy program may still apply and be accepted into the Doctor of Physical Therapy Graduate Program. Students pursuing other undergraduate majors at Gannon University who 1) complete all of the required prerequisite courses and 2) meet the minimum admission requirements at the time of application to the DPT program at Gannon University will receive preference for admission. Currently, 75% of seats in the graduate DPT program are reserved for students who have graduated from Gannon University with a bachelor's degree and meet all of the DPT admission requirements. Seats in the graduate program will be filled first with students granted admission to one of the two guaranteed programs and successfully complete all requirements of the guaranteed program. Any remaining available seats will be offered to Gannon students enrolled in other majors, or who transfer to Gannon, who meet all entry requirements.

The graduate program gives preference to qualified Gannon University undergraduate physical therapy applicants who meet the following criteria:

1. Maintain a minimum overall 3.0 GPA in undergraduate coursework
2. Satisfy the prerequisite course GPA requirements of 3.0 with no more than four credits of repeat course work; grades of C- or below are not accepted.
3. Successful completion of an undergraduate degree from Gannon University.
4. Transferred to Gannon University and completed a minimum of 30 credits in the undergraduate physical therapy program at Gannon University.

Course Selection:

The following coursework meets the general requirements for most professional schools of physical therapy including Gannon’s graduate program:

| | | | |
|-----------------------------|-----------|------------------------------|-----------|
| Biology with laboratories | 8 credits | Human Anatomy with lab | 4 credits |
| Chemistry with laboratories | 8 credits | Human Physiology with lab | 4 credits |
| Physics with laboratories | 8 credits | Exercise Physiology with lab | 4 credits |
| Mathematics | 3 credits | Statistics | 3 credits |
| Psychology | 6 credits | Kinesiology (recommended) | |

4 + 3 Undergraduate Physical Therapy Curriculum:

BS Health Science/4 +3 Guaranteed UG Physical Therapy Track

Recommended Schedule of Courses

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First Year Seminar
- 3 LTHE 101 Found. of Theo. & Morality
- 3 LENG 111 College Composition
- 3 BIOL 122 Molecular/Cellular Biology
- 1 BIOL 123 Molecular/Cellular Biology Lab
- 3 LHST 111 History without Borders
- 2 PT 100 Introduction to the Physical Therapy Profession

17

Spring

- 3 LPHI 131 Introduction to Philosophy
- 3 LTHE 201 The Bible: An Introduction
- 3 LENG 112 Critical Analysis and Comp
- 3 BIOL 124 Animal Form and Function
- 1 BIOL 125 Animal Form and Function Lab
- 3 MATH 112 College Trigonometry

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SOPHOMORE

Fall

- 3 CHEM 111 Gen Chemistry I
- 1 CHEM 1112 Gen Chemistry I Lab
- 3 PHYS 105 College Physics I
- 1 PHYS 106 College Physics I Lab
- 3 SPCH Speech*
- 3 PSYC 111 Intro to Psychology
- 3 General Elective

17

Spring

- 3 CHEM 114 Gen Chemistry II
- 1 CHEM 115 Gen Chemistry II Lab
- 3 PHYS 108 College Physics II
- 1 PHYS 109 College Physics II Lab
- 3 PHAS 121 Medical Terminology
- 3 SPRT 360 Kinesiology
- 1 SPRT 361 Kinesiology Lab

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JUNIOR

Fall

- 3 PSYC 222 Psychology of Hum Dev
- 3 Health Science Elective
- 3 LPHI 320 Bioethics *or*
LPHI 325 Healthcare Ethics
- 3 LENG Literature Series*
- 3 BIOL 365 Human Gross Anatomy
- 1 BIOL 366 Human Gross Anatomy Lab

16

Spring

- 3 PSYC 211 Psychological Statistics
- 3 LPHI 237 Ethical Resp. *or*
LTHE THEO III series*
- 1 Leadership Seminar
- 3 Health Science Elective
- 3 PSYC 234 Health Psychology
- 3 BIOL 368 Human Physiology
- 1 BIOL 369 Human Physiology Lab

17

SENIOR

Fall

| | |
|-----------|---|
| 3 | SPRT 390 Physiology of Exercise & Sport |
| 1 | SPRT 391 Physiology of Exercise & Sport Lab |
| 3 | LFIN Fine Arts Series* |
| 6 | Health Science Electives |
| 4 | PSYC 303 Research Methods with Lab |
| <u>17</u> | |

Spring

| | |
|-----------|--------------------------|
| 7 | Health Science Electives |
| 3 | Senior Capstone Seminar* |
| 3 | General Elective |
| <u>13</u> | |

* Please refer to the undergraduate Catalog for course options.

The 4 + 3 Guaranteed Physical Therapy track allows a student the opportunity to study abroad in the junior year. The following is a proposed schedule of courses which includes the study abroad option.

BS Health Science/4 +3 Guaranteed Physical Therapy Track**Recommended Schedule of Courses/Study Abroad Option**

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|-----------|--|
| 2 | First Year Seminar |
| 3 | LTHE 101 Found. of Theo. & Morality |
| 3 | LENG 111 College Composition |
| 3 | BIOL 122 Molecular/Cellular Biology |
| 1 | BIOL 123 Molecular/Cellular Biology Lab |
| 3 | LHST 111 History without Borders |
| 2 | PT 100 Introduction to the Physical Therapy Profession |
| <u>17</u> | |

Spring

| | |
|-----------|---------------------------------------|
| 3 | PSYC 111 Intro to Psychology |
| 3 | LPHI 131 Introduction to Philosophy |
| 3 | LENG 112 Critical Analysis and Comp |
| 3 | BIOL 124 Animal Form and Function |
| 1 | BIOL 125 Animal Form and Function Lab |
| 3 | MATH 112 College Trigonometry |
| <u>16</u> | |

SOPHOMORE

Fall

| | |
|-----------|--------------------------------|
| 3 | CHEM 111 Gen Chemistry I |
| 1 | CHEM 112 Gen Chemistry I Lab |
| 3 | PHYS 105 College Physics I |
| 1 | PHYS 106 College Physics I Lab |
| 3 | SPCH Speech* |
| 3 | General Elective |
| 3 | Health Science Elective |
| <u>17</u> | |

Spring

| | |
|-----------|---------------------------------|
| 3 | CHEM 114 Gen Chemistry II |
| 1 | CHEM 115 Gen Chemistry II Lab |
| 3 | PHYS 108 College Physics II |
| 1 | PHYS 109 College Physics II Lab |
| 3 | PHAS 121 Medical Terminology |
| 3 | PSYC 222 Psychology of Hum Dev |
| 3 | SPRT 360 Kinesiology |
| 1 | SPRT 361 Kinesiology Lab |
| <u>18</u> | |

JUNIOR

Fall – Recommended Study Abroad Semester

- 3 LTHE 201 The Bible: An Introduction
- 3 LPHI 237 Ethical Resp. *or*
LTHE THEO III series*
- 3 LENG Literature Series*
- 3 LFIN Fine Arts Series*

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Spring

- 3 Health Science Elective
- 3 PSYC 211 Psychological Statistics
- 1 Leadership Seminar
- 3 LPHI 320 Bioethics *or*
LPHI 325 Healthcare Ethics
- 3 BIOL 365 Human Gross Anatomy
- 1 BIOL 366 Human Gross Anatomy Lab

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SENIOR

Fall

- 3 BIOL 368 Human Physiology
- 1 BIOL 369 Human Physiology Lab
- 6 Health Science Electives
- 4 PSYC 303 Research Methods with Lab
- 3 Senior Capstone Seminar*

17

Spring

- 3 SPRT 390 Physiology of Exercise & Sport
- 1 SPRT 391 Physiology of
Exercise & Sport Lab
- 3 PSYC 234 Health Psychology
- 3 General Elective
- 7 Health Science Electives

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* Please refer to the undergraduate Catalog for course options.

3 + 3 Guaranteed Undergraduate Physical Therapy Track:

BS Health Science/3 +3 Guaranteed Physical Therapy Track

Recommended Schedule of Courses

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

- 2 First Year Seminar
- 3 LTHE 101 Found. of Theo. & Morality
- 3 LENG 111 College Composition
- 3 BIOL 122 Molecular/Cellular Biology
- 1 BIOL 123 Molecular/
Cellular Biology Lab
- 3 PHAS 121 Medical Terminology
- 3 PSYC 111 Intro to Psychology

18

Spring

- 3 LPHI 131 Introduction to Philosophy
- 3 LTHE 201 The Bible: An Introduction
- 3 LENG 112 Critical Analysis and Comp
- 3 BIOL 124 Animal Form and Function
- 1 BIOL 125 Animal Form and Function Lab
- 3 MATH 112 College Trigonometry
- 2 PT 100 Introduction to the Physical
Therapy Profession

18

SOPHOMORE

Fall

- 3 CHEM 111 Gen Chemistry I
- 1 CHEM 112 Gen Chemistry I Lab
- 3 PHYS 105 College Physics I
- 1 PHYS 106 College Physics I Lab
- 3 SPCH Speech*
- 3 LHST 111 History without Borders
- 3 General Elective

17

Spring

- 3 CHEM 114 Gen Chemistry II
- 1 CHEM 115 Gen Chemistry II Lab
- 3 PHYS 108 College Physics II
- 1 PHYS 109 College Physics II Lab
- 3 PSYC 222 Psychology of Hum Dev
- 3 SPRT 360 Kinesiology
- 1 SPRT 361 Kinesiology Lab
- 3 General Elective

18

JUNIOR
Fall

- 3 LPHI 320 Bioethics *or*
Healthcare Ethics
- 3 LFIN Fine Arts Series*
- 3 LENG Literature Series*
- 3 PSYC 211 Psychological Statistics
- 3 BIOL 365 Human Gross Anatomy
- 1 BIOL 366 Human Gross Anatomy Lab

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Spring

- 3 LPHI 237 Ethical Resp. *or*
LTHE THEO III series* LPHI 325
- 1 Leadership Seminar
- 3 PSYC 234 Health Psychology
- 3 SPRT 390 Physiology of Exercise & Sport
- 1 SPRT 391 Physiology of
Exercise & Sport Lab
- 3 BIOL 368 Human Physiology
- 1 BIOL 369 Human Physiology Lab
- 3 Senior Capstone Seminar*

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SENIOR ***Fall*

- 2 GDPT 814 Evidence Based Practice 1
- 2 GDPT 811 Applied Anatomy
- 1 GDPT 816 Community Health
Initiatives 1
- 3 GDPT 802 Pathology and
Medical Management for the PT 1
- 5 GDPT 818 Foundations
in Human Movement

 13
Spring

- 1 GDPT 826 Community Health
Initiatives 2
- 6 GDPT 822 Musculoskeletal
Dysfunctions Ext.
- 3 GDPT 824 Musculoskeletal
Dysfunctions Ext. Lab

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* Please refer to the undergraduate Catalog for course options.

** Additional graduate courses are required as part of the DPT curriculum

Professional schools of physical therapy vary in regard to entry requirements. Consultation with the physical therapy school of choice during the freshman year is recommended. All students receiving a bachelor's degree from Gannon must complete the Liberal Studies Core requirements and the course requirements for the Bachelor of Science in Health Science in addition to the courses listed above.

The program encourages students to consider seeking a minor in Applied Exercise Science or Psychology, if interested, and to talk with their advisor to learn more.

COURSE DESCRIPTIONS

PT 100: Introduction to the Physical Therapy Profession

This course will cover the history of the physical therapy profession. The role of the physical therapist as a health professional will be discussed. Scope of practice, responsibilities, and relationships with other health professionals will be reviewed. The professional organization for physical therapists will be introduced to the students. The students will meet with clinicians who will discuss various career paths available, types of practice settings and opportunities for "specialization" in physical therapy. They will participate in observation of physical therapists in the clinic and share their experiences with each other. Students will be introduced to the practice of physical therapy for conditions affecting the various body systems.

2 credits, Fall/Spring

PT 210: Physical Therapy Seminar II

This course is the second in the series of seminar classes to introduce the student to the physical therapy profession. It will allow the students additional observation of physical therapists in the clinic and to share their experiences with each other. It also enables the students to begin to develop their professional communication style including introduction to medical terminology and reading professional journals. 1 credit

PHYSICIAN ASSISTANT

KIMBERLY CAVANAGH, DHSc, MPAS, PA-C., *Chairperson*

FACULTY: Associate Professors: Heather Adams, Kimberly Cavanagh, Kristen Grippe.
Assistant Professors: Blake Hoppe, Mackenzie Starns. *Associate Teaching Professor:* Jennifer Majewski. *Assistant Teaching Professors:* Natasha Camera, Adrienne Colabuno. *Medical Director:* John Jageman.

Physician assistants (PAs) are medical providers who are nationally certified and state licensed to practice medicine as a member of a team with other healthcare professionals. Their specific tasks vary widely due to differences among state laws and hospital policies.

Generally, PAs are qualified to obtain patient histories, perform comprehensive physical examinations, order and interpret diagnostic laboratory tests, develop a diagnosis, implement a treatment plan for common illnesses, deliver patient education and counseling, perform certain surgical procedures, and provide emergency care. PAs may assist in surgery and deliver pre-operative and post-operative care. Physician Assistants may deliver patient care in any setting in which the physician works.

The Physician Assistant Department offers a Master of Physician Assistant Science degree following five years of increasingly specialized study. The curriculum is predominantly clinical during the fifth year. During the fifth year, clinical faculty, in conjunction with various health care institutions, introduce the students to professional physician assistant training. This component of the program is offered primarily in clinical sites in northwestern Pennsylvania, Ohio and western New York, as well as some locations farther afield. Students are responsible for their own housing and transportation to and from clinical sites.

The PA program curriculum of Gannon University's Physician Assistant Program is accredited by the Accreditation Review Commission on Education for the Physician Assistant, Inc. (ARC-PA). Applicants must meet the technical standards for admission to the program. For further details, contact the Admissions office.

Accreditation

The ARC-PA has granted **Accreditation-Continued** status to the **Gannon University** Physician Assistant Program sponsored by Gannon University. Accreditation-Continued is an accreditation status granted when a currently accredited program is in compliance with the *ARC-PA Standards*.

Accreditation remains in effect until the program closes or withdraws from the accreditation process or until accreditation is withdrawn for failure to comply with the Standards. The approximate date for the next validation review of the program by the ARC-PA will be March 2027. The review date is contingent upon continued compliance with the Accreditation Standards and ARC-PA policy.

Technical Standards

A candidate for admission to the PA Program must have the use of certain sensory and motor functions to permit them to carry out the activities described in the sections that follow. Graduation from the program signifies that the individual is prepared for entry into clinical practice or into postgraduate training programs. Therefore, it follows that graduates must

have the knowledge and skills needed to function in a broad variety of clinical situations and to render a wide spectrum of diagnostic and therapeutic care. The candidate and student must be able consistently, quickly, and accurately to integrate all information received by whatever sense(s) are employed. Also, they must have the intellectual ability to learn, integrate, analyze, and synthesize data.

A candidate for the PA Program ordinarily must have the following abilities and skills as explained below: observation; communication; motor; intellectual, conceptual, integrative, and quantitative; and behavioral and social. Where technological assistance is available in the program, it may permit for disabilities in certain areas. Under all circumstances, a candidate should be able to perform the following tasks in a reasonably independent manner:

- I. *Observation*: Candidates and students ordinarily must have sufficient vision to be able to observe demonstrations, experiments, and laboratory exercises. They must be able to observe a patient accurately at a distance and close at hand.
- II. *Communication*: Candidates and students ordinarily must be able to communicate with patients and colleagues. They should be able to hear, but if technological compensation is available, it may permit for some handicaps in this area. Candidates and students must be able to read, write, and speak English.
- III. *Motor*: Candidates and students ordinarily should have sufficient motor function such that they are able to execute movements reasonably required to provide general care and emergency treatment to patients. Examples of emergency treatment reasonably required of physician assistants is cardiopulmonary resuscitation, administration of intravenous medication, the application of pressure to stop bleeding, the opening of obstructed airways, the suturing of simple wounds, and the performance of simple obstetrical maneuvers. These actions require coordination of both gross and fine muscular movements, equilibrium, and functional use of the senses of touch and vision.
- IV. *Intellectual, Conceptual, Integrative, and Quantitative Abilities*: These abilities include measurement, calculation, reasoning, analysis, and synthesis. Problem solving, the critical intellectual skill demanded of a physician assistant, requires all of these intellectual abilities. In addition, candidates and students should be able to comprehend three dimensional relationships and understand the spatial relationships of structures.
- V. *Behavioral and Social Abilities*: Candidates and students must possess the emotional health required for full utilization of the intellectual abilities, the exercise of good judgment, the prompt completion of all responsibilities attendant to the assessment and care of patients, and the development of mature, sensitive, and effective relationships with patients. Candidates and students must be able to tolerate physically taxing workloads, adapt to changing environments, display flexibility, and learn to function in the face of uncertainties inherent in the clinical problems of many patients. Compassion, integrity, concern for others, interpersonal skills, interest, and motivation are all personal qualities to be assessed during the admissions and educational processes.

The PA Department is committed to providing reasonable accommodations to students with an identifiable disability as defined by the Americans with Disability Act. In doing so, however, the PA Department must maintain the integrity of its curriculum and preserve those elements deemed essential to educating candidates to become effective physician assistants.

Students in the program must be of sufficient health and be able to obtain all required clearances (criminal, child abuse and FBI background checks annually) to meet the criteria of the PA Department our clinical affiliates.

The PA Department reserves the right to reassess the student's ability to meet the technical standards and Department requirements at any time during the student's training and to act accordingly.

Employment Policy

Employment during the fourth year of the PA Program is not recommended. Demanding courses and time constraints are to be expected. Employment during the fifth year of the PA Program is strongly discouraged. Students will spend an average of 40 hours per week at their clinical site, plus complete reading assignments to prepare for end of rotation exams. Students may need to relocate every five weeks, precluding steady employment. Students who choose to work may jeopardize performance and continuation in the program.

Transfer Policies

- Gannon's physician assistant program is designed for first-time students. Due to limitations on class size, the only option available for transfer students is to enter the program at the freshmen level. This will require students to remain at Gannon for a full five years regardless of number of credits that the student can transfer. In order to be considered for the program, students must submit a completed application (application, official college transcript(s) and official high school transcripts and test scores, if necessary) by November 15.
- In order to be considered, transfer students must have a minimum overall GPA of a 3.0, as well as a GPA of a 3.0 for science courses. If a transfer student has earned fewer than 30 college credits, an official high school transcript and SAT or ACT score are required.
- Qualified applicants must complete one of the scheduled interview dates (see Program website).
- Transfer students must repeat any science course which was taken longer than five years prior to program admission.
- Once matriculated into the program, Program GPA's of 3.0 must be maintained throughout the program as well as an overall GPA of 3.0
- Students are required to complete 30 hours of patient interaction experiences prior to matriculation and an additional 20 hours annually during the first four years of the program. More information is provided to students upon acceptance to the program.
- Transfer students must complete the course of study (found in this catalog) for the Physician Assistant Program.
- Transfer students with a Bachelor's Degree should refer to Gannon's Graduate Catalog for prerequisite courses needed prior to application to the Post Baccalaureate program. All prerequisite courses are offered at Gannon University.
- Advanced standing is not granted in the fourth or fifth years of the program. No credits are awarded for experiential learning.

COURSE DESCRIPTIONS

PHAS 100: First-Year Seminar: Applied Concepts in Health Care

This course is a First Year Seminar in the Liberal Studies core curriculum. It is a discussion/ experience-based course intended to orient the new student to Gannon University, to introduce the Liberal Studies Core and LIFECORE, to assist in the transition from high school to university life, and to encourage the development of academic, personal and spiritual dimensions of the student's life. This course will also provide an introduction to the field of health care including the principles of integrity that are essential to all health care professions as well as sources of information relating to the field of health care, how to search for these sources, and how to understand sources that are found. The course also investigates health care careers so that the student can plan his/her academic courses in a focused and analytical manner.

2 credits, Fall

PHAS 121: Medical Terminology

This course provides students with an introductory study of the medical language through prefix, suffix and root word forms. Anatomic and clinical terms pertaining to each body system

are covered. Classroom activities emphasize pronunciation, interpretation and application of medical terms.

Prerequisite: PA major

3 credits, Fall, Spring

PHAS 215: Communication and Resources in the Patient Encounter

This course is designed to introduce the students to communication skills in the patient encounter for the Physician Assistant, including boundaries of the interview, ethical professional behavior and establishing a provider/patient relationship. Emphasis will be placed on the interviewing process and communication techniques. This course will focus on communication skills with patients in various settings and exposure to resources available to assist in health care and special needs of patients to prepare the student for service-learning experiences.

Prerequisite: PA major

1 credit, Spring

PHAS 300: Leadership Seminar

The Leadership Seminar introduces students to a three-dimensional model of leadership, including a repertoire of leadership skills and means of using those skills responsibly in the various communities to which they belong. In addition, the course helps students explore the relevance of leadership skills in the leadership process. Ethical reasoning and Catholic social justice teaching serve as the basis for students' leadership development.

1 credit Fall

PHAS 312: Community Resources in Healthcare: A Service Learning Experience

The goal of this course is to introduce the student to community service-learning through student/client experience in various health care/social service agencies within the Gannon and Erie community. Collectively each student's experience will provide a model resource of agencies available to communities and how each agency assists in the care of the patient.

Prerequisite: PA major

1 credit, Fall, Spring

PHAS 363: Research Process

The primary goal of this course is for students to be comfortable with all aspects of clinical research in the Health Science field. All practitioners need to have an understanding of the ethical design of studies and the ethical treatment of human subjects in clinical research. Therefore, part of the class is dedicated to the study of "Good Clinical Practices (GCP)" as defined by the US Food and Drug Administration. All students will be required to obtain NIH certification in this area. In addition, the course focuses on the theoretical and practical aspects of designing research studies. We will survey multiple types of research methodologies including the statistical basis for making rational conclusions based upon the data. Finally, we will focus on medical writing, including how to do a literature search, write an abstract, and write a research paper. Appropriate form and style utilization will be discussed. Students will be required to complete multiple assignments including literature critiques, bibliographies, editing and the completion of an entire literature review.

3 credits, Fall

PHAS 408: Behavioral Medicine

This course is designed to introduce the students to the major mental health conditions including adolescent and childhood disorders. Special attention will be given to disease characteristics, etiologies, and applicable behavioral and pharmacological treatments.

Prerequisite: PA major

1 credit, Spring

PHAS 411: Physical Diagnosis I

The techniques of history-taking, discussion and demonstration of normal physical findings with various organ systems and alteration of physical signs in disease states are introduced to the student. The relationship of physical signs to altered physiology is emphasized.

Prerequisite: PA major

5 credits, Fall

PHAS 413: Physical Diagnosis II

Designed to complement the physical diagnosis lectures, this course enables students to develop skills in performing histories and physical examinations on fellow students.

Prerequisite: PA major

1 credit, Fall

PHAS 414: Medical Lecture Series I

Symptoms, signs and abnormal body function are taught in a problem-oriented manner, including a logical method, relevant diagnostic maneuvers, possible therapeutic intervention and patient education. The lectures complement the knowledge acquired in Physical Diagnosis, and is correlated with the Pharmacotherapeutics and Clinical Science courses.

Prerequisite: PA major

3 credits, Fall

PHAS 415: Medical Lecture Series II

A continuation of PHAS 414

Prerequisite: PHAS 414

6 credits, Spring

PHAS 416: Physical Diagnosis III

In addition to performing histories and physical examination on hospitalized or nursing home patients, the student is exposed to a wide variety of frequently encountered medical problems and begins to develop a basic understanding of pathophysiology. In addition the student will develop a methodology for approaching any presenting medical complaint.

Prerequisites: PHAS 411, 413

1 credit, Spring

PHAS 424: Pharmacotherapeutics I

This course is designed to provide both basic information regarding the pharmacology of many commonly used medications coupled with a practical and systematic approach to the selection of appropriate drug therapy for patients. Two major areas of focus are a review of the principles of therapeutics (e.g., pharmacokinetics and pharmacodynamics) and a review of recommended drug therapy for common medical disorders (e.g., hypertension, peptic ulcer disease). Students will be instructed on a process through which they will think pharmacotherapeutically – that is, to identify a disease, review the drugs available to treat that disease, select treatment based upon goals of therapy and specific patient parameters and how to adjust therapy if required. Also, all lectures are coordinated with Medical Lecture Series such that medications are reviewed in close proximity to lectures on pathophysiology in order to enhance the learning experience for students.

Prerequisite: PA major

3 credits, Fall

PHAS 425: Pharmacotherapeutics II

A continuation of PHAS 424

Prerequisite: PHAS 424

2 credits, Spring

PHAS 431: Clinical Science I

This course is designed to provide a basic understanding of the pathophysiology and clinical diagnostic methods involved in the evaluation of common disease processes. Emphasis is placed on understanding molecular structure and function as it applies to application and interpretation of clinical testing for diagnostic/therapeutic purposes. Topics include hematology, immunology & serology, medical microbiology, virology, clinical chemistry, urine studies and pertinent genetic testing. Lectures correlate with Physical Diagnosis I & II, Medical Lecture Series I, Pharmacotherapeutics I and Radiology in a systems oriented approach to the disease processes.

Prerequisite: PA major

3 credits, Fall

PHAS 432: Clinical Science II

A continuation of PHAS 431/GPHAS 531, this course is designed to provide a basic understanding of the pathophysiology and clinical diagnostic methods involved in the evaluation of common disease processes discussed in Medical Lecture Series II and Pharmacotherapeutics II. Topics continue from Clinical Science I and include parasitology, arterial blood gas interpretation, electrocardiography interpretation and fluid, electrolyte & acid-base balance.

Prerequisite: PHAS 431

2 credits, Spring

PHAS 438: Pediatrics/Obstetrics/Gynecology Lecture Series

This course will discuss common disease process in Obstetrics/Gynecology and Pediatrics in a problem oriented manner to enable the student to incorporate knowledge of pathogenesis, clinical findings, appropriate laboratory and diagnostic testing and create a treatment plan for each disease process.

Prerequisite: PHAS 414

4 credits, Spring

PHAS 443: Research Proposal

Students distinguish between different types of research and systematically examine research designs and methodologies for the purpose of development of a proposal. Students will develop a research proposal under the direction of a research advisor.

Prerequisite: PA major

1 credit, Spring

PHAS 445: Problem Based Medicine

This course offers the student an introduction to evidence based medicine. Emphasis will be placed on clinical problem solving through a case study approach. The student will be instructed to incorporate knowledge of pathogenesis, clinical findings, laboratory and other diagnostics to develop a differential diagnosis. This approach is designed to initiate critical thinking about medical problems and incorporation of treatment plans.

Prerequisite: PHAS 414

2 credits, Spring

PHAS 490: Special Topics

This is an elective course which will cover topics of special interest.

1-3 credits

GPHAS 600: Pre-Rotation Lecture and Skills Lab

This laboratory section is designed to complement and integrate the Pre-Rotation Lecture Series course in the Physician Assistant Program. The laboratory experience will supplement many of the lectures and afford students hands-on opportunities to practice clinical skills such as gowning and gloving, injections, use of the Patient Simulation Center, CPR/ACLS certification and OR orientation.

Prerequisites: Successful completion of PHAS 408-445

1 credit, Summer

GPHAS 601: Pre-Rotation Lecture Series

This capstone course is designed to complement and integrate the Liberal Studies academic experience and didactics of the pre professional phase of the Physician Assistant Program. Students are expected to demonstrate their capacity to utilize concepts and methodologies presented in previous Liberal Studies courses as we explore the issues related to medical ethics. Issues explored will include but not be limited to the patient and health care provider relationship, human experimentation, reproductive and dying technology. Topics in the areas of Emergency Medicine, Orthopedics, and Surgery will be discussed utilizing the foundation of information previously presented in the didactic pre-professional phase.

Prerequisite: Successful completion of PHAS 408-445

4 credits, Summer

GPHAS 602: Business Practices and Current Issues for Physician Assistants

This course is designed to introduce the Physician Assistant student to practice management in the clinical setting. Emphasis is placed on understanding health insurance coverage, cost containment and the quality of health care. Diagnosis and procedure coding will be introduced and legal issues related to the clinical setting are addressed.

Prerequisite: Successful completion of PHAS 408-445

2 credit, Summer

GPHAS 614: General Surgery Rotation

This five week clinical experience is designed to allow the student exposure to a wide variety of acute surgical problems. Under supervision, the student is expected to participate in preoperative and postoperative patient care. This experience will include taking histories, performing physical examinations, and assisting in the emergency department and operating room.

Prerequisites: Enrollment in or successful completion of GPHAS 600, GPHAS 601, GPHAS 602.

5 credits

GPHAS 616: Clinical Research

This is a four week rotation in which students participate in medical research under the direction of a preceptor or develop a community health project. This project may involve reviewing charts, interviewing patients, reviewing existing data, collecting data and/or participating in ongoing clinical trials or educating the public. Students are required to complete a project outline and will begin to compose a research or project paper of publishable quality. The students will develop a power point presentation in order to illustrate their research or project.

Prerequisites: Enrollment in or successful completion of GPHAS 600, GPHAS 601, GPHAS 602.

4 credits

GPHAS 617: Family Medicine Rotation I

This five week clinical experience is designed to familiarize the student with all aspects of Family Practice in ambulatory, inpatient and long-term care settings. The student, through the collection and acquisition of historical, physical and laboratory data, develops an understanding of patient evaluation and treatment under the supervision of physicians or mid-level practitioners. This clinical rotation will emphasize aspects of Internal Medicine and the unique characteristics of the care of the geriatric patient.

Prerequisites: Enrollment in or successful completion of GPHAS 600, GPHAS 601, GPHAS 602.

5 credits

GPHAS 618: Family Medicine Rotation II

This five week clinical experience is designed to familiarize the student with all aspects of Family Practice in ambulatory, inpatient and long-term care settings. The student, through the collection and acquisition of historical, physical and laboratory data, develops an understanding of patient evaluation and treatment under the supervision of physicians or mid-level practitioners. This clinical rotation will emphasize normal variations of growth and development of children from infancy to adolescence, as well as, exposure to acute and chronic illnesses of childhood.

Prerequisites: Enrollment in or successful completion of GPHAS 600, GPHAS 601, GPHAS 602.

5 credits

GPHAS 619: Family Medicine Rotation III

This five week clinical experience is designed to familiarize the student with all aspects of Family Practice in ambulatory, inpatient and long-term care settings. The student, through the collection and acquisition of historical, physical and laboratory data, develops an understanding of patient evaluation and treatment under the supervision of physicians or mid-level practitioners. This clinical rotation will emphasize routine gynecologic care and common complaints as well as prenatal care of the female patient. This experience will also focus on common behavioral health disorders encountered in primary care.

Prerequisites: Enrollment in or successful completion of GPHAS 600, GPHAS 601, GPHAS 602.

5 credits

GPHAS 621: Emergency Medicine Rotation

This five week clinical experience is designed to stress the evaluation and management of both medical and surgical problems of the ambulatory patient in an acute care situation. Students gain experience in the initial evaluation of patients in the emergency setting, perform problem specific examinations, practice minor surgery skills, and participate in the management of orthopedic problems.

Prerequisites: Enrollment in or successful completion of GPHAS 600, GPHAS 601, GPHAS 602.

5 credits

GPHAS 622: Family Medicine Rotation IV

This five week clinical experience is designed to familiarize the student with all aspects of Family Practice in ambulatory, inpatient and long-term care settings. The student, through the collection and acquisition of historical, physical and laboratory data, develops an understanding of patient evaluation and treatment under the supervision of physicians or

mid-level practitioners. This clinical rotation will emphasize the evaluation and treatment of conditions common at the primary care level and the appropriate health maintenance measures for different age groups from infancy to geriatrics.

Prerequisites: Enrollment in or successful completion of GPHAS 600, GPHAS 601, GPHAS 602.

5 credits

GPHAS 623: Elective Rotation I

This five week clinical experience is designed to acquaint the student with the role of the physician assistant in practice. Students train under the supervision of a physician or midlevel provider in an office/or hospital setting. Through this clinical rotation the student will gain an in-depth exposure to a wide-spectrum of acute and chronic patient problems. This experience can occur in a clinical area that has already been experienced by the student or a specialty area of the student's choosing.

Prerequisites: Enrollment in or successful completion of GPHAS 600, GPHAS 601, GPHAS 602.

5 credits

GPHAS 624: Elective Rotation II

This five week clinical experience is designed to acquaint the student with the role of the physician assistant in practice. Students train under the supervision of a physician or midlevel provider in an office/or hospital setting. Through this clinical rotation the student will gain an in-depth exposure to a wide-spectrum of acute and chronic patient problems. This experience can occur in a clinical area that has already been experienced by the student or a specialty area of the student's choosing.

Prerequisites: Enrollment in or successful completion of GPHAS 600, GPHAS 601, GPHAS 602.

5 credits

GPHAS 631: Research/Project Guidance

Students complete a research project (including analysis of data and reporting results) using the scientific method to answer a question in clinical practice, under the direction of a research/project advisor. Projects may use a variety of methodologies. Students will finalize a power point presentation and/or poster for presentation or display.

Prerequisites: Successful completion of GPHAS 616

2 credits

GPHAS 634: Clinical & Professional Capstone

Graduation from an accredited PA program qualifies an individual to take the Physician Assistant National Certification Examination (PANCE). Successful completion of PANCE is mandatory for clinical practice as a PA. As the student works to achieve professional status as a PA, the Clinical and Professional Capstone allows for an opportunity to merge the clinical rotation experience with classroom learning through a high yield didactic approach and culminating with the program Summative Examination. The course will provide a comprehensive overview of requisite knowledge for the graduating PA student. Emphasis will be placed on identified organ systems and task areas that are consistent with the NCCPA Examination Content Blueprint for the PANCE. Additionally, the Clinical and Professional Capstone will focus on the application of knowledge and skills for clinical practice case study and evidence based medicine facilitating the transition from student to medical provider.

Prerequisite: Enrollment in the Graduate phase of the Physician Assistant program. *2 credits*

Master of Physician Assistant Science Curriculum**Liberal Studies/Liberal Studies Core Courses**

| | | | |
|---|--|---|--|
| 3 | LENG 111 College Composition | 3 | LPHI Philosophy II Series |
| 3 | LENG 112 Critical Analysis & Composition | 3 | LPHI 237 <i>or</i> any LTHE 300 course |
| 3 | LENG Literature Series | 3 | LFIN Fine Art Series |
| 3 | LTHE 101 Foundations of Theology | 3 | LHST 111 History Without Borders |
| 3 | LTHE 201 The Bible: An Intro | 3 | PSYC 111 Intro to Psychology |
| 3 | LPHI 131 Intro to Philosophy | 3 | SOCI 110 Basic Sociology |
| 3 | SPCH 111 Public Speaking | 1 | PHAS 300 Leadership Seminar |
| 2 | PHAS 100 First-Year Seminar | | |
| | | | 42 Total |

Other Courses

| | | | |
|---|--|--|-----------------|
| 3 | CIS 170-173 <i>or</i> CIS 150 PC Courses <i>or</i> Business Technology I | | |
| 3 | PSYC 211, SOCI 351 <i>or</i> MATH 213 Statistics | | |
| 3 | Elective | | |
| 3 | Elective | | |
| | | | 12 Total |

Basic Science Courses

| | | | |
|---|---|---|---|
| 3 | BIOL 122 Molecular Cellular Biology | 1 | CHEM 104 Chemistry of Life I Lab |
| 1 | BIOL 123 Molecular Cellular Biology Lab | 3 | CHEM 106 Chemistry of Life II |
| 3 | BIOL 124 Animal Form & Function | 1 | CHEM 107 Chemistry of Life II Lab |
| 1 | BIOL 125 Animal Form & Function Lab | 3 | DIET 202 <i>or</i> SPRT 130 Nutrition <i>or</i> Nutrition for Sports & Exercise |
| 3 | CHEM 103 Chemistry of Life I | | |
| | | | 19 Total |

Physician Assistant Courses

| | | | |
|---|---|---|---|
| 3 | PHAS 121 Medical Terminology | 1 | PHAS 312 Community Resources in Healthcare: A Service Learning Experience |
| 1 | PHAS 215 Communication & Resources in the Patient Encounter | | |
| | | | 5 Total |

PA Program Curricula

| | | | |
|---|----------------------------------|---|-----------------------------------|
| 3 | BIOL 232 Human Genetics | 1 | BIOL 369 Human Physiology Lab |
| 3 | BIOL 365 Human Gross Anatomy | 3 | BIOL 378 Medical Microbiology |
| 1 | BIOL 366 Human Gross Anatomy Lab | 1 | BIOL 379 Medical Microbiology Lab |
| 3 | BIOL 368 Human Physiology | 3 | PHAS 363 The Research Process |
| | | | 18 Total |

FOURTH YEAR*Fall Semester*

| | |
|---|------------------------------------|
| 5 | PHAS 411 Physical Diagnosis I |
| 1 | PHAS 413 Physical Diagnosis Lab II |
| 3 | PHAS 414 Medical Lecture Series I |
| 3 | PHAS 424 Pharmacotherapeutics I |
| 3 | PHAS 431 Clinical Science I |
| 3 | RADS 441 Intro to Radiology |

18*Spring Semester*

| | |
|---|-------------------------------------|
| 1 | PHAS 408 Behavioral Medicine |
| 6 | PHAS 415 Medical Lecture Series II |
| 1 | PHAS 416 Physical Diagnosis Lab III |
| 2 | PHAS 425 Pharmacotherapeutics II |
| 2 | PHAS 432 Clinical Science II |
| 4 | PHAS 438 PEDS/OB/GYN |
| 2 | PHAS 445 Problem-Based Medicine |

18

Requirements complete for Bachelor of Science degree with a major in Health Science

FOURTH YEAR (start of Graduate Phase)

Summer Semester

| | |
|-----------|---|
| 1 | GPHAS 600 Pre-Rotation Lecture Series Lab |
| 4 | GPHAS 601 Pre-Rotation Lecture Series |
| 2 | GPHAS 602 Business Practice for PAs |
| 5 | GPHAS 617 Family Medicine Rotation I |
| <u>12</u> | |

FIFTH YEAR

Fall Semester

| | |
|-----------|--|
| 5 | GPHAS 618 Family Medicine Rotation II |
| 5 | GPHAS 619 Family Medicine Rotation III |
| 5 | GPHAS 614 General Surgery Rotation |
| <u>15</u> | |

Spring Semester

| | |
|-----------|---------------------------------------|
| 4 | GPHAS 616 Clinical Research |
| 5 | GPHAS 621 Emergency Medical Rotation |
| 5 | GPHAS 622 Family Medicine Rotation IV |
| <u>14</u> | |

FIFTH YEAR

Summer Semester

| | |
|-----------|--|
| 5 | GPHAS 623 Elective Rotation I |
| 5 | GPHAS 624 Elective Rotation II |
| 2 | GPHAS 631 Research Guidance |
| 2 | GPHAS 634 Clinical & Professional Capstone |
| <u>14</u> | |

Requirements complete for Master of Physician Assistant Science

PHYSICS

NICHOLAS CONKLIN, *Chairperson*

FACULTY: *Professor:* Nicholas Conklin. *Assistant Professor:* David Horne.

Assistant Teaching Professor: Perry Hilburn.

COURSE DESCRIPTIONS

PHYS 101: Concepts in Physics

This one-semester course provides an introduction to fundamental concepts in physics sufficient to provide a foundation for other courses in the physical and medical sciences. The course is appropriate for all students, particularly those in allied-health majors. Topics will include motion, center of mass, levers, force, energy, momentum, pressure, fluid dynamics, thermodynamics, and sound waves. While emphasis is placed on mastery of basic concepts, computations requiring high-school level math are an integral part of the course.

Prerequisite: None; however, high school trigonometry,

MATH 111, 112, or 114 are strongly recommended

3 credits

PHYS 102: Introduction to Astronomy

This course provides a basic introduction to astronomy, including the position and apparent behavior of stars and planets in the sky, coordinate systems, constellations, celestial bodies and the nature of the solar system. The sun and planets within the solar system will be discussed in detail along with our solar system's place in the galaxy and the universe at large. Particular attention is paid to the history of scientific discovery and the development of our knowledge of the solar system. Emphasis is placed on the history of observation of the skies and contrasted with the results of new scientific discoveries and missions to the planets. Hands-on telescope observation sessions will also form part of the course.

3 credits

PHYS 105: College Physics 1

This course provides an algebra and trigonometry-based introduction to mechanics, fluids, and waves, and emphasizes quantitative and conceptual understanding of the material. Topics covered include kinematics in one and two dimensions, Newton's laws of motion, rotational motion, gravitation, conservation of energy and momentum, fluids, oscillations, and sound.

Prerequisites: MATH 112 or MATH 135 or MATH 140

3 credits

PHYS 106: College Physics 1 Lab

In this laboratory course, students will work in groups to perform experiments to reinforce concepts from PHYS 105 (College Physics 1). Labs are designed to build conceptual and quantitative understanding of the material.

Pre/Corequisite: PHYS 105

1 credit

PHYS 108: College Physics 2

This course provides an algebra-based introduction to thermodynamics, electricity, magnetism, and optics, and emphasizes quantitative and conceptual understanding of the material. Topics covered include ideal gas laws and kinetic theory, calorimetry and heat transfer, the laws of thermodynamics, electric fields and potentials, basic electric circuits, magnetism, electromagnetic induction, geometric optics, and the wave nature of light.

Prerequisite: PHYS 105

3 credits

PHYS 109: College Physics 2 Lab

In this laboratory course, students will work in groups to perform experiments to reinforce concepts from PHYS 108 (College Physics 2). Labs are designed to build conceptual and quantitative understanding of the material.

Pre/Corequisite: PHYS 108

1 credit

PHYS 111: General Physics III

An introduction to mechanics. Topics covered include kinematics, dynamics, energy, momentum and rotation.

Prerequisite: MATH 140

3 credits

PHYS 112: General Physics III Lab

Experimental verification of some topics from PHYS 111. Lab includes computer use in data collection.

1 credit

PHYS 210: Fundamentals of Physics 1: Mechanics

This course provides a calculus-based introduction to mechanics and emphasizes both quantitative and conceptual understanding of the material. Topics covered include kinematics in one and two dimensions, Newton's laws of motion, rotational motion, conservation of energy and momentum, and gravitation.

Prerequisite: MATH 140

Pre/Corequisite: MATH 141

3 credits

PHYS 211: Fundamentals of Physics 1 Lab

In this laboratory course, students will work in groups to perform experiments to reinforce concepts from PHYS 210 (Fundamentals of Physics 1). Labs are designed to build conceptual and quantitative understanding of the material.

Pre/Corequisite: PHYS 210 or PHYS 111

1 credit

PHYS 212: Fundamentals of Physics 2: Fluids and Thermodynamics

This course provides a calculus-based introduction to fluids, thermodynamics, waves and optics, and emphasizes both quantitative and conceptual understanding of the material. Topics covered include fluid mechanics, oscillations, waves and sound, the laws of thermodynamics, heat, kinetic theory of gases, geometric optics, and interference phenomena.

Prerequisites: MATH 141 and either PHYS 111 or PHYS 210

3 credits

PHYS 213: Fundamentals of Physics 2 Lab

In this laboratory course, students will work in groups to perform experiments to reinforce concepts from PHYS 212 (Fundamentals of Physics 2). Labs are designed to build conceptual

and quantitative understanding of the material.

Pre/Corequisite: PHYS 212

1 credit

PHYS 214: Fundamentals of Physics 3: Electricity and Magnetism

This course provides a calculus-based introduction to electricity and magnetism and emphasizes quantitative and conceptual understanding of the material. Topics covered include Coulomb's Law, electric fields, electric potential, basic DC and AC circuits, magnetic fields, magnetic induction, and Maxwell's equations.

Prerequisites: MATH 141 and either PHYS 111 or PHYS 210

3 credits

PHYS 215: Fundamentals of Physics 3 Lab

In this laboratory course, students will work in groups to perform experiments to reinforce concepts from PHYS 214 (Fundamentals of Physics 3). Labs are designed to build conceptual and quantitative understanding of the material.

Pre/Corequisite: PHYS 214

1 credit

PHYS 218: Lab for Engineers

In this laboratory course, students will work in groups to perform experiments to reinforce selected topics from PHYS 210 (Fundamentals of Physics 1) and PHYS 212 (Fundamentals of Physics 2). Labs are designed to build conceptual and quantitative understanding of the material.

Prerequisite: PHYS 111 or PHYS 210

Pre/Corequisite: PHYS 212

1 credit

PHYS 300: Introduction to Modern Physics

An historical and quantitative presentation of the events and thinking which led to the twentieth century revision of Classical Physics. An introduction to Relativity, Planck Quantum Theory, the Bohr atom, de Broglie's thesis, Schrodinger quantum mechanics, and electronic spin.

Prerequisites: PHYS 210, 212, 214 or equivalent

3 credits

PHYS 301: Theoretical Mechanics

Particle dynamics, moving reference systems, central forces, collision theory, dynamics of a system of particles, rigid body motion, Lagrangian and Hamiltonian Theory.

Prerequisites: PHYS 210, 212, 214, MATH 242

3 credits

PHYS 304: Mathematical Methods of Physics

Fourier series, Fourier transform, Laplace transform, vector field theory, complex variables, partial differential equations, special functions, probability, numerical analysis, matrices.

Prerequisite: MATH 242

3 credits

PHYS 321: Statistical Mechanics

Boltzman, Fermi-Dirac, and Bose-Einstein statistics by the combinatorial methods, entropy and probability, partition functions, classical and quantum mechanical specific heats of gases and solids, Planck radiation law, paramagnetic susceptibilities.

Prerequisites: Chem/CHEM 331, MATH 242

3 credits, Spring

PHYS 332: Experimental Physics

Selected experiments from the entire field, designed to develop a facility with laboratory techniques, a critical awareness of the errors of measurements and the consequent limitations on empirical conclusions, and an original initiative toward minimizing these limitations through refinements of techniques and instruments.

Laboratory: Six hours per week.

2 credits

PHYS 380: Undergraduate Research I

The student will work to complete an original research project in physics with a Physics faculty member.

1-3 credits

PHYS 381: Undergraduate Research II

The student will work to complete an original research project in physics with a Physics faculty member in continuation of PHYS 380.

1-3 credits

PHYS 406: Optics

Fermat's principles, thick lens theory, third order aberration theory, interference phenomena, Kirchoff's integral, Fresnel and Farunhoffer diffraction, Fourier transform optics, coherence times and lengths, holography, polarization, absorption, scattering, dispersion.

Prerequisites: PHYS 212, MATH 242

3 credits

PHYS 430: Quantum Mechanics I

Schrödinger Quantum Mechanics from an operator standpoint, wells, barriers and the harmonic oscillator, the Hydrogen atom, electric spin, angular momentum, perturbation theory, matrix representations, relativistic corrections, multi-electron atoms, Zeeman and Stark effects, molecular states.

Prerequisites: PHYS 300, 304

3 credits

PHYS 431: Quantum Mechanics II

Schrödinger Quantum Mechanics from an operator standpoint, wells, barriers and the harmonic oscillator, the Hydrogen atom, electric spin, angular momentum, perturbation theory, matrix representations, relativistic corrections, multi-electron atoms, Zeeman and Stark effects, molecular states.

Prerequisites: PHYS 300, 304

3 credits

PRE-HEALTH PROGRAMS

MELANIE GUSTAFSON-ROPSKI, M.A., *Director, Pre-Health Advising Program*

The following programs are in this section:

TRADITIONAL PROGRAMS

Pre-Chiropractic Medicine

Pre-Dental Medicine

Pre-Medicine

Pre-Optometry

Pre-Pharmacy

Pre-Podiatric Medicine

Pre-Veterinary Medicine

AFFILIATION PROGRAMS**Chiropractic Medicine**

NYCC 3+3 Accelerated Chiropractic Medicine

NYCC 4+3 Chiropractic Medicine

Dental Medicine

CWRU 3+4 Early Acceptance

Dental Medicine

LECOM 4+4 Early Acceptance

Dental Medicine

Medicine

LECOM 3+4 Early Acceptance Medicine

LECOM 4+4 Early Acceptance Medicine

PCOM 4+4 Medicine

Ross University 4+4 Medicine

UMHS 3+4 Accelerated Medicine

UMHS 4+4 Medicine

Optometry

Salus University 3+4 Accelerated Optometry

Pharmacy

Duquesne University 2+4 Accelerated

Pharmacy

LECOM2+3/2+4 Early Acceptance Pharmacy

LECOM3+3/3+4 Early Acceptance Pharmacy

LECOM4+3/4+4 Early Acceptance Pharmacy

University at Buffalo 3+4 Accelerated Pharmacy

University of Charleston 2+4

Accelerated Pharmacy

University of Charleston 3+4

Accelerated Pharmacy

Podiatric Medicine

Kent State University 3+4

Accelerated Podiatric Medicine

Temple University 3+4

Accelerated Podiatric Medicine

Veterinary Medicine

Ross University 3+4

Accelerated Veterinary Medicine

Ross University 4+4 Veterinary Medicine

Preparatory Program

Pre-Health Qualification

PRE-CHIROPRACTIC MEDICINE, PRE-DENTAL MEDICINE, PRE-MEDICINE, PRE-OPTOMETRY, PREPODIATRIC MEDICINE, PRE-VETERINARY MEDICINE

These programs prepare students for admission to any chiropractic, dental, medical, optometric, podiatric, or veterinary school in the United States. These health professional schools require at least two semesters of biology with laboratories, four semesters of chemistry with laboratories, and two semesters of physics with laboratories. Since additional academic requirements vary by profession, and even by schools within a single profession, it is essential to meet the exact requirements for each professional school under consideration for application. Gannon's pre-health programs have a long-standing tradition of excellence. Nearly 100% of competitive applicants are accepted to health professional schools each year.

GU Undergraduate Entry Requirements:

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.0 or higher on a 4.0 scale
- Minimum SAT score of 1130 (new SAT)/1050 (old SAT) or ACT composite score of 23

Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|----------|--|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <hr/> 16 | |

Second Semester

| | |
|----------|---|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Calculus 1/MATH 140 <i>or</i> Calculus 2/ MATH 141 <i>or</i> Applied Statistics/ MATH 213 |
| 3 | Critical Analysis & Composition/ LENG 112 |
| 3 | History Without Borders/LHST 111 |
| <hr/> 3 | |
| <hr/> 17 | |

Students planning to complete a traditional four-year degree should select an academic major before completion of their third semester. Most students complete the biology or chemistry or biochemistry major curriculum, but other majors are viable options for students desiring admission to health professional schools. Non-science majors may become candidates for admission, if they have taken the prerequisite science courses required by the school to which they apply. For example, pre-medical subjects required by U.S. medical schools are listed in the *Medical School Admission Requirements (MSAR)*, published by the Association of American Medical Colleges.

If time permits within a student's major curriculum, the following courses are recommended:

- Applied Statistics/MATH 213
- Organic Spectroscopic Methods & Lab/CHEM 325/326
- Comparative Vertebrate Anatomy & Lab/BIOL 292/293
- Histology & Lab/BIOL 320/321
- Human Physiology & Lab/BIOL 368/369
- Genetics & Lab/BIOL 265/266
- Structural Biochemistry/CHEM 366

Advising

Students participating in a pre-health program are assigned two pre-health advisors. The primary academic advisor assists students in scheduling courses appropriate for their chosen major curriculum. The Pre-Health Advising Program Director acts as a secondary advisor for all pre-health students, preparing students to become qualified professional school applicants and making recommendations on their behalf in collaboration with other faculty evaluators.

Early Acceptance

A three-year option is available to extraordinary students who have completed three years of undergraduate study at Gannon University (a minimum of 96 credits including all of the liberal studies core requirements) and have achieved early acceptance to an accredited health professional school. The student must petition the Pre-Health Advising Program Director, who in consultation with the Dean of the Morosky College of Health Professions and Sciences, may award a Bachelor of Science degree in health science upon completion of the first year of study at an accredited health professional school. The student must submit an official transcript showing completion of the first year of coursework to the Gannon University Registrar, who will forward it to the Director for review. Upon the Director's and Dean's approval, a B.S. in health science will be awarded to the student.

PRE-PHARMACY

Students participating in this program who complete a minimum of 65 credits will be eligible to apply to any of the 139 pharmacy schools across the United States. After completing the first semester, students should begin to think about which accredited pharmacy school(s) to which they would like to apply and look up the prerequisite coursework to ensure it is included in their undergraduate curriculum. Students planning to complete a traditional four-year degree should select an academic major before completion of their third semester. For these students, courses selected after the freshman year will depend upon the student's final choice of major.

GU Undergraduate Entry Requirements:

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.0 or higher on a 4.0 scale
- Minimum SAT score of 1130 (new SAT)/1050 (old SAT) or ACT composite score of 23

Curriculum

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|----|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 17 | |

Second Semester

| | |
|----|--|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Calculus 2/MATH 141 <i>or</i> Applied Statistics/MATH 213 |
| 3 | Critical Analysis & Composition/ LENG 112 |
| 3 | History Without Borders/LHST 111 |
| 17 | |

NYCC 3+3 ACCELERATED CHIROPRACTIC MEDICINE, NYCC 4+3 CHIROPRACTIC MEDICINE

Gannon University, in affiliation with New York Chiropractic College (NYCC) located in Seneca Falls, New York, offers two programs for qualified students to earn a bachelor's degree from Gannon University and a Doctor of Chiropractic (D.C.) degree from NYCC. The 3+3 accelerated program grants highly motivated and academically strong students an opportunity to matriculate to NYCC after completing only three years of undergraduate study at Gannon University. Successful completion of the first year of chiropractic school at NYCC will allow students in the 3+3 accelerated program to earn a Bachelor of Science degree in Health Science from Gannon University. The majority of students complete the traditional 4+3 program, which allows students to complete a four-year bachelor's degree prior to attending NYCC. Qualified students enrolled in these programs will be conditionally guaranteed an interview with NYCC, providing these students with an advantage over students from other institutions at the time of application. Participation in either program does not restrict students' ability to apply to other chiropractic schools.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.0 or higher on a 4.0 scale
- Class rank in the top 25% of high school class
- Minimum SAT score of 1220 (new SAT)/1150 (old SAT) or ACT composite score of 25
- Evidence of academic and personal potential and a desire to become a chiropractor

NYCC Entry Requirements

After three or four years of undergraduate study, the participant is conditionally guaranteed an interview and possible admission to NYCC if the following requirements are satisfied.

- Completion of all required Liberal Studies Core Curriculum courses as stated in the Undergraduate Catalog of Gannon University
- Completion of the course of study with a cumulative grade point average of at least 3.00, with a minimum of C (2.00) in all specified science courses (general chemistry, organic chemistry, biology and physics)
- Letter of intent submitted to NYCC Office of Admissions during the first year at Gannon University, identifying student as an articulation student and the desired date of entrance to NYCC
- Application for admission to NYCC one year in advance of their desired entrance date, completing all other application procedures, including submission of official college transcripts, furnishing of three character references (at least one from a Doctor of Chiropractic and two from the faculty members at Gannon University)
- Satisfactory admissions interview with NYCC
- Any additional requirements as outlined through the affiliation agreement between Gannon University and NYCC; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

In recognition of students' completion of the program including procedures outlined above, New York Chiropractic College shall accept all such students for the entrance date of their choice.

Curriculum

NYCC 3+3 ACCELERATED CHIROPRACTIC MEDICINE

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 or Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Composition/ LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | History Without Borders/LHST 111 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | The Bible: An Intro/LTHE 201* |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Public Speaking/SPCH 111 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | Philosophy II Series/LPHI* |
| <u>15</u> | |

JUNIOR

First Semester

| | |
|-----------|---------------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Applied Statistics/MATH 213 |
| 3 | LPHI 237 or any LTHE 300 level course |
| 3 | Introduction to Psychology/PSYC 111 |
| 1 | Leadership Seminar |
| <u>17</u> | |

Second Semester

| | |
|--------------|-------------------------|
| 5-7 | Biology Electives** |
| 3 | Fine Arts Series/LFIN* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| <u>14-16</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in bold): *Ecosystem Biology & Evolution/Lab* (BIOL 126/127); *Vertebrate Embryology/Lab* (BIOL 307/308); *Histology/Lab* (BIOL 320/321); ***Microbiology/Lab*** (BIOL 331/332); *Immunology/Lab* (BIOL 338/339); *Virology* (BIOL 334); *Parasitology/Lab* (BIOL 354/355); *Endocrinology* (BIOL 363); ***Human Gross Anatomy/Lab*** (BIOL 365/366); ***Cellular Biochemistry/Lab*** (BIOL 373/374) and ***Cell Biology/Lab*** (BIOL 375/376); please consult with your advisor.

Total Credits to be Completed at Gannon: 96-98

NYCC 4+3 CHIROPRACTIC MEDICINE**Biology Curriculum†***(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

| | |
|-----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140 |
| 3 | Critical Analysis & Composition/ LENG 112 |
| 3 | Intro to Philosophy/LPHI 131 |
| <u>17</u> | |

SOPHOMORE*First Semester*

| | |
|-----------|---|
| 3 | Ecosystem Biology & Evolution/ BIOL 126 |
| 1 | Ecosystem Biology & Evolution Lab/ BIOL 127 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Calculus 1/MATH 140 <i>or</i> Calculus 2/ MATH 141 <i>or</i> Applied Statistics/ MATH 213 |
| 3 | The Bible: An Intro/LTHE 201* |
| 3 | History Without Borders/LHST 111 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Philosophy II Series/LPHI* |
| 3 | Intro to Psychology/PSYC 111 |
| 3 | General Electives |
| <u>17</u> | |

JUNIOR*First Semester*

| | |
|-----------|--|
| 8 | Biology Electives** |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 1 | Leadership Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|--------------------------------|
| 8 | Biology Electives** |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | Public Speaking/SPCH 111 |
| <u>15</u> | |

SENIOR*First Semester*

| | |
|-----------|--|
| 2 | Biology Topics/BIOL 490-495 <i>or</i> Directed Research/BIOL 487 <i>or</i> Biology Research I/BIOL 488 |
| 8 | Biology Electives** |
| 3 | Literature Series/LENG* |
| 3 | General Electives |
| <u>16</u> | |

Second Semester

| | |
|--------------|-------------------------|
| 3 | Biology Electives** |
| 3 | Senior Seminar/LBST 383 |
| 6-9 | General Electives |
| 3 | Fine Arts Series/LFIN* |
| <u>15-18</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Vertebrate Embryology/Lab (BIOL 307/308); Histology/Lab (BIOL 320/321);

Microbiology/Lab (BIOL 331/332); Immunology/Lab (BIOL 338/339); Virology (BIOL 334); Parasitology/Lab (BIOL 354/355); Endocrinology (BIOL 363); Human Gross Anatomy/Lab (BIOL 365/366); Human Physiology/Lab (BIOL 368/369); Cellular Biochemistry/Lab (BIOL 373/374) and Cell Biology/Lab (BIOL 375/376); please consult with your advisor.

- † *The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated NYCC matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.*

Total Credits to be Completed at Gannon: 129-132

CWRU 3+4 EARLY ACCEPTANCE DENTAL MEDICINE

Gannon University, in affiliation with Case Western Reserve University (CWRU) School of Dental Medicine located in Cleveland, Ohio, offers a program for qualified students to earn a bachelor's degree from Gannon University and a Doctor of Dental Medicine (D.M.D) degree from CWRU. The 3+4 early acceptance program grants highly motivated and academically strong high school students the opportunity to gain conditionally guaranteed acceptance to the CWRU School of Dental Medicine as early as the senior year of high school. Participation in the program alleviates much of the cost of applying to dental schools, while providing a strong background in scientific and biomedical courses at Gannon University. Successful completion of the first year of dental school at CWRU will allow students in the 3+4 early acceptance program to earn a Bachelor of Science degree in Health Science from Gannon University.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.5 or higher on a 4.0 scale
- Class rank in the top 25% of your high school class
- Minimum SAT score of 1360 (new SAT)/1300 (old SAT) or ACT composite score of 29
- Personal statement or essay
- Evidence of academic and personal potential, as well as desire to become a dentist
- Documentation for a mastery of English, if the applicant's primary language is not English
- Documented exposure to clinical environments, preferably in the profession of dentistry
- Satisfactory admissions interview with the CWRU School of Dental Medicine as noted below

Program Admissions Process

Students applying to this program are encouraged to apply by November 1st for priority consideration. Guaranteed acceptance will not be granted until all requirements listed below have been satisfied. Decisions will be rendered by April 1st and formal notification of acceptance into the program will be sent to the applicant by Gannon University by April 15th, two weeks prior to the deposit deadline for Gannon University.

Students who wish to be considered for the CWRU affiliation program with Gannon University must:

- apply to Gannon University's CWRU 3+4 Early Acceptance Dental Medicine program and be successfully admitted to the University.
- complete a satisfactory admissions interview with CWRU School of Dental Medicine after receiving an offer of acceptance from Gannon University as a high school senior.

CWRU School of Dental Medicine Entry Requirements

After three years of undergraduate study, the participant is conditionally guaranteed an offer of admission to the CWRU School of Dental Medicine if the following requirements are satisfied.

- Successful completion of approximately 90 credits of undergraduate study
- College GPA of 3.50 (overall and science only), calculated using AADSAS convention
- Completion of pre-dental prerequisite coursework with grades of B or better
- Good standing with Gannon University
- Minimum of 20 hours of shadowing or volunteering in clinical and dental environments
- DAT score of 19 or higher for Academic Average and 18 or higher for Perceptual Ability, to be taken as early as April of the second undergraduate year and preferably no later than January of the students third year
- During the junior year apply to CWRU-SODM through ADEA AADSAS by the end of September and email their director of admissions that you have done so. Update your fall grades on the application by January 1st.
- Letter of evaluation from the Pre-Health Applicant Review Committee at Gannon University
- Final on-site interview at the CWRU School of Dental Medicine upon their receipt of the dental school application
- Response to the offer of acceptance within 15 days to secure a seat in the incoming class
- Any additional requirements as outlined through the affiliation agreement between Gannon University and the CWRU School of Dental Medicine; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University. Though not required, students are encouraged to participate in small-group, capstone, or case-oriented undergraduate coursework or experiential scholarly activities. Students admitted to this program will forfeit their conditionally guaranteed seat if they apply to any other dental medicine schools.

Curriculum

CWRU 3+4 EARLY ACCEPTANCE DENTAL MEDICINE

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-------|--|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <hr/> | |
| 16 | |

Second Semester

| | |
|-------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | History Without Borders/LHST 111 |
| <hr/> | |
| 17 | |

SOPHOMORE

First Semester

| | |
|-------|-------------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | The Bible: An Intro/LTHE 201* |
| <hr/> | |
| 18 | |

Second Semester

| | |
|-------|-----------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | Philosophy II Series/LPHI* |
| <hr/> | |
| 15 | |

JUNIOR

First Semester

| | |
|-------|--|
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Intro to Psychology/PSYC 111 <i>or</i> Basic Sociology/SOCI 110 |
| 3 | Public Speaking/SPCH 111 |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 1 | Leadership Seminar |
| <hr/> | |
| 16 | |

Second Semester

| | |
|-------|-------------------------|
| 6-8 | Biology Electives** |
| 3 | Fine Arts Series/LFIN* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| <hr/> | |
| 15-17 | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): **Ecosystem Biology & Evolution/Lab (BIOL 126/127)**; **Comparative Vertebrate Anatomy/Lab (BIOL 292/293)**; **Vertebrate Embryology/Lab (BIOL 307/308)**; **Histology/Lab (BIOL 320/321)**; **Microbiology/Lab (BIOL 331/332)**; **Immunology/Lab (BIOL 338/339)**; **Virology (BIOL 334)**; **Parasitology/Lab (BIOL 354/355)**; **Endocrinology (BIOL 363)**; **Human Gross Anatomy/Lab (BIOL 365/366)**; **Cellular Biochemistry/Lab (BIOL 373/374)** and **Cell Biology/Lab (BIOL 375/376)**; please consult with your advisor.

Total Credits to be Completed at Gannon: 97-99

LECOM 4+4 EARLY ACCEPTANCE DENTAL MEDICINE

Gannon University, in affiliation with the Lake Erie College of Osteopathic Medicine (LECOM) School of Dental Medicine, located in Bradenton, Florida, offers an early acceptance program for qualified students to earn a four-year bachelor's degree in biology from Gannon University and a Doctor of Dental Medicine (D.M.D.) degree from LECOM. The 4+4 early acceptance program grants academically strong students an opportunity to gain conditionally guaranteed acceptance to the LECOM School of Dental Medicine as early as the senior year of high school. Participation in the program alleviates much of the cost of applying to dental schools, while providing a strong background in scientific and biomedical courses at Gannon University.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.5 or higher on a 4.0 scale
- Class rank in the top 25% of your high school class
- Minimum SAT score of 1240 (new SAT)/1170 (old SAT) or ACT composite score of 26
- Evidence of academic and personal potential, as well as desire to become a dentist
- Satisfactory admissions interview with LECOM

Program Admissions Process

Students applying to this program are encouraged to apply by November 1st for priority consideration. From the qualified applicant pool, a maximum of five (5) students are accepted to this program in the senior year of high school. Guaranteed acceptance to the program will not be granted until all requirements listed below have been satisfied.

Students who wish to be considered for the LECOM dental affiliation program with Gannon University must:

- apply to Gannon University's LECOM 4+4 Early Acceptance Dental Medicine program and be successfully admitted to the University.
- complete the Early Acceptance Program Inquiry form available on the LECOM portal (portal.lecom.edu), selecting the Dental 4+4 Program from the drop down menu and listing Gannon University as one of the top three schools you are interested in attending.
- complete a satisfactory admissions interview with LECOM after receiving an offer of acceptance from Gannon University as a high school senior.
- submit an Early Acceptance Program online application.
- send LECOM an email from your University email account, indicating that you have chosen to attend Gannon.
- receive a provisional letter of acceptance from LECOM.

Gannon University students interested in the 4+4 program must submit an Early Acceptance Program online application no later than February 1st of their sophomore year of study at Gannon University.

LECOM School of Dental Medicine Entry Requirements

After four years of undergraduate study, the participant is conditionally guaranteed admission to LECOM if the following requirements are satisfied.

- Grades are submitted through the LECOM portal within 30 days following each semester
- LECOM's progressive GPA requirements are met
- Cumulative overall GPA of 3.4 or higher by the time of application
- Cumulative science GPA of 3.2 or higher by the time of application
- Minimum grade of C in all courses required by LECOM
- Good standing with Gannon University
- DAT score of 18 or higher with a 17 in all subsections, to be taken by December 1st of the year prior to LECOM matriculation
- Approximately 100 hours of shadowing in a clinical dental setting
- U.S. citizen or permanent resident
- Successful criminal background check
- Meet and agree to LECOM's Health and Technical Standards
- Application to the LECOM School of Dental Medicine through ADEA AADSAS by November 15th of the year prior to LECOM matriculation
- LECOM secondary application submitted by December 31st of the year prior to LECOM matriculation
- Letters of recommendation and all supporting documentation to be submitted for review by LECOM
- Any additional requirements as outlined through the affiliation agreement between Gannon University and the LECOM School of Dental Medicine; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

Each academic year, LECOM will admit up to five (5) students total from Gannon University's dental affiliation program. Additional students may be considered on an individual basis and at the discretion of LECOM.

Students admitted to this program will forfeit their conditionally guaranteed seat if they apply to any other dental medicine schools.

LECOM 4+4 EARLY ACCEPTANCE DENTAL MEDICINE**Biology Curriculum†***(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

| | |
|----------|--|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| <u>2</u> | First-Year Seminar |
| 16 | |

Second Semester

| | |
|---|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | History Without Borders/LHST 111 |

17**SOPHOMORE***First Semester*

| | |
|----------|--|
| 3 | Ecosystem Biology & Evolution/ BIOL 126 |
| 1 | Ecosystem Biology & Evolution Lab/ BIOL 127 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Public Speaking/SPCH 111 |
| <u>3</u> | |
| 17 | |

Second Semester

| | |
|---|-----------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Philosophy II Series/LPHI* |
| 3 | The Bible: An Intro/LTHE 201* |
| 3 | Literature Series/LENG* |

17**JUNIOR***First Semester*

| | |
|----------|--|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Intro to Psychology/PSYC 111 <i>or</i> Basic Sociology/SOCI 110 |
| <u>3</u> | General Electives |
| 17 | |

Second Semester

| | |
|---|--------------------------------|
| 8 | Biology Electives** |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | Fine Arts Series/LFIN* |

15**SENIOR***First Semester*

| | |
|----------|--|
| 2 | Biology Topics/BIOL 490-495 <i>or</i> Directed Research/BIOL 487 <i>or</i> Biology Research I/BIOL 488 |
| 6-8 | Biology Electives** |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 1 | Leadership Seminar |
| <u>3</u> | General Electives |
| 15-17 | |

Second Semester

| | |
|-----|-------------------------|
| 5-7 | Biology Electives** |
| 3 | Senior Seminar/LBST 383 |
| 6 | General Electives |

14-16

* Please refer to the Undergraduate Catalog for course options.

- ** *The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Vertebrate Embryology/Lab (BIOL 307/308); **Histology/Lab (BIOL 320/321); Microbiology/Lab (BIOL 331/332); Immunology/Lab (BIOL 338/339); Virology (BIOL 334); Parasitology/Lab (BIOL 354/355); Endocrinology (BIOL 363); **Human Gross Anatomy/Lab (BIOL 365/366); Cellular Biochemistry/Lab (BIOL 373/374) and Cell Biology/Lab (BIOL 375/376); please consult with your advisor.*****
- † *The student may pursue another approved program like Chemistry or Biochemistry that allows the student to acquire all prerequisite coursework prior to anticipated LECOM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.*

Total Credits to be Completed at Gannon: 128-132

LECOM 3+4 EARLY ACCEPTANCE MEDICINE

Gannon University, in affiliation with Lake Erie College of Osteopathic Medicine (LECOM), offers an early acceptance program for qualified students to earn a bachelor's degree from Gannon University and a Doctor of Osteopathic Medicine (D.O.) degree from LECOM. The 3+4 early acceptance program grants highly motivated academically strong students an opportunity to gain conditionally guaranteed acceptance to LECOM as early as the senior year of high school. Participation in the program alleviates much of the cost of applying to medical schools, while providing a strong background in scientific and biomedical courses at Gannon University. After completing their undergraduate education at Gannon University, students matriculate to either the main campus in Erie, Pennsylvania, which includes an additional location at Seton Hill University in Greensburg, Pennsylvania or a branch campus in Bradenton, Florida. Successful completion of the first year of medical school at LECOM will allow students in the 3+4 early acceptance program to earn a Bachelor of Science degree in Health Science from Gannon University.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.8 or higher on a 4.0 scale
- Class rank in the top 25% of your high school class
- Minimum SAT score of 1340 (new SAT)/1280 (old SAT) or ACT composite score of 28
- LECOM Academic Index Score of 120 or higher
- Evidence of academic and personal potential and a desire to become an osteopathic physician
- Satisfactory admissions interview with LECOM

Program Admissions Process

Students applying to this program are encouraged to apply by November 1st for priority consideration. From the qualified applicant pool, a maximum of ten (10) students are accepted to this program in the senior year of high school. Guaranteed acceptance to the program will not be granted until all requirements listed below have been satisfied.

Students who wish to be considered for the LECOM medical affiliation program with Gannon University must:

- apply to Gannon University's LECOM 3+4 Early Acceptance Medicine program and be successfully admitted to the University.
- complete the Early Acceptance Program Inquiry form available on the LECOM portal (portal.lecom.edu), selecting the Medical 3+4 Program from the drop down menu and listing Gannon University as one of the top three schools you are interested in attending.

- submit an Early Acceptance Program online application.
- complete a satisfactory admissions interview with LECOM after receiving an offer of acceptance from Gannon University as a high school senior.
- send LECOM an email from your University email account, indicating that you have chosen to attend Gannon.
- receive a provisional letter of acceptance from LECOM.

Gannon University students who may be eligible for the accelerated medical program are identified by the Director of the Pre-Health Advising Program in collaboration with LECOM. Gannon University students interested in the 3+4 program must submit an Early Acceptance Program online application no later than June 1st following their freshman year at Gannon University.

LECOM Entry Requirements

After three years of undergraduate study, the participant is conditionally guaranteed admission to LECOM if the following requirements are satisfied.

- Grades are submitted through the LECOM portal within 30 days following each semester
- LECOM's progressive GPA requirements are met
- Cumulative overall GPA of 3.5 or higher by time of application
- Cumulative science GPA of 3.2 or higher by time of application
- Minimum of a C in all courses required by LECOM
- Good standing with Gannon University
- LECOM Academic Index Score of 123 or higher*
- Minimum MCAT score of 500**
- Shadowing an osteopathic physician is highly recommended but not required
- Attendance of at least one, but preferably all, annual on-campus day events held for affiliated students at LECOM
- U.S. citizen or permanent resident
- Successful criminal background check
- Meet and agree to LECOM's Health and Technical Standards
- Application to LECOM and preference of learning pathway submitted through the LECOM portal by November 1st of the year prior to matriculation
- Letters of recommendation and all supporting documentation to be submitted for review by LECOM
- Any additional requirements as outlined through the affiliation agreement between Gannon University and LECOM; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

* *Students not meeting AIS requirement one year prior to matriculating to LECOM must take the MCAT by December 1st of the year prior to LECOM matriculation or switch to the 4+4 program prior to starting their third year of study at Gannon.*

** *Students will be exempt from the MCAT requirement providing they have submitted official documentation of SAT or ACT scores to LECOM and have taken at least one biochemistry course and one genetics course, earning a grade of C or higher in each.*

Each academic year, LECOM will admit up to ten (10) students total from Gannon University's medical affiliation programs. Additional students may be considered on an individual basis and at the discretion of LECOM.

Students admitted to this program will forfeit their conditionally guaranteed seat if they apply to any other medical schools.

Curriculum

LECOM 3+4 EARLY ACCEPTANCE MEDICINE

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|--|
| 3 | Molecular & Cellular Biology/BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>17</u> | |

SOPHOMORE***

First Semester

| | |
|-----------|--|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Intro to Psychology/PSYC 111 <i>or</i> Basic Sociology/SOCI 110 |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>18</u> | |

Second Semester***

| | |
|-----------|-----------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | Philosophy II Series/LPHI* |
| <u>15</u> | |

JUNIOR

First Semester

| | |
|-----------|--|
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Applied Statistics/MATH 213 |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 3 | Public Speaking/SPCH 111 |
| 1 | Leadership Seminar |
| 3 | History Without Borders/LHST 111 |
| <u>16</u> | |

Second Semester

| | |
|--------------|-------------------------|
| 5-7 | Biology Electives** |
| 3 | Fine Arts Series/LFIN* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| <u>14-16</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): **Ecosystem Biology & Evolution/Lab (BIOL 126/127)**; **Vertebrate Embryology/Lab (BIOL 307/308)**; **Histology/Lab (BIOL 320/321)**; **Microbiology/Lab (BIOL 331/332)**; **Immunology/Lab (BIOL 338/339)**; **Virology (BIOL 334)**; **Parasitology/Lab (BIOL 354/355)**; **Endocrinology (BIOL 363)**; **Human Gross Anatomy/Lab (BIOL 365/366)**; **Cellular Biochemistry/Lab (BIOL 373/374)** and **Cell Biology/Lab (BIOL 375/376)**; please consult with your advisor.

*** Students preparing to take the MCAT are also encouraged to take Basic Sociology (SOCI 110) and Introduction to Psychology (PSYC 111) this year.

Total Credits to be Completed at Gannon: 96-98

LECOM 4+4 EARLY ACCEPTANCE MEDICINE

Gannon University, in affiliation with Lake Erie College of Osteopathic Medicine (LECOM) offers an early acceptance program for qualified students to earn a four-year bachelor's degree in biology or chemistry from Gannon University and a Doctor of Osteopathic Medicine (D.O.) degree from LECOM. The 4+4 early acceptance program grants academically strong students an opportunity to gain conditionally guaranteed acceptance to LECOM as early as the senior year of high school. Participation in the program alleviates much of the cost of applying to medical schools, while providing a strong background in scientific and biomedical courses at Gannon University. After completing their undergraduate education at Gannon University, students matriculate to either the main campus in Erie, Pennsylvania which includes an additional location at Seton Hill University in Greensburg, Pennsylvania or a branch campus in Bradenton, Florida.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.5 or higher on a 4.0 scale
- Class rank in the top 25% of your high school class
- Minimum SAT score of 1240 (new SAT)/1170 (old SAT) or ACT composite score of 26
- LECOM Academic Index Score of 115 or higher
- Evidence of academic and personal potential and a desire to become an osteopathic physician
- Satisfactory admissions interview with LECOM

Program Admissions Process

Students applying to this program are encouraged to apply by November 1st for priority consideration. From the qualified applicant pool, a maximum of ten (10) students are accepted to this program in the senior year of high school. Guaranteed acceptance to the program will not be granted until all requirements listed below have been satisfied.

Students who wish to be considered for the LECOM medical affiliation program with Gannon University must:

- apply to Gannon University's LECOM 4+4 Early Acceptance Medicine program and be successfully admitted to the University.
- complete the Early Acceptance Program Inquiry form available on the LECOM portal (portal.lecom.edu), selecting the Medical 4+4 Program from the drop down menu and listing Gannon University as one of the top three schools you are interested in attending.
- submit an Early Acceptance Program online application.
- complete a satisfactory admissions interview with LECOM after receiving an offer of acceptance from Gannon University as a high school senior.
- send LECOM an email from your University email account, indicating that you have chosen to attend Gannon.
- receive a provisional letter of acceptance from LECOM.

Gannon University students interested in the 4+4 program must submit an Early Acceptance Program online application no later than June 1st following their sophomore year of study at Gannon University.

LECOM Entry Requirements

After four years of undergraduate study, the participant is conditionally guaranteed admission to LECOM if the following requirements are satisfied.

- Grades are submitted through the LECOM portal within 30 days following each semester
- LECOM's progressive GPA requirements are met
- Cumulative overall GPA of 3.4 or higher by time of application

- Cumulative science GPA of 3.2 or higher by time of application
- Minimum of a C in all courses required by LECOM
- Good standing with Gannon University
- LECOM Academic Index Score of 115 or higher*
- Minimum MCAT score of 500**
- Shadowing an osteopathic physician is highly recommended but not required
- Attendance of at least one, but preferably all, annual on-campus day events held for affiliated students at LECOM
- U.S. citizen or permanent resident
- Successful criminal background check
- Meet and agree to LECOM's Health and Technical Standards
- Application to LECOM and preference of learning pathway submitted through the LECOM portal by November 1st of the year prior to matriculation
- Letters of recommendation and all supporting documentation to be submitted for review by LECOM
- Any additional requirements as outlined through the affiliation agreement between Gannon University and LECOM; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

* *Students not meeting the AIS requirement one year prior to matriculating to LECOM must take the MCAT by December 1st of the year prior to LECOM matriculation.*

** *Students will be exempt from the MCAT requirement providing they have submitted official documentation of SAT or ACT scores to LECOM and have taken at least one biochemistry course and one genetics course, earning a grade of C or higher in each.*

Each academic year, LECOM will admit up to ten (10) students total from Gannon University's medical affiliation programs. Additional students may be considered on an individual basis and at the discretion of LECOM.

Students admitted to this program will forfeit their conditionally guaranteed seat if they apply to any other medical schools.

LECOM 4+4 EARLY ACCEPTANCE MEDICINE

Biology Curriculum†

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

- 3 Molecular & Cellular Biology/
BIOL 122
- 1 Molecular & Cellular Biology Lab/
BIOL 123
- 3 General Chemistry I/CHEM 111
- 1 General Chemistry I Lab/CHEM 112
- 3 Trigonometry/MATH 112 *or*
Calculus 1/MATH 140
- 3 College Composition/LENG 111
- 2 First-Year Seminar

16

Second Semester

- 3 Animal Form & Function/BIOL 124
- 1 Animal Form & Function Lab/BIOL 125
- 3 General Chemistry II/CHEM 114
- 1 General Chemistry II Lab/CHEM 115
- 3 Critical Analysis & Comp/LENG 112
- 3 Foundations of Theology/LTHE 101
- 3 History Without Borders/LHST 111

17

SOPHOMORE

First Semester

| | |
|-----------|--|
| 3 | Ecosystem Biology & Evolution/ BIOL 126 |
| 1 | Ecosystem Biology & Evolution Lab/ BIOL 127 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Public Speaking/SPCH 111 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Philosophy II Series/LPHI* |
| 3 | The Bible: An Intro/LTHE 201* |
| 3 | Literature Series/LENG* |
| <u>17</u> | |

JUNIOR***

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Introduction to Psychology/PSYC 111 |
| 3 | General Electives |
| <u>17</u> | |

*Second Semester****

| | |
|-----------|--------------------------------|
| 7 | Biology Electives** |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | Fine Arts Series/LFIN* |
| <u>14</u> | |

SENIOR

First Semester

| | |
|--------------|--|
| 2 | Biology Topics/BIOL 490-495 <i>or</i> Directed Research/BIOL 487 <i>or</i> Biology Research I/BIOL 488 |
| 6-8 | Biology Electives** |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | General Electives |
| <u>15-17</u> | |

Second Semester

| | |
|--------------|-------------------------|
| 6-8 | Biology Electives** |
| 3 | Senior Seminar/LBST 383 |
| 6 | General Electives |
| <u>15-17</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in bold): **Vertebrate Embryology/Lab (BIOL 307/308)**; **Histology/Lab (BIOL 320/321)**; **Microbiology/Lab (BIOL 331/332)**; **Medical Microbiology/Lab (BIOL 378/379)**; **Immunology/Lab (BIOL 338/339)**; **Virology (BIOL 334)**; **Parasitology/Lab (BIOL 354/355)**; **Endocrinology (BIOL 363)**; **Human Gross Anatomy/Lab (BIOL 365/366)**; **Cellular Biochemistry/Lab (BIOL 373/374)**; and **Cell Biology/Lab (BIOL 375/376)**; students must take at least two of these courses along with the accompanying lab, if offered; please consult with your advisor.

† The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated LECOM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.

*** Students preparing to take the MCAT are also encouraged to take Basic Sociology (SOCI 110) and Introduction to Psychology (PSYC 111) this year.

Total Credits to be Completed at Gannon: 128-132

LECOM 4+4 EARLY ACCEPTANCE MEDICINE**Chemistry Curriculum†***(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

| | |
|-------|--|
| 3 | Molecular and Cellular Biology/ BIOL 122 |
| 1 | Molecular and Cell. Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <hr/> | |
| 16 | |

Second Semester

| | |
|-------|---------------------------------------|
| 3 | Animal Form and Function/BIOL 124 |
| 1 | Animal Form and Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Calculus 2/MATH 141 |
| <hr/> | |
| 17 | |

SOPHOMORE*First Semester*

| | |
|-------|-------------------------------------|
| 4 | Genetics with lab/BIOL 265/266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Fundamentals of Physics 1/PHYS 210 |
| 1 | Fund of Physics 1 Lab/PHYS 211 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <hr/> | |
| 18 | |

*Second Semester****

| | |
|-------|------------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Fundamentals of Physics 2/PHYS 212 |
| 1 | Fund of Physics 2 Lab/PHYS 213 |
| 3 | Philosophy II Series/LPHI* |
| 3 | Public Speaking/SPCH 111 |
| <hr/> | |
| 18 | |

JUNIOR*First Semester*

| | |
|-------|--|
| 3 | Organic Spectroscopic Methods/ CHEM 325 |
| 1 | Organic Spectroscopic Methods Lab/ CHEM 326 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Physical Chemistry I/CHEM 331 |
| 1 | Physical Chemistry I Lab/CHEM 332 |
| 3 | Introduction to Psychology/PSYC 111 |
| <hr/> | |
| 14 | |

Second Semester

| | |
|-------|--|
| 3-4 | Biology Electives** |
| 3 | Physical Chemistry II/CHEM 334 |
| 1 | Physical Chemistry II Lab/CHEM 335 |
| 3 | Modern Analytical Chemistry/ CHEM 336 |
| 2 | Modern Analytical Chemistry Lab/ CHEM 337 |
| 1 | Chemical Literature/CHEM 356 |
| 3 | The Bible: An Intro/LTHE 201* |
| <hr/> | |
| 16-17 | |

SENIOR*First Semester*

| | |
|-------|---------------------------------------|
| 1 | Undergrad Research/CHEM 380-383 |
| 7 | Chemistry Electives* |
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | History Without Borders/LHST 111 |
| <hr/> | |
| 15 | |

Second Semester

| | |
|-------|---------------------------------|
| 2-3 | Biology Electives** |
| 1 | Undergrad Research/CHEM 380-383 |
| 4 | Chemistry Electives* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| 3 | Fine Arts/LFIN* |
| <hr/> | |
| 16-17 | |

- * Please refer to Undergraduate Catalog for course options.
- ** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): **Ecosystem Biology & Evolution/Lab (BIOL 126/127)**; **Vertebrate Embryology/Lab (BIOL 307/308)**; **Histology/Lab (BIOL 320/321)**; **Microbiology/Lab (BIOL 331/332)**; **Medical Microbiology/Lab (BIOL 378/379)**; **Immunology/Lab (BIOL 338/339)**; **Virology (BIOL 334)**; **Parasitology/Lab (BIOL 354/355)**; **Endocrinology (BIOL 363)**; **Human Gross Anatomy/Lab (BIOL 365/366)**; **Cellular Biochemistry/Lab (BIOL 373/374)**; and **Cell Biology/Lab (BIOL 375/376)**; students must take at least two of these courses along with the accompanying lab, if offered; please consult with your advisor.
- † The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to planned LECOM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.
- *** Students preparing to take the MCAT are also encouraged to take Basic Sociology (SOC 110) and Introduction to Psychology (PSYC 111) this year.

Total Credits to be Completed at Gannon: 130-132

PCOM 4+4 MEDICINE

Gannon University, in affiliation with Philadelphia College of Osteopathic Medicine (PCOM) located in Philadelphia, Pennsylvania, offers a program for qualified students to earn a four-year bachelor's degree from Gannon University and a Doctor of Osteopathic Medicine (D.O.) degree from PCOM. The traditional 4+4 program grants academically strong students an opportunity to complete a bachelor's degree in biology or chemistry prior to attending PCOM. Qualified students enrolled in the program will be conditionally guaranteed an interview with PCOM, providing these students with an advantage over students from other institutions at the time of application. Participation in the program does not restrict students' ability to apply to other medical schools.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.4 or higher on a 4.0 scale
- Class rank in the top 25% of high school class
- Minimum SAT score of 1220 (new SAT)/1150 (old SAT) or ACT composite score of 25
- Evidence of academic and personal potential and a desire to become an osteopathic physician

PCOM Entry Requirements

After four years of undergraduate study, the participant is conditionally guaranteed an interview and possible admission to PCOM if the following requirements are satisfied.

- Completion of all required courses as listed in PCOM's Catalog
- Cumulative overall and science GPA of 3.25 or higher through the end of the junior year
- MCAT must be taken as early as possible as but no later than the fall of the senior year.
- Candidate must earn a minimum score of a 504 composite and at least a 126 on each section of the MCAT
- U.S. citizen or permanent resident (green card holder) at time of application submission to AACOMAS
- Application to PCOM through AACOMAS by October 31st of the senior year
- PCOM supplemental application submitted by November 30th of the senior year
- Letter of recommendation from an osteopathic physician (D.O.) is suggested but not required
- Satisfactory admissions interview with PCOM

- Any additional requirements as outlined through the affiliation agreement between Gannon University and PCOM; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

Each academic year, PCOM will admit up to three (3) students total from Gannon University's medical affiliation programs. Additional students may be considered on an individual basis and at the discretion of PCOM.

PCOM 4+4 MEDICINE

Biology Curriculum†

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|--|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | History Without Borders/LHST 111 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|-----------|--|
| 3 | Ecosystem Biology & Evolution/ BIOL 126 |
| 1 | Ecosystem Biology & Evolution Lab/ BIOL 127 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Public Speaking/SPCH 111 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Philosophy II Series/LPHI* |
| 3 | The Bible: An Intro/LTHE 201* |
| 3 | Literature Series/LENG* |
| <u>17</u> | |

JUNIOR***

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Introduction to Psychology/PSYC 111 |
| 3 | General Electives |
| <u>17</u> | |

Second Semester***

| | |
|-----------|--------------------------------|
| 7 | Biology Electives** |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | Fine Arts Series/LFIN* |
| <u>14</u> | |

SENIOR

First Semester

| | |
|-----|--|
| 2 | Biology Topics/BIOL 490-495 or Directed Research/BIOL 487 or Biology Research I/BIOL 488 |
| 6-8 | Biology Electives** |
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | General Electives |

15-17*Second Semester*

| | |
|-----|-------------------------|
| 6-8 | Biology Electives** |
| 3 | Senior Seminar/LBST 383 |
| 6 | General Electives |

15-17

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): *Vertebrate Embryology/Lab* (BIOL 307/308); ***Histology/Lab*** (BIOL 320/321); ***Microbiology/Lab*** (BIOL 331/332); ***Immunology/Lab*** (BIOL 338/339); *Virology* (BIOL 334); *Parasitology/Lab* (BIOL 354/355); ***Endocrinology*** (BIOL 363); ***Human Gross Anatomy/Lab*** (BIOL 365/366); *Cellular Biochemistry/Lab* (BIOL 373/374) and *Cell Biology/Lab* (BIOL 375/376); please consult with your advisor.

† The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated PCOM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.

*** Students preparing to take the MCAT are also encouraged to take Basic Sociology (SOC1 110) and Introduction to Psychology (PSYC 111) this year.

Total Credits at Gannon: 128-132

PCOM 4+4 MEDICINE

Chemistry Curriculum†

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|---|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |

16*Second Semester*

| | |
|---|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Calculus 2/MATH 141 |

17

SOPHOMORE

First Semester

| | |
|---|-------------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Fundamentals of Physics 1/PHYS 210 |
| 1 | Fund of Physics 1 Lab/PHYS 211 |
| 3 | Introduction to Philosophy/LPHI 131 |

18*Second Semester*

| | |
|---|------------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Fundamentals of Physics 2/PHYS 212 |
| 1 | Fund of Physics 2 Lab/PHYS 213 |
| 3 | Philosophy II Series/LPHI* |
| 3 | Public Speaking/SPCH 111 |

18

JUNIOR***

First Semester

| | |
|-----------|--|
| 3 | Organic Spectroscopic Methods/ CHEM 325 |
| 1 | Organic Spectroscopic Methods Lab/ CHEM 326 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Physical Chemistry I/CHEM 331 |
| 1 | Physical Chemistry I Lab/CHEM 332 |
| 3 | Introduction to Psychology/PSYC 111 |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>17</u> | |

*Second Semester****

| | |
|--------------|--|
| 3-4 | Biology Electives** |
| 3 | Physical Chemistry II/CHEM 334 |
| 1 | Physical Chemistry II Lab/CHEM 335 |
| 3 | Modern Analytical Chemistry/ CHEM 336 |
| 2 | Modern Analytical Chemistry Lab/ CHEM 337 |
| 1 | Chemical Literature/CHEM 356 |
| <u>13-14</u> | |

SENIOR

First Semester

| | |
|-----------|---------------------------------------|
| 1 | Undergrad Research/CHEM 380-383 |
| 7 | Chemistry Electives* |
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | History Without Borders/LHST 111 |
| <u>15</u> | |

Second Semester

| | |
|--------------|---------------------------------|
| 2-3 | Biology Electives** |
| 1 | Undergrad Research/CHEM 380-383 |
| 4 | Chemistry Electives* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| 3 | Fine Arts Series/LFIN* |
| <u>16-17</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): *Ecosystem Biology & Evolution/Lab* (BIOL 126/127); *Vertebrate Embryology/Lab* (BIOL 307/308); ***Histology/Lab*** (BIOL 320/321); ***Microbiology/Lab*** (BIOL 331/332); *Immunology/Lab* (BIOL 338/339); *Virology* (BIOL 334); *Parasitology/Lab* (BIOL 354/355); *Endocrinology* (BIOL 363); ***Human Gross Anatomy/Lab*** (BIOL 365/366); *Cellular Biochemistry/Lab* (BIOL 373/374) and *Cell Biology/Lab* (BIOL 375/376); please consult with your advisor.

*** Students preparing to take the MCAT are also encouraged to take *Basic Sociology* (SOCI 110) and *Introduction to Psychology* (PSYC 111) this year.

† The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to planned PCOM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.

Total Credits at Gannon: 130-132

ROSS UNIVERSITY 4+4 MEDICINE

Gannon University, in affiliation with Ross University School of Medicine (RUSM) located in Bridgetown on the island of Barbados in the Caribbean, offers a program for qualified students to earn a four-year bachelor's degree from Gannon University and a Medical Doctor (M.D.) degree from RUSM. The traditional 4+4 program grants academically strong students an opportunity to complete a bachelor's degree in biology or chemistry prior to attending RUSM. Participation in the program alleviates much of the cost of applying to medical schools, while providing a strong background in scientific and biomedical courses at Gannon University. Students enrolled in the program are given priority consideration when they apply to RUSM, including a guaranteed admissions interview and waiving of the application fee.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.4 or higher on a 4.0 scale
- Class rank in the top 25% of high school class
- Minimum SAT score of 1220 (new SAT)/1150 (old SAT) or ACT composite score of 25
- Evidence of academic and personal potential and a desire to become a physician

RUSM Entry Requirements

After four years of undergraduate study and within two years after graduation, the participant is conditionally guaranteed an admissions interview to RUSM if the following requirements are satisfied.

- Cumulative overall GPA of 3.2 or higher
- Minimum GPA of a 3.00 or higher in all courses designated by RUSM as prerequisites for admission
- No F, D, or C- grade in any course designated by RUSM as prerequisites for admission. All prerequisite coursework must have been completed within the past ten years.
- MCAT score of 490 or higher or an overall score in the 25th percentile or higher
- Other minimum admissions requirements required of all RUSM students
- Satisfactory admissions interview with RUSM
- Any additional requirements as outlined through the affiliation agreement between Gannon University and RUSM; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

Each academic year, RUSM will hold open five (5) seats in each RUSM semester class (January, May, and September) for eligible Gannon University students until thirty (30) days prior to the start of the semester. Additional students may be considered on an individual basis and at the discretion of RUSM.

ROSS UNIVERSITY 4+4 MEDICINE**Biology Curriculum†**

(Numerals in front of courses indicate credits)

FRESHMAN*First Semester*

| | |
|---|--|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |

 16
Second Semester

| | |
|---|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | History Without Borders/LHST 111 |

 17

SOPHOMORE

First Semester

| | |
|-----------|--|
| 3 | Ecosystem Biology & Evolution/ BIOL 126 |
| 1 | Ecosystem Biology & Evolution Lab/ BIOL 127 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Public Speaking/SPCH 111 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Philosophy II Series/LPHI* |
| 3 | The Bible: An Intro/LTHE 201* |
| 3 | Literature Series/LENG* |
| <u>17</u> | |

JUNIOR***

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Introduction to Psychology/PSYC 111 |
| 3 | General Electives |
| <u>17</u> | |

*Second Semester****

| | |
|-----------|--------------------------------|
| 7 | Biology Electives** |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | Fine Arts Series/LFIN* |
| <u>14</u> | |

SENIOR

First Semester

| | |
|--------------|--|
| 2 | Biology Topics/BIOL 490-495 <i>or</i> Directed Research/BIOL 487 <i>or</i> Biology Research I/BIOL 488 |
| 6-8 | Biology Electives** |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | General Electives |
| <u>15-17</u> | |

Second Semester

| | |
|--------------|-------------------------|
| 6-8 | Biology Electives** |
| 3 | Senior Seminar/LBST 383 |
| 6 | General Electives |
| <u>15-17</u> | |

* Please refer to Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Vertebrate Embryology/Lab (BIOL 307/308); Histology/Lab (BIOL 320/321); **Microbiology/Lab (BIOL 331/332)**; Immunology/Lab (BIOL 338/339); Virology (BIOL 334); Parasitology/Lab (BIOL 354/355); Endocrinology (BIOL 363); **Human Gross Anatomy/Lab (BIOL 365/366)**; Cellular Biochemistry/Lab (BIOL 373/374) and Cell Biology/Lab (BIOL 375/376); please consult with your advisor.

*** Students preparing to take the MCAT are also encouraged to take Basic Sociology (SOCI 110) and Introduction to Psychology (PSYC 111) this year.

† The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated RUSM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.

Total Credits to be Completed at Gannon: 128-132

ROSS UNIVERSITY 4+4 MEDICINE**Chemistry Curriculum†***(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

| | |
|----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| <u>2</u> | First-Year Seminar |
| 16 | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Calculus 2/MATH 141 |
| <u>17</u> | |

SOPHOMORE*First Semester*

| | |
|----------|-------------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Fundamentals of Physics 1/PHYS 210 |
| 1 | Fund of Physics 1 Lab/PHYS 211 |
| <u>3</u> | Introduction to Philosophy/LPHI 131 |
| 18 | |

Second Semester

| | |
|----------|------------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Fundamentals of Physics 2/PHYS 212 |
| 1 | Fund of Physics 2 Lab/PHYS 213 |
| 3 | Philosophy II Series/LPHI* |
| <u>3</u> | Public Speaking/SPCH 111 |
| 18 | |

JUNIOR****First Semester*

| | |
|----------|--|
| 3 | Organic Spectroscopic Methods/ CHEM 325 |
| 1 | Organic Spectroscopic Methods Lab/ CHEM 326 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Physical Chemistry I/CHEM 331 |
| 1 | Physical Chemistry I Lab/CHEM 332 |
| 3 | Intro to Psychology/PSYC 111 |
| <u>3</u> | The Bible: An Intro/LTHE 201* |
| 17 | |

*Second Semester****

| | |
|--------------|--|
| 3-4 | Biology Electives |
| 3 | Physical Chemistry II/CHEM 334 |
| 1 | Physical Chemistry II Lab/CHEM 335 |
| 3 | Modern Analytical Chemistry/ CHEM 336 |
| 2 | Modern Analytical Chemistry Lab/ CHEM 337 |
| 1 | Chemical Literature/CHEM 356 |
| <u>13-14</u> | |

SENIOR*First Semester*

| | |
|-----------|---------------------------------------|
| 1 | Undergrad Research/CHEM 380-383 |
| 7 | Chemistry Electives* |
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | History Without Borders/LHST 111 |
| <u>15</u> | |

Second Semester

| | |
|----------|---------------------------------|
| 2-3 | Biology Electives** |
| 1 | Undergrad Research/CHEM 380-383 |
| 4 | Chemistry Electives* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| <u>3</u> | Fine Arts Series/LFIN |
| 16-17 | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Ecosystem Biology & Evolution/Lab (BIOL 126/127); Vertebrate Embryology/Lab (BIOL

307/308); *Histology/Lab* (BIOL 320/321); **Microbiology/Lab** (BIOL 331/332); *Immunology/Lab* (BIOL 338/339); *Virology* (BIOL 334); *Parasitology/Lab* (BIOL 354/355); *Endocrinology* (BIOL 363); **Human Gross Anatomy/Lab** (BIOL 365/366); *Cellular Biochemistry/Lab* (BIOL 373/374) and *Cell Biology* (BIOL 375/376); please consult with your advisor.

*** Students preparing to take the MCAT are also encouraged to take *Basic Sociology* (SOC1 110) and *Introduction to Psychology* (PSYC 111) this year.

† The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated RUSM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.

Total Credits to be Completed at Gannon: 130-132

UMHS 3+4 ACCELERATED MEDICINE, UMHS 4+4 MEDICINE

Gannon University, in affiliation with the University of Medicine and Health Sciences (UMHS) located on the island of St. Kitts in the Caribbean, offers two programs for qualified students to earn a bachelor's degree from Gannon University and a Doctor of Medicine (M.D.) degree from UMHS. The 3+4 accelerated program grants highly motivated and academically strong students an opportunity to matriculate to UMHS after completing only three years of undergraduate study at Gannon University. Successful completion of the first year of medical school at UMHS will allow the students in the 3+4 accelerated program to earn a Bachelor of Science degree in Health Science from Gannon University. The majority of students complete the traditional 4+4 program, which allows students to complete a four-year bachelor's degree prior to attending UMHS. Qualified students enrolled in these programs will be conditionally guaranteed an interview with UMHS, providing these students with an advantage over students from other institutions at the time of application. Participation in either program does not restrict a student's ability to apply to other medical schools.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.4 or higher on a 4.0 scale
- Class rank in the top 25% of high school class
- Minimum SAT score of 1220 (new SAT)/1150 (old SAT) or ACT composite score of 25
- Evidence of academic and personal potential and a desire to become a physician

UMHS Entry Requirements

After three or four years of undergraduate study, the participant is conditionally guaranteed an interview and possible admission to UMHS if the following requirements are satisfied.

- Successful completion of a minimum of 96 credit hours of undergraduate study
- Completion of all course requirements for UMHS with no grade lower than C- in any pre-medical prerequisite coursework
- Cumulative overall GPA of 3.25 or higher
- Good standing with Gannon University
- MCAT score considered to be competitive by UMHS admissions
- Online application to UMHS, approximately 10–12 months prior to anticipated UMHS matriculation
- Letter of evaluation from the Pre-Health Applicant Review Committee at Gannon University that attests to the candidate's preparation and suitability for the study and practice of medicine
- Recommendation for admission by a UMHS interviewer who has interviewed the applicant in person or via Skype

- No circumstances that might prevent the student from participating in clerkships in the United States or make the student ineligible for study or licensure in the United States
- Any additional requirements as outlined through the affiliation agreement between Gannon University and UMHS; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

Students who meet all entry requirements listed above will be accepted on a rolling admissions basis. If the semester for which the student has applied has reached capacity prior to acceptance, they will be eligible for acceptance the next available semester.

Curriculum

UMHS 3+4 ACCELERATED MEDICINE

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140† |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>17</u> | |

SOPHOMORE***

First Semester

| | |
|-----------|--|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Intro to Psychology/PSYC 111 <i>or</i> Basic Sociology/SOCI 110 |
| 3 | Philosophy II Series/LPHI* |
| <u>3</u> | |
| <u>18</u> | |

Second Semester***

| | |
|-----------|-----------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>15</u> | |

JUNIOR

First Semester

| | |
|-----------|--|
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Applied Statistics/MATH 213 |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 3 | Public Speaking/SPCH 111 |
| 1 | Leadership Seminar |
| 3 | History Without Borders/LHST 111 |
| <u>3</u> | |
| <u>16</u> | |

Second Semester

| | |
|--------------|-------------------------|
| 5-7 | Biology Electives** |
| 3 | Fine Arts Series/LFIN* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| <u>14-16</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Ecosystem Biology & Evolution/Lab (BIOL 126/127); Vertebrate Embryology/Lab (BIOL

307/308); *Histology/Lab* (BIOL 320/321); *Microbiology/Lab* (BIOL 331/332); *Immunology/Lab* (BIOL 338/339); *Virology* (BIOL 334); *Parasitology/Lab* (BIOL 354/355); *Endocrinology* (BIOL 363); *Human Gross Anatomy/Lab* (BIOL 365/366); *Cellular Biochemistry/Lab* (BIOL 373/374) and *Cell Biology/Lab* (BIOL 375/376); please consult with your advisor.

*** Students preparing to take the MCAT are also encouraged to take Basic Sociology (SOCI 110) and Introduction to Psychology (PSYC 111) this year.

† Calculus 1 is preferred.

Total Credits to be Completed at Gannon: 96-98

UMHS 4+4 MEDICINE

Biology Curriculum††

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140† |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | History Without Borders/LHST 111 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|-----------|--|
| 3 | Ecosystem Biology & Evolution/ BIOL 126 |
| 1 | Ecosystem Biology & Evolution Lab/ BIOL 127 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Public Speaking/SPCH 111 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Philosophy II Series/LPHI* |
| 3 | The Bible: An Intro/LTHE 201* |
| 3 | Literature Series/LENG* |
| <u>17</u> | |

JUNIOR***

First Semester

| | |
|-----------|--|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Intro to Psychology/PSYC 111 <i>or</i> Basic Sociology/SOCI 110 |
| 3 | General Electives |
| <u>17</u> | |

Second Semester***

| | |
|-----------|--------------------------------|
| 7 | Biology Electives** |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | Fine Arts Series/LFIN* |
| <u>14</u> | |

SENIOR

First Semester

| | |
|--------------|--|
| 2 | Biology Topics/BIOL 490-495 or Directed Research/BIOL 487 or Biology Research I/BIOL 488 |
| 6-8 | Biology Electives** |
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | General Electives |
| <u>15-17</u> | |

Second Semester

| | |
|--------------|-------------------------|
| 6-8 | Biology Electives** |
| 3 | Senior Seminar/LBST 383 |
| 6 | General Electives |
| <u>15-17</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Vertebrate Embryology/Lab (BIOL 307/308); **Histology/Lab (BIOL 320/321)**; **Microbiology/Lab (BIOL 331/332)**; **Immunology/Lab (BIOL 338/339)**; Virology (BIOL 334); Parasitology/Lab (BIOL 354/355); Endocrinology (BIOL 363); **Human Gross Anatomy/Lab (BIOL 365/366)**; **Cellular Biochemistry/Lab (BIOL 373/374)** and Cell Biology/Lab (BIOL 375/376); please consult with your advisor.

*** Students preparing to take the MCAT are also encouraged to take Basic Sociology (SOCI 110) and Introduction to Psychology (PSYC 111) this year.

† Calculus 1 is preferred.

†† The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated UMHS matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.

Total Credits to be Completed at Gannon: 128-132

UMHS 4+4 MEDICINE

Chemistry Curriculum†

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| <u>2</u> | First-Year Seminar |
| 16 | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Calculus 2/MATH 141 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|----------|-------------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Fundamentals of Physics 1/PHYS 210 |
| 1 | Fund of Physics 1 Lab/PHYS 211 |
| <u>3</u> | Introduction to Philosophy/LPHI 131 |
| 18 | |

Second Semester

| | |
|----------|-----------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Fund of Physics 2/PHYS 212 |
| 1 | Fund of Physics 2 Lab/PHYS 213 |
| 3 | Philosophy II Series/LPHI* |
| <u>3</u> | Public Speaking/SPCH 111 |
| 18 | |

JUNIOR***

First Semester

| | |
|-----------|--|
| 3 | Organic Spectroscopic Methods/ CHEM 325 |
| 1 | Organic Spectroscopic Methods Lab/ CHEM 326 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Physical Chemistry I/CHEM 331 |
| 1 | Physical Chemistry I Lab/CHEM 332 |
| 3 | Intro to Psychology/PSYC 111 |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>17</u> | |

*Second Semester****

| | |
|--------------|--|
| 3-4 | Biology Electives** |
| 3 | Physical Chemistry II/CHEM 334 |
| 1 | Physical Chemistry II Lab/CHEM 335 |
| 3 | Modern Analytical Chemistry/CHEM 336 |
| 2 | Modern Analytical Chemistry Lab/ CHEM 337 |
| 1 | Chemical Literature/CHEM 356 |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>13-14</u> | |

SENIOR

First Semester

| | |
|-----------|---------------------------------------|
| 1 | Undergrad Research/CHEM 380-383 |
| 7 | Chemistry Electives* |
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | History Without Borders/LHST 111 |
| <u>15</u> | |

Second Semester

| | |
|--------------|---------------------------------|
| 2-3 | Biology Electives** |
| 1 | Undergrad Research/CHEM 380-383 |
| 4 | Chemistry Electives* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| 3 | Fine Arts Series/LFIN* |
| <u>16-17</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): *Ecosystem Biology & Evolution/Lab* (BIOL 126/127); *Vertebrate Embryology/Lab* (BIOL 307/308); ***Histology/Lab*** (BIOL 320/321); ***Microbiology/Lab*** (BIOL 331/332); ***Immunology/Lab*** (BIOL 338/339); *Virology* (BIOL 334); *Parasitology/Lab*(BIOL 354/355); *Endocrinology* (BIOL 363); ***Human Gross Anatomy/Lab*** (BIOL 365/366); ***Cellular Biochemistry/Lab*** (BIOL 373/374) and *Cell Biology/Lab* (BIOL 375/376); please consult with your advisor.

*** Students preparing to take the MCAT are also encouraged to take *Basic Sociology* (SOCI 110) and *Introduction to Psychology* (PSYC 111) this year.

† The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated UMHS matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.

Total Credits to be Completed at Gannon: 130-132

SALUS UNIVERSITY 3+4 ACCELERATED OPTOMETRY

Gannon University, in affiliation with Salus University Pennsylvania College of Optometry (PCO) located in Elkins Park, Pennsylvania, offers a program for qualified students to earn a bachelor's degree from Gannon University and a Doctor of Optometry (O.D.) degree from Salus University PCO. The 3+4 accelerated program grants highly motivated and academically strong students an opportunity to matriculate to Salus University PCO after completing only three years of undergraduate study at Gannon University. Successful completion of the first year of optometry school at Salus University PCO will allow the students in the 3+4 accelerated program to earn a Bachelor of Science degree in Health Science from Gannon University. Qualified students enrolled in this program will be conditionally guaranteed an interview with Salus University PCO, providing these students with an advantage over students from other institutions at the time of application. Participation in the program does not restrict student's ability to apply to other optometry schools.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.0 or higher on a 4.0 scale
- Class rank in the top 25% of high school class
- Minimum SAT score of 1220 (new SAT)/1150 (old SAT) or ACT composite score of 25
- Evidence of academic and personal potential and a desire to become an optometrist

Salus University PCO Entry Requirements

After three years of undergraduate study, the participant is conditionally guaranteed an interview and possible admission to Salus University PCO if the following requirements are satisfied:

- Completion of the specific prerequisite coursework for the Salus University PCO Doctor of Optometry program as indicated in the Salus University Catalog
- Completion of all Gannon University General Education (Core) requirements
- Cumulative overall GPA of 3.0 or higher by the end of the first year of undergraduate study
- Cumulative overall GPA of 3.3 or higher at the end of each semester following the first year of undergraduate study
- Adherence to Gannon University’s Student Code of Conduct and Code of Academic Integrity
- Application to Salus University PCO between July 1st and September 1st following the second year of undergraduate study
- Optometry Admissions Test (OAT) scores released to Salus University PCO
- Satisfactory admissions interview with Salus University PCO
- Any additional requirements as outlined through the affiliation agreement between Gannon University and Salus University PCO; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

Curriculum

SALUS UNIVERSITY 3+4 ACCELERATED OPTOMETRY

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

- 3 Molecular & Cellular Biology/
BIOL 122
- 1 Molecular & Cellular Biology Lab/
BIOL 123
- 3 General Chemistry I/CHEM 111
- 1 General Chemistry Lab I/CHEM 112
- 3 Trigonometry/MATH 112 *or*
Calculus 1/MATH 140
- 3 College Composition/LENG 111
- 2 First-Year Seminar

16

Second Semester

- 3 Animal Form & Function/BIOL 124
- 1 Animal Form & Function Lab/BIOL 125
- 3 General Chemistry II/CHEM 114
- 1 General Chemistry Lab II/CHEM 115
- 3 Calculus 1/MATH 140 *or*
Calculus 2/MATH 141
- 3 Critical Analysis & Comp/LENG 112
- 3 Foundations of Theology/LTHE 101

17

SOPHOMORE

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>18</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | College Physics 2/PHYS 105 |
| 1 | College Physics 2 Lab/PHYS 106 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Philosophy II Series/LPHI* |
| <u>14</u> | |

JUNIOR

First Semester

| | |
|-----------|---------------------------------------|
| 3 | Microbiology/BIOL 331 |
| 1 | Microbiology Lab/BIOL 332 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | LPHI 237 or any LTHE 300 level course |
| 3 | Public Speaking/SPCH 111 |
| 1 | Leadership Seminar |
| 3 | History Without Borders/LHST 111 |
| <u>17</u> | |

Second Semester

| | |
|--------------|------------------------------|
| 3-4 | Biology Electives** |
| 3 | Intro to Psychology/PSYC 111 |
| 3 | Fine Arts Series/LFIN* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| <u>15-16</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): *Ecosystem Biology & Evolution/Lab* (BIOL 126/127); *Vertebrate Embryology/Lab* (BIOL 307/308); ***Histology/Lab*** (BIOL 320/321); *Immunology/Lab* (BIOL 338/339); *Virology* (BIOL 334); *Parasitology/Lab* (BIOL 354/355); *Endocrinology* (BIOL 363); ***Human Gross Anatomy/Lab*** (BIOL 365/366); ***Genetics/Lab*** (BIOL 265/266); *Cellular Biochemistry/Lab* (BIOL 373/374); *Cell Biology/Lab* (BIOL 375/376); *Research Methods with Labs* (PSYC 303); *Physiological Psychology* (PSYC 315); please consult with your advisor.

Total Credits to be Completed at Gannon: 97-98

DUQUESNE UNIVERSITY

2+4 ACCELERATED PHARMACY

Gannon University, in affiliation with Duquesne University Mylan School of Pharmacy located in Pittsburgh, Pennsylvania, offers a program for qualified students to complete two years of undergraduate study at Gannon University and earn a Doctor of Pharmacy (Pharm.D.) degree from Duquesne University. Participation in the program alleviates much of the cost of applying to pharmacy schools, while providing a strong background in scientific and biomedical courses at Gannon University. Students enrolled in this program will be conditionally guaranteed acceptance to Duquesne University Mylan School of Pharmacy. Students in the 2+4 accelerated program will not earn a Gannon University undergraduate degree.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.0 or higher on a 4.0 scale
- Class rank in the top 25% of high school class

- Minimum SAT score of 1170 (new SAT)/1100 (old SAT) or ACT composite score of 24
- Evidence of academic and personal potential and a desire to become a pharmacist
- Strong background in college-prep courses
- Three letters of recommendation
- Evidence of leadership potential community service and co-curricular activities
- Essay/personal statement is recommended

Program Admissions Process

Students applying to this program are encouraged to apply by November 1st for priority consideration. From the qualified applicant pool, a maximum of four (4) students are accepted to this program in the senior year of high school. Once offered acceptance, students will have two weeks to send their enrollment deposit to reserve their space in the program. If the deadline passes without a deposit, their space will be given to another student and they will be placed at the bottom of the applicant wait list.

Duquesne University Mylan School of Pharmacy Entry Requirements

After two years of undergraduate study, the participants are guaranteed an offer of admission to the Duquesne University Mylan School of Pharmacy if the following requirements are satisfied.

- Completion of the two-year undergraduate curriculum at Gannon University
- GPA of 3.5 or higher in Gannon undergraduate courses; no grade lower than a C
- GPA of 3.0 or higher in science and math courses
- Recommendation from the Gannon University Pre-Health Applicant Review Committee
- Evidence of leadership potential and commitment to the pharmacy profession
- Satisfactory admissions interview with Duquesne University Mylan School of Pharmacy
- PCAT score of 375 or higher on each section of the exam, taken by fall of sophomore year
- Successful criminal background check
- Any additional requirements as outlined through the affiliation agreement between Gannon University and Duquesne University Mylan School of Pharmacy; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

Each academic year, Duquesne University Mylan School of Pharmacy will admit up to four (4) students from Gannon University's Pharmacy Affiliation program. Additional students may be considered on an individual basis at the discretion of the Duquesne University Mylan School of Pharmacy.

Curriculum

DUQUESNE UNIVERSITY 2+4 ACCELERATED PHARMACY

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Basic Sociology/SOCI 110 |
| 3 | History Without Borders/LHST 111 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|----------|-------------------------------------|
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Macroeconomics/BCOR 112 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Public Speaking/SPCH 111 |
| <hr/> 17 | |

Second Semester

| | |
|----------|---|
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Fine Arts Series/LFIN* |
| 3 | Intro to Psychology/PSYC 111 |
| 3 | Philosophy of Ethical Responsibility/ LPHI 237 |
| <hr/> 16 | |

* Please refer to the Undergraduate Catalog for course options.

Total Credits to be Completed at Gannon: 67

LECOM 2+3/2+4 EARLY ACCEPTANCE PHARMACY, LECOM 3+3/3+4 EARLY ACCEPTANCE PHARMACY, LECOM 4+3/4+4 EARLY ACCEPTANCE PHARMACY

Gannon University, in affiliation with the Lake Erie College of Osteopathic Medicine (LECOM) School of Pharmacy, offers three early acceptance programs for qualified students to earn a Doctor of Pharmacy (Pharm.D.) degree from LECOM after two, three, or four years of undergraduate study at Gannon University. Students enrolled in these programs are conditionally guaranteed an acceptance to LECOM. The 2+3/2+4 program is available to exceptional students who have the maturity and intellectual capability to enter a professional school after completing only two years of undergraduate study. Students in the 2+3/2+4 program will not earn a Gannon University undergraduate degree. The 3+3/3+4 program is available to all students but is typically utilized by highly motivated students who wish to enter pharmacy school before receiving an undergraduate degree. Successful completion of the first year of pharmacy school at LECOM will allow the students in the 3+3/3+4 program to earn a Bachelor of Science degree in Health Science from Gannon University. The 4+3/4+4 program is recommended for most students. This program allows students to complete a four year bachelor's degree prior to attending LECOM. After completing their undergraduate education at Gannon University, students matriculate to either LECOM's School of Pharmacy located in Erie, Pennsylvania for three years of pharmacy school education or LECOM's School of Pharmacy located in Bradenton, Florida for four years of pharmacy school education.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.5 or higher on a 4.0 scale
- Class rank in the top 25% of your high school class
- Minimum SAT score of 1240 (new SAT)/1170 (old SAT) or ACT composite score of 26
- Evidence of academic and personal potential and a desire to become a pharmacist
- Satisfactory admissions interview with LECOM

Program Admissions Process

Students applying to this program are encouraged to apply by November 1st for priority consideration. Guaranteed acceptance to the program will not be granted until all requirements listed below have been satisfied.

Students who wish to be considered for the LECOM pharmacy affiliation programs with Gannon University must:

- apply to Gannon University's LECOM 2+3/2+4, 3+3/3+4, or 4+3/4+4 Early Acceptance Pharmacy program and be successfully admitted to the University.
- complete the Early Acceptance Program Inquiry form available on the LECOM portal (portal.lecom.edu), select the appropriate program from the drop down menu and list Gannon University as one of the top three schools you are interested in attending.
- submit an Early Acceptance Program online application.
- complete a satisfactory admissions interview with LECOM after receiving an offer of acceptance from Gannon University as a high school senior.
- send LECOM an email from your Gannon University email account, indicating that you have chosen to attend Gannon.
- receive a provisional letter of acceptance from LECOM.

Gannon University students interested in the 2+3/2+4 program must submit an Early Acceptance Program online application no later than November 1st of their freshman year at Gannon University.

Gannon University students interested in the 3+3/3+4 program must submit an Early Acceptance Program online application no later than February 1st of their freshman year at Gannon University.

Gannon University students interested in the 4+3/4+4 program must submit an Early Acceptance Program online application no later than February 1st of their sophomore year at Gannon University.

LECOM School of Pharmacy Entry Requirements

After two, three, or four years of undergraduate study, the participants are conditionally guaranteed an offer of admission to the LECOM School of Pharmacy if the following requirements are satisfied.

- Grades are submitted through the LECOM portal within 30 days following each semester
- LECOM's progressive GPA requirements are met
- Completion of the undergraduate curriculum at Gannon University
- Cumulative overall GPA of 3.4 or higher by time of application
- Cumulative science GPA of 3.2 or higher by time of application
- Minimum of a C in all courses required by LECOM
- The PCAT will not be required for anyone submitting an official SAT or ACT score
- Demonstrated leadership potential and commitment to the pharmacy profession
- Good standing with Gannon University
- U.S. citizen or permanent resident
- Successful criminal background check
- Meet and agree to LECOM's Health and Technical Standards
- Application to LECOM through PharmCAS by November 15th of the year prior to LECOM matriculation
- LECOM secondary application submitted by December 31st of the year prior to LECOM matriculation
- Letters of recommendation and all supporting documentation to be submitted to PharmCAS
- Any additional requirements as outlined through the affiliation agreement between Gannon University and the LECOM School of Pharmacy; students accepted to the program will have access to all requirements specified in the agreement through the Director of the Pre-Health Advising Program at Gannon University

Each academic year, LECOM will admit up to ten (10) students total from Gannon University's pharmacy affiliation programs. Additional students may be considered on an individual basis and at the discretion of LECOM.

Students admitted to this program will forfeit their conditionally guaranteed seat if they apply to any other pharmacy schools.

Curriculum

LECOM 2+3/2+4 EARLY ACCEPTANCE PHARMACY

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |
| <u>3</u> | |
| <u>17</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Intro to Psychology/PSYC 111 <i>or</i> Basic Sociology/SOCI 110 |
| 3 | History Without Borders/LHST 111 |
| <u>3</u> | |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|-----------|--|
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Microeconomics/BCOR 111 <i>or</i> Macroeconomics/BCOR 112 |
| 3 | Public Speaking/SPCH 111 |
| <u>3</u> | |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 4 | Biology Electives** |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Fine Arts Series/LFIN* |
| 3 | Intro to Philosophy/LPHI 131 |
| <u>3</u> | |
| <u>14</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following science coursework is highly recommended: Microbiology/Lab (BIOL 331/332) and Human Anatomy & Physiology I/Lab (BIOL 115/116); please consult with advisor.

Total Credits to be Completed at Gannon: 65

LECOM 3+3/3+4 EARLY ACCEPTANCE PHARMACY*(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

| | |
|-----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|---|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | History Without Borders/LHST 111 |

17**SOPHOMORE***First Semester*

| | |
|-----------|--|
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Microeconomics/BCOR 111 <i>or</i> Macroeconomics/BCOR 112 |
| 3 | Public Speaking/SPCH 111 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>17</u> | |

Second Semester

| | |
|---|-----------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | The Bible: An Intro/LTHE 201* |
| 3 | Philosophy II Series/LPHI* |

18**JUNIOR***First Semester*

| | |
|-----------|--|
| 4 | Biology Electives** |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Intro to Psychology/PSYC 111 <i>or</i> Basic Sociology/SOCI 110 |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 1 | Leadership Seminar |
| <u>17</u> | |

Second Semester

| | |
|-----|-------------------------|
| 5-7 | Biology Electives** |
| 3 | Fine Arts Series/LFIN* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |

14-16* *Please refer to the Undergraduate Catalog for course options.*** *The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Ecosystem Biology & Evolution/Lab (BIOL 126/127); **Genetics/Lab (BIOL 265/266)**; Vertebrate Embryology/Lab (BIOL 307/308); Histology/Lab (BIOL 320/321); **Microbiology/Lab (BIOL 331/332)**; Immunology/Lab (BIOL 338/339); Virology (BIOL 334); Parasitology/Lab (BIOL 354/355); Endocrinology (BIOL 363); **Cellular Biochemistry/Lab (BIOL 373/374)** and Cell Biology/Lab (BIOL 375/376); please consult with your advisor.***Total Credits to be Completed at Gannon: 99-101**

LECOM 4+3/4+4 EARLY ACCEPTANCE PHARMACY**Biology Curriculum†***(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

- 3 Molecular & Cellular Biology/
BIOL 122
 - 1 Molecular & Cellular Biology Lab/
BIOL 123
 - 3 General Chemistry I/CHEM 111
 - 1 General Chemistry I Lab/CHEM 112
 - 3 Trigonometry/MATH 112 *or*
Calculus 1/MATH 140
 - 3 College Composition/LENG 111
 - 2 First-Year Seminar
-

16

Second Semester

- 3 Animal Form & Function/BIOL 124
 - 1 Animal Form & Function Lab/BIOL 125
 - 3 General Chemistry II/CHEM 114
 - 1 General Chemistry II Lab/CHEM 115
 - 3 Critical Analysis & Comp/LENG 112
 - 3 Foundations of Theology/LTHE 101
 - 3 History Without Borders/LHST 111
-

17

SOPHOMORE*First Semester*

- 3 Ecosystem Biology & Evolution/
BIOL 126
 - 1 Ecosystem Biology & Evolution Lab/
BIOL 127
 - 3 Organic Chemistry I/CHEM 221
 - 1 Organic Chemistry I Lab/CHEM 222
 - 3 Applied Statistics/MATH 213
 - 3 Introduction to Philosophy/LPHI 131
 - 3 Public Speaking/SPCH 111
-

17

Second Semester

- 3 Genetics/BIOL 265
 - 1 Genetics Lab/BIOL 266
 - 3 Organic Chemistry II/CHEM 224
 - 1 Organic Chemistry II Lab/CHEM 225
 - 3 Philosophy II Series/LPHI*
 - 3 The Bible: An Intro/LTHE 201*
 - 3 Literature Series/LENG*
-

17

JUNIOR*First Semester*

- 3 Human Physiology/BIOL 368
 - 1 Human Physiology Lab/BIOL 369
 - 3 Structural Biochemistry/CHEM 366
 - 3 College Physics 1/PHYS 105
 - 1 College Physics 1 Lab/PHYS 106
 - 3 Intro to Psychology/PSYC 111 *or*
Basic Sociology/SOCI 110
 - 3 Microeconomics/BCOR 111 *or*
Macroeconomics/BCOR 112
-

17

Second Semester

- 5-7 Biology Electives**
 - 3 College Physics 2/PHYS 108
 - 1 College Physics 2 Lab/PHYS 109
 - 3 Fine Arts Series/LFIN*
 - 3 General Electives
-

15-17

SENIOR*First Semester*

- 2 Biology Topics/BIOL 490-495 *or*
Directed Research/BIOL 487 *or*
Biology Research I/BIOL 488
 - 6-8 Biology Electives**
 - 3 LPHI 237 *or* any LTHE 300 level course
 - 1 Leadership Seminar
 - 3 General Electives
-

15-17

Second Semester

- 6-8 Biology Electives**
 - 3 Senior Seminar/LBST 383
 - 6 General Electives
-

15-17

* Please refer to Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Vertebrate Embryology/Lab (BIOL 307/308); Histology/Lab (BIOL 320/321); **Microbiology/Lab (BIOL 331/332)**; Immunology/Lab (BIOL 338/339); Virology (BIOL 334); Parasitology/Lab (BIOL 354/355); Endocrinology (BIOL 363); **Cellular Biochemistry/Lab (BIOL 373/374)** and Cell Biology/Lab (BIOL 375/376); please consult with your advisor.

† The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated LECOM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.

Total Credits to be Completed at Gannon: 129-135

LECOM 4+3/4+4 EARLY ACCEPTANCE PHARMACY

Chemistry Curriculum†

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Calculus 2/MATH 141 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Fundamentals of Physics 1/PHYS 210 |
| 1 | Fund of Physics 1 Lab/PHYS 211 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>18</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Fund of Physics 2/PHYS 212 |
| 1 | Fund of Physics 2 Lab/PHYS 213 |
| 3 | Philosophy II Series/LPHI* |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>18</u> | |

JUNIOR

First Semester

| | |
|-----------|--|
| 3 | Organic Spectroscopic Methods/ CHEM 325 |
| 1 | Organic Spectroscopic Methods Lab/ CHEM 326 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Physical Chemistry I/CHEM 331 |
| 1 | Physical Chemistry I Lab/CHEM 332 |
| 3 | LPHI 237 or any LTHE 300 level course |
| 1 | Leadership Seminar |
| <u>15</u> | |

Second Semester

| | |
|-----------|--|
| 3 | History Without Borders/LHST 111 |
| 3 | Physical Chemistry II/CHEM 334 |
| 1 | Physical Chemistry II Lab/CHEM 335 |
| 3 | Modern Analytical Chemistry/ CHEM 336 |
| 2 | Modern Analytical Chemistry Lab/ CHEM 337 |
| 1 | Chemical Literature/CHEM 356 |
| 3 | Public Speaking/SPCH 111 |
| <u>16</u> | |

SENIOR

First Semester

| | |
|-----|--|
| 3-4 | Biology Electives** |
| 1 | Undergrad Research/CHEM 380-383 |
| 7 | Chemistry Electives |
| 3 | Fine Arts Series/LFIN* |
| 3 | Microeconomics/BCOR 111 <i>or</i> Macroeconomics/BCOR 112 |

17-18

Second Semester

| | |
|-----|--|
| 2-3 | Biology Electives** |
| 1 | Undergrad Research/CHEM 380-383 |
| 4 | Chemistry Electives |
| 3 | Senior Seminar/LBST 383 |
| 3 | Intro to Psychology/PSYC 111 <i>or</i> Basic Sociology/SOCI 110 |
| 3 | Literature Series/LENG* |

16-17

* Please refer to Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Ecosystem Biology & Evolution/Lab (BIOL 126/127); Vertebrate Embryology/Lab (BIOL 307/308); Histology/Lab (BIOL 320/321); **Microbiology/Lab (BIOL 331/332)**; Immunology/Lab (BIOL 338/339); Virology (BIOL 334); Parasitology/Lab (BIOL 354/355); Endocrinology (BIOL 363); **Cellular Biochemistry/Lab (BIOL 373/374)** and Cell Biology/Lab (BIOL 375/376); please consult with your advisor.

† The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated LECOM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.

Total Credits to be Completed at Gannon: 133-135

UNIVERSITY AT BUFFALO

3+4 ACCELERATED PHARMACY

Gannon University, in affiliation with The State University of New York, University at Buffalo (UB), School of Pharmacy and Pharmaceutical Sciences located in Buffalo, New York, offers a program for qualified students to earn a bachelor's degree from Gannon University and a Doctor of Pharmacy (Pharm.D.) degree from UB. The 3+4 accelerated program grants highly motivated and academically strong students an opportunity to matriculate to UB after completing only three years of undergraduate study at Gannon University. Successful completion of the first year of pharmacy school at UB will allow the students in the 3+4 accelerated program to earn a Bachelor of Science degree in Health Science from Gannon University. Qualified students enrolled in this program will be conditionally guaranteed an interview with UB School of Pharmacy and Pharmaceutical Sciences, providing these students with an advantage over students from other institutions at the time of application. Participation in the program does not restrict students' ability to apply to other pharmacy schools.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.4 or higher on a 4.0 scale
- Class rank in the top 25% of your high school class
- Minimum SAT score of 1220 (new SAT)/1150 (old SAT) or ACT composite score of 25
- Evidence of academic and personal potential as well as desire to become a pharmacist

UB School of Pharmacy and Pharmaceutical Sciences Entry Requirements

After three years of undergraduate study, the participant is conditionally guaranteed an interview and possible admission to UB School of Pharmacy and Pharmaceutical Sciences if the following requirements are satisfied.

- Cumulative overall GPA of 3.5 or higher
- Cumulative GPA of 3.3 or higher in prerequisite science and mathematics courses
- Evidence of achieving and maintaining these standards at the end of each undergraduate year
- Grade of C (2.0) or greater in all courses required by UB, which must be successfully completed by the end of the summer semester prior to fall admission
- Application to UB through PharmCAS, no later than October 1st of junior year
- Competitive PCAT score, typically at least 300*
- Letter of recommendation from the Gannon University Pre-Health Applicant Review Committee as a part of the three required PharmCAS letters of recommendation
- University at Buffalo Pharm.D. Supplemental Application and Application Fee due March 1st
- Demonstration of communication skills, leadership ability, community service, health care-related or research experience, and motivation for pursuing a career in pharmacy
- Satisfactory admissions interview with UB
- Criminal Background Check (CBC) and a Drug Screen
- Any additional requirements as outlined through the affiliation agreement between Gannon University and The State University of New York, University at Buffalo, School of Pharmacy and Pharmaceutical Sciences; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

* *The Pharmacy College Admissions Test (PCAT) must be taken no later than October of the junior year. A maximum of two (2) test administrations are allowed by the University at Buffalo.*

A candidate in good standing will have the option of spending the fourth year of the program at Gannon University to complete a baccalaureate degree rather than at the University at Buffalo in the first year of the Pharm.D. program. Choosing this option will necessarily extend the length of the program to eight years. During the fourth year at Gannon University, a participant must maintain the same academic standards as specified for the first three years in order to remain in good standing.

Curriculum

UNIVERSITY AT BUFFALO 3+4 ACCELERATED PHARMACY

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|---|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First Year Seminar |

16

Second Semester

| | |
|---|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Calculus 2/MATH 141 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |

17

SOPHOMORE

First Semester

| | |
|-----------|---|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 <i>or</i> Psych Stats/PSYC 211 |
| 3 | The Bible: An Intro/LTHE 201* |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>17</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Microbiology/BIOL 331 |
| 1 | Microbiology Lab/BIOL 332 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Philosophy II Series/LPHI* |
| 3 | History Without Borders/LHST 111 |
| <u>18</u> | |

JUNIOR

First Semester

| | |
|-----------|--|
| 3 | Human Anatomy & Physiology I/ BIOL 115† |
| 1 | Human Anatomy & Physiology I Lab/ BIOL 116† |
| 3 | Public Speaking/SPCH 111 |
| 3 | Introduction to Psych/PSYC 111 <i>or</i> Basic Sociology/SOCI 110 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 1 | Leadership Seminar |
| <u>17</u> | |

Second Semester

| | |
|-----------|--|
| 3 | Human Anatomy & Physiology II/ BIOL 117† |
| 1 | Human Anatomy & Physiology II Lab/ BIOL 118† |
| 3 | Microeconomics/BCOR 111 <i>or</i> Macroeconomics/BCOR 112 |
| 3 | Fine Arts Series/LFIN* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 (Medical Ethics) |
| <u>16</u> | |

* Please refer to the Undergraduate Catalog for course options.

† Students may take the Human Physiology/Lab (BIOL 368/369) and Human Gross Anatomy/Lab (BIOL 365/366) sequence in place of BIOL 115-118.

Total Credits to be Completed at Gannon: 101

UNIVERSITY OF CHARLESTON 2+4 ACCELERATED PHARMACY, UNIVERSITY OF CHARLESTON 3+4 ACCELERATED PHARMACY

Gannon University, in affiliation with the University of Charleston (UC) School of Pharmacy located in Charleston, West Virginia, offers two accelerated programs for qualified students to earn a Doctor of Pharmacy (Pharm.D.) degree from the UC School of Pharmacy after two or three years of undergraduate study at Gannon University. Students enrolled in these programs are conditionally guaranteed an acceptance to the UC School of Pharmacy. The 2+4 accelerated program is available to exceptional students who have the maturity and intellectual capability to enter a professional school after completing only two years of undergraduate study. Students in the 2+4 accelerated program will not earn a Gannon University undergraduate degree. The 3+4 accelerated program is typically utilized by highly motivated students who wish to enter pharmacy school before receiving an undergraduate degree. Successful completion of the first year of pharmacy school at UC School of Pharmacy will allow the students in 3+4 accelerated program to earn a Bachelor of Science degree in Health Science from Gannon University.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)

- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.0 or higher on a 4.0 scale
- Class rank in the top 25% of high school class
- Minimum SAT score of 1170 (new SAT)/1100 (old SAT) or ACT composite score of 24
- Two letters of recommendation
- Evidence of scholarly and extracurricular activities
- Evidence of academic and personal potential and a desire to become a pharmacist

UC School of Pharmacy Entry Requirements

After two or three years of undergraduate study, the participant is conditionally guaranteed admission to the UC School of Pharmacy if the following requirements are satisfied.

- Successful completion of the accelerated program curriculum at Gannon University
- Cumulative GPA of 3.25 or higher in the coursework outlined in the program curriculum with no grade lower than a C
- Cumulative GPA of 3.25 or higher in math and sciences courses with no grade lower than a C
- Two letters of recommendation; one letter must be from the Pre-Health Applicant Review Committee and the other from a licensed pharmacist
- Demonstrated experience in community/campus activism
- Completed application for admission to the UC School of Pharmacy
- PCAT score in the 65th percentile or higher with an appropriate score on the writing sample
- Satisfactory interview with the UC School of Pharmacy faculty
- Successful criminal background check
- Any additional requirements as outlined through the affiliation agreement between Gannon University and the University of Charleston School of Pharmacy; students accepted to the program will have access to all requirements specified in the agreement through the Director of the Pre-Health Advising Program at Gannon University

Each academic year UC School of Pharmacy will admit up to five (5) students from each of Gannon University's pharmacy affiliation programs. Additional students may be considered on an individual basis and at the discretion of the UC School of Pharmacy.

Students receiving grades of C- or D or F in any of the required courses will lose their conditionally guaranteed seat in the affiliation program.

Students may not repeat courses in which a D or F is earned in an attempt to remediate the course.

Curriculum

UNIVERSITY OF CHARLESTON 2+4 ACCELERATED PHARMACY

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

- | | |
|---|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 3 | Foundations of Theology/LTHE 101 |

17

Second Semester

- | | |
|---|--|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | History Without Borders/LHST 111 |
| 3 | Introduction to Psychology/PSYC 111 or Basic Sociology/SOCI 110 |

17

Third Semester

- 3 College Physics 1/PHYS 105
- 1 College Physics 1 Lab/PHYS 106
- 3 Microeconomics/BCOR 111 *or*
Macroeconomics/BCOR 112

 7

SOPHOMORE

First Semester

- 3 Human Anatomy & Physiology I/
BIOL 115
- 1 Human Anatomy & Physiology I Lab/
BIOL 116
- 3 Microbiology/BIOL 331
- 1 Microbiology Lab/BIOL 332
- 3 Organic Chemistry I/CHEM 221
- 1 Organic Chemistry I Lab/CHEM 222
- 3 Public Speaking/SPCH 111

 15
Second Semester

- 3 Human Anatomy & Physiology II/
BIOL 117
- 1 Human Anatomy & Physiology II Lab/
BIOL 118
- 3 Organic Chemistry II/CHEM 224
- 1 Organic Chemistry II Lab/CHEM 225
- 3 Applied Statistics/MATH 213
- 3 Intro to Philosophy/LPHI 131
- 3 Senior Seminar/LBST 383
(Medical Ethics)

 17

Total Credits to be Completed at Gannon: 73

UNIVERSITY OF CHARLESTON 3+4 ACCELERATED PHARMACY

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

- 3 Molecular & Cellular Biology/
BIOL 122
- 1 Molecular & Cellular Biology Lab/
BIOL 123
- 3 General Chemistry I/CHEM 111
- 1 General Chemistry I Lab/CHEM 112
- 3 College Composition/LENG 111
- 2 First-Year Seminar
- 3 Foundations of Theology/LTHE 101

 16
Second Semester

- 3 Animal Form & Function/BIOL 124
- 1 Animal Form & Function Lab/BIOL 125
- 3 General Chemistry II/CHEM 114
- 1 General Chemistry II Lab/CHEM 115
- 3 Calculus 1/MATH 140
- 3 Critical Analysis & Comp/LENG 112
- 3 History Without Borders/LHST 111

 17

SOPHOMORE

First Semester

- 3 Microbiology/BIOL 331
- 1 Microbiology Lab/BIOL 332
- 3 Organic Chemistry I/CHEM 221
- 1 Organic Chemistry I Lab/CHEM 222
- 3 Public Speaking/SPCH 111
- 3 Introduction to Philosophy/LPHI 131
- 3 Applied Statistics/MATH 213

 17
Second Semester

- 3 Organic Chemistry II/CHEM 224
- 1 Organic Chemistry II Lab/CHEM 225
- 3 College Physics 1/PHYS 105
- 1 College Physics 1 Lab/PHYS 106
- 3 The Bible: An Intro/LTHE 201*
- 3 Philosophy II Series/LPHI*

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JUNIOR

First Semester

- 3 Human Anatomy & Physiology I/
BIOL 115
- 1 Human Anatomy & Physiology I Lab/
BIOL 116
- 3 LPHI 237 *or* any LTHE 300 level course
- 3 Literature Series/LENG*
- 3 Introduction to Psych/PSYC 111 *or*
Basic Sociology/SOCI 110
- 1 Leadership Seminar

14*Second Semester*

- 3 Human Anatomy & Physiology II/
BIOL 117
- 1 Human Anatomy & Physiology II Lab/
BIOL 118
- 3 Immunology/BIOL 338
- 1 Immunology Lab/BIOL 339
- 3 Fine Arts Series/LFIN*
- 3 Senior Seminar/LBST 383
(Medical Ethics)
- 3 Microeconomics/BCOR 111 *or*
Macroeconomics/BCOR 112

17

* Please refer to the Undergraduate Catalog for course options.

Total Credits to be Completed at Gannon: 95

KENT STATE UNIVERSITY

3+4 ACCELERATED PODIATRIC MEDICINE

Gannon University, in affiliation with Kent State University College of Podiatric Medicine (KSUCPM) located in Independence, Ohio, offers a program for qualified students to earn a bachelor's degree from Gannon University and a Doctor of Podiatric Medicine (D.P.M.) degree from KSUCPM. The 3+4 accelerated program grants highly motivated and academically strong students the opportunity to matriculate to KSUCPM after completing only three years of undergraduate study at Gannon University. Students enrolled in the program are conditionally guaranteed acceptance to KSUCPM. Participation in the program alleviates much of the cost of applying to podiatry schools, while providing a strong background in scientific and biomedical courses at Gannon University. Successful completion of the first year of podiatry school at KSUCPM will allow students in the 3+4 accelerated program to earn a Bachelor of Science degree in Health Science from Gannon University.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.0 or higher on a 4.0 scale
- Class rank in the top 25% of high school class
- Minimum SAT score of 1220 (new SAT)/1150 (old SAT) or ACT composite score of 25
- Evidence of academic and personal potential and a desire to become a podiatrist

KSUCPM Entry Requirements

After three years of undergraduate study, the participant is conditionally guaranteed admission to KSUCPM if the following requirements are satisfied.

- Completion of the curriculum as outlined in Gannon University's Undergraduate Catalog
- Cumulative overall GPA of 3.4 or higher maintained during the first three years of undergraduate study at Gannon
- Cumulative science GPA of 3.2 or higher maintained during the first three years of undergraduate study at Gannon
- MCAT score of 496 or higher preferred

- Commitment to the podiatric profession and its advancement and demonstrated moral and professional character
- Application for admission to KSUCPM
- Any additional requirements as outlined through the affiliation agreement between Gannon University and Kent State University College of Podiatric Medicine; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

Curriculum

KENT STATE UNIVERSITY 3+4 ACCELERATED PODIATRIC MEDICINE

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|--|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>17</u> | |

SOPHOMORE***

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Introduction to Psychology/PSYC 111 |
| 3 | Philosophy II Series/LPHI* |
| <u>18</u> | |

Second Semester***

| | |
|-----------|-----------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>15</u> | |

JUNIOR

First Semester

| | |
|-----------|--|
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Applied Statistics/MATH 213 |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 3 | Public Speaking/SPCH 111 |
| 1 | Leadership Seminar |
| 3 | History Without Borders/LHST 111 |
| <u>16</u> | |

Second Semester

| | |
|--------------|-------------------------|
| 5-7 | Biology Electives** |
| 3 | Fine Arts Series/LFIN* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| <u>14-16</u> | |

- * Please refer to the Undergraduate Catalog for course options.
- ** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): *Ecosystem Biology & Evolution/Lab* (BIOL 126/127); *Vertebrate Embryology/Lab* (BIOL 307/308); ***Histology/Lab*** (BIOL 320/321); ***Microbiology/Lab*** (BIOL 331/332); *Immunology/Lab* (BIOL 338/339); *Virology* (BIOL 334); *Parasitology/Lab* (BIOL 354/355); *Endocrinology* (BIOL 363); ***Human Gross Anatomy/Lab*** (BIOL 365/366); *Cellular Biochemistry/Lab* (BIOL 373/374) and *Cell Biology/Lab* (BIOL 375/376); please consult with your advisor.
- *** Students preparing to take the MCAT are also encouraged to take *Basic Sociology* (SOC1 110) and *Introduction to Psychology* (PSYC 111) this year.

Total Credits to be Completed at Gannon: 96-98

TEMPLE UNIVERSITY

3+4 ACCELERATED PODIATRIC MEDICINE

Gannon University, in affiliation with Temple University School of Podiatric Medicine (TUSPM), located in Philadelphia, Pennsylvania, offers a program for qualified students to earn a bachelor's degree from Gannon University and a Doctor of Podiatric Medicine (D.P.M.) degree from TUSPM. The 3+4 accelerated program grants highly motivated and academically strong students the opportunity to matriculate to TUSPM after completing only three years of undergraduate study at Gannon University. Students enrolled in the program are conditionally guaranteed acceptance to TUSPM. Participation in the program alleviates much of the cost of applying to podiatry schools, while providing a strong background in scientific and biomedical courses at Gannon University. Successful completion of the first year of podiatry school at TUSPM will allow students in the 3+4 accelerated program to earn a Bachelor of Science degree in Health Science from Gannon University.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.0 or higher on a 4.0 scale
- Class rank in the top 25% of high school class
- Minimum SAT score of 1220 (new SAT)/1150 (old SAT) or ACT composite score of 25
- Evidence of academic and personal potential and a desire to become a podiatrist

TUSPM Entry Requirements

After three years of undergraduate study, the participant is conditionally guaranteed admission TUSPM if the following requirements are satisfied.

- Completion of at least 90 semester hours of prerequisite undergraduate coursework
- Cumulative overall GPA of 3.1 or higher
- Cumulative science GPA of 3.0 or higher
- MCAT score at the 40th percentile or higher
- Recommendation by the Pre-Health Applicant Review Committee or Director of the Pre-Health Advising Program as having met the established requirements and standards for consideration for admission
- Satisfactory admissions interview with TUSPM Admissions Committee
- Any additional requirements as outlined through the affiliation agreement between Gannon University and TUSPM; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

Curriculum

TEMPLE UNIVERSITY 3+4 ACCELERATED PODIATRIC MEDICINE

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|--|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry/MATH 112 <i>or</i> Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>17</u> | |

SOPHOMORE***

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Introduction to Psychology/PSYC 111 |
| 3 | Philosophy II Series/LPHI* |
| <u>18</u> | |

Second Semester***

| | |
|-----------|-----------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>15</u> | |

JUNIOR

First Semester

| | |
|-----------|--|
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Applied Statistics/MATH 213 |
| 3 | LPHI 237 <i>or</i> any LTHE 300 level course |
| 1 | Leadership Seminar |
| 3 | Public Speaking/SPCH 111 |
| 3 | History Without Borders/LHST 111 |
| <u>16</u> | |

Second Semester

| | |
|--------------|-------------------------|
| 5-7 | Biology Electives** |
| 3 | Fine Arts Series/LFIN* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| <u>14-16</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): *Ecosystem Biology & Evolution/Lab* (BIOL 126/127); *Vertebrate Embryology/Lab* (BIOL 307/308); ***Histology/Lab*** (BIOL 320/321); ***Microbiology/Lab*** (BIOL 331/332); *Immunology/Lab* (BIOL 338/339); *Virology* (BIOL 334); *Parasitology/Lab* (BIOL 354/355); *Endocrinology* (BIOL 363); ***Human Gross Anatomy/Lab*** (BIOL 365/366); *Cellular Biochemistry/Lab* (BIOL 373/374); and *Cell Biology/Lab* (BIOL 375/376); please consult with your advisor.

*** Students preparing to take the MCAT are also encouraged to take *Basic Sociology* (SOCI 110) and *Introduction to Psychology* (PSYC 111) this year.

Total Credits to be Completed at Gannon: 96-98

ROSS UNIVERSITY 3+4 ACCELERATED VETERINARY MEDICINE, ROSS UNIVERSITY 4+4 VETERINARY MEDICINE

Gannon University, in affiliation with Ross University School of Veterinary Medicine (RUSVM) located on the island of St. Kitts in the Caribbean, offers two programs for qualified students to earn a bachelor's degree from Gannon University and a Doctor of Veterinary Medicine (D.V.M.) degree from Ross University. The 3+4 accelerated program grants highly motivated and academically strong students an opportunity to matriculate to RUSVM after completing only three years of undergraduate study at Gannon University. Successful completion of the first year of veterinary school at RUSVM will allow students in the 3+4 accelerated program to earn a Bachelor of Science degree in Health Science from Gannon University. The majority of students complete the traditional 4+4 program, which allows students to complete a four-year bachelor's degree prior to attending RUSVM. Students enrolled in these programs are conditionally guaranteed an acceptance to RUSVM.

GU Undergraduate Entry Requirements

- Completion of four years of science courses at the high school level (biology and chemistry courses are required, while physics is highly recommended)
- Completion of four years of math courses at the high school level
- Cumulative high school GPA of 3.4 or higher on a 4.0 scale
- Class rank in the top 25% of high school class
- Minimum SAT score of 1220 (new SAT)/1150 (old SAT) or ACT composite score of 25
- Evidence of academic and personal potential and a desire to become a veterinarian

RUSVM Entry Requirements

After three or four years of undergraduate study, the participant is conditionally guaranteed an acceptance to RUSVM if the following requirements are satisfied.

- Cumulative overall GPA of 3.2 or higher
- Minimum of a 3.00 in all courses designated by RUSVM as prerequisites for admission
- No F, D, or C- grade in any course designated by RUSVM as prerequisites for admission
- Score in the 25th percentile or better in each category of the Graduate Record Examination
- Other minimum admissions requirements required of all RUSVM students
- Satisfactory admissions interview with RUSVM
- Any additional requirements as outlined through the affiliation agreement between Gannon University and RUSVM; students accepted to the program will have access to all requirements specified in the agreement through the Pre-Health Advising Program Director at Gannon University

Each academic year, RUSVM will admit up to five (5) students total from Gannon University's veterinary medicine affiliation programs. Additional students may be considered on an individual basis and at the discretion of RUSVM.

Curriculum

ROSS UNIVERSITY 3+4 ACCELERATED VETERINARY MEDICINE

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Trigonometry MATH 112 or Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | History Without Borders/LHST 111 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>18</u> | |

Second Semester

| | |
|-----------|-----------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| 3 | Philosophy II Series/LPHI* |
| <u>15</u> | |

JUNIOR

First Semester

| | |
|-----------|---------------------------------------|
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Applied Statistics/MATH 213 |
| 3 | LPHI 237 or any LTHE 300 level course |
| 3 | Introduction to Psychology/PSYC 111 |
| 1 | Leadership Seminar |
| 3 | Public Speaking/SPCH 111 |
| <u>16</u> | |

Second Semester

| | |
|--------------|-------------------------|
| 5-7 | Biology Electives** |
| 3 | Fine Arts Series/LFIN* |
| 3 | Literature Series/LENG* |
| 3 | Senior Seminar/LBST 383 |
| <u>14-16</u> | |

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): *Ecosystem Biology & Evolution* (BIOL 126/127); *Comparative Vertebrate Anatomy/Lab* (BIOL 292/293); *Vertebrate Embryology/Lab* (BIOL 307/308); *Histology/Lab* (BIOL 320/321); *Vertebrate Zoology/Lab* (BIOL 325/326); *Microbiology/Lab* (BIOL 331/332); *Immunology/Lab* (BIOL 338/339); *Virology* (BIOL 334); *Parasitology/Lab* (BIOL 354/355); *Endocrinology* (BIOL 363); *Cellular Biochemistry/Lab* (BIOL 373/374) and *Cell Biology/Lab* (BIOL 375/376); please consult with your advisor.

Total Credits to be Completed at Gannon: 96-98

ROSS UNIVERSITY 4+4 VETERINARY MEDICINE**Biology Curriculum†***(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

- 3 Molecular & Cellular Biology/
BIOL 122
- 1 Molecular & Cellular Biology Lab/
BIOL 123
- 3 General Chemistry I/CHEM 111
- 1 General Chemistry I Lab/CHEM 112
- 3 Trigonometry/MATH 112 *or*
Calculus 1/MATH 140
- 3 College Composition/LENG 111
- 2 First Year-Seminar
- 16

Second Semester

- 3 Animal Form & Function/BIOL 124
- 1 Animal Form & Function Lab/BIOL 125
- 3 General Chemistry II/CHEM 114
- 1 General Chemistry II Lab/CHEM 115
- 3 Critical Analysis & Comp/LENG 112
- 3 Foundations of Theology/LTHE 101
- 3 History Without Borders/LHST 111

17**SOPHOMORE***First Semester*

- 3 Ecosystem Biology & Evolution/
BIOL 126
- 1 Ecosystem Biology & Evolution Lab/
BIOL 127
- 3 Organic Chemistry I/CHEM 221
- 1 Organic Chemistry I Lab/CHEM 222
- 3 Applied Statistics/MATH 213
- 3 Introduction to Philosophy/LPHI 131
- 3 Public Speaking/SPCH 111
- 3
- 17

Second Semester

- 3 Genetics/BIOL 265
- 1 Genetics Lab/BIOL 266
- 3 Organic Chemistry II/CHEM 224
- 1 Organic Chemistry II Lab/CHEM 225
- 3 Philosophy II Series/LPHI*
- 3 The Bible: An Intro/LTHE 201*
- 3 Literature Series/LENG*

17**JUNIOR***First Semester*

- 3 Human Physiology/BIOL 368
- 1 Human Physiology Lab/BIOL 369
- 3 Structural Biochemistry/CHEM 366
- 3 College Physics 1/PHYS 105
- 1 College Physics 1 Lab/PHYS 106
- 3 Introduction to Psychology/PSYC 111
- 3 General Electives
- 17

Second Semester

- 7 Biology Electives**
- 3 College Physics 2/PHYS 108
- 1 College Physics 2 Lab/PHYS 109
- 3 Fine Arts Series/LFIN*

14**SENIOR***First Semester*

- 2 Biology Topics/BIOL 490-495 *or*
Directed Research/BIOL 487 *or*
Biology Research I/BIOL 488
- 6-8 Biology Electives**
- 3 LPHI 237 *or* any LTHE 300 level course
- 1 Leadership Seminar
- 3 General Electives
- 15-17

Second Semester

- 6-8 Biology Electives**
- 3 Senior Seminar/LBST 383
- 6 General Electives

15-17

* Please refer to the Undergraduate Catalog for course options.

- ** *The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Comparative Vertebrate Anatomy/Lab (BIOL 292/293); Vertebrate Embryology/Lab (BIOL 307/308); Histology/Lab (BIOL 320/321); Wildlife Management/Lab (BIOL 323/324); Vertebrate Zoology/Lab (BIOL 324/325); **Microbiology/Lab (BIOL 331/332)**; Immunology/Lab (BIOL 338/339); Virology (BIOL 334); Parasitology/Lab (BIOL 354/355); Endocrinology (BIOL 363); Cellular Biochemistry/Lab (BIOL 373/374) and Cell Biology/Lab (BIOL 375/376); please consult with your advisor.*
- † *The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated RUSVM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.*

Total Credits to be Completed at Gannon: 128-132

ROSS UNIVERSITY 4+4 VETERINARY MEDICINE

Chemistry Curriculum†

(Numerals in front of courses indicate credits)

FRESHMAN

First Semester

| | |
|-----------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry I Lab/CHEM 112 |
| 3 | Calculus 1/MATH 140 |
| 3 | College Composition/LENG 111 |
| 2 | First-Year Seminar |
| <u>16</u> | |

Second Semester

| | |
|-----------|-------------------------------------|
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Critical Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Calculus 2/MATH 141 |
| <u>17</u> | |

SOPHOMORE

First Semester

| | |
|-----------|-------------------------------------|
| 3 | Genetics/BIOL 265 |
| 1 | Genetics Lab/BIOL 266 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Applied Statistics/MATH 213 |
| 3 | Fundamentals of Physics 1/PHYS 210 |
| 1 | Fund of Physics 1 Lab/PHYS 211 |
| 3 | Introduction to Philosophy/LPHI 131 |
| <u>18</u> | |

Second Semester***

| | |
|-----------|-----------------------------------|
| 3 | Human Physiology/BIOL 368 |
| 1 | Human Physiology Lab/BIOL 369 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Fund of Physics 2/PHYS 212 |
| 1 | Fund of Physics 2 Lab/PHYS 213 |
| 3 | Philosophy II Series/LPHI* |
| 3 | Public Speaking/SPCH 111 |
| <u>18</u> | |

JUNIOR

First Semester

| | |
|-----------|--|
| 3 | Organic Spectroscopic Methods/ CHEM 325 |
| 1 | Organic Spectroscopic Methods Lab/ CHEM 326 |
| 3 | Structural Biochemistry/CHEM 366 |
| 3 | Physical Chemistry I/CHEM 331 |
| 1 | Physical Chemistry I Lab/CHEM 332 |
| 3 | Introduction to Psych/PSYC 111 |
| <u>14</u> | |

Second Semester

| | |
|--------------|--|
| 3-4 | Biology Electives** |
| 3 | Physical Chemistry II/CHEM 334 |
| 1 | Physical Chemistry II Lab/CHEM 335 |
| 3 | Modern Analytical Chemistry/ CHEM 336 |
| 2 | Modern Analytical Chemistry Lab/ CHEM 337 |
| 1 | Chemical Literature/CHEM 356 |
| 3 | The Bible: An Intro/LTHE 201* |
| <u>16-17</u> | |

SENIOR

First Semester

- 1 Undergrad Research/CHEM 380-383
- 7 Chemistry Electives*
- 3 LPHI 237 or any LTHE 300 level course
- 1 Leadership Seminar
- 3 History Without Borders/LHST 111

15

Second Semester

- 2-3 Biology Electives**
- 1 Undergrad Research/CHEM 380-383
- 4 Chemistry Electives*
- 3 Literature Series/LENG*
- 3 Senior Seminar/LBST 383
- 3 Fine Arts Series/LFIN*

16-17

* Please refer to the Undergraduate Catalog for course options.

** The following upper-level science coursework is recommended (those highly recommended are shown in **bold**): Ecosystem Biology & Evolution/Lab (BIOL 126/127); Comparative Vertebrate Anatomy/Lab (BIOL 292/293); Vertebrate Embryology/Lab (BIOL 307/308); Histology/Lab (BIOL 320/321); Wildlife Management/Lab (BIOL 323/324); Vertebrate Zoology/Lab (BIOL 325/326); **Microbiology/Lab (BIOL 331/332)**; Immunology/Lab (BIOL 338/339); Virology (BIOL 334); Parasitology/Lab (BIOL 354/355); Endocrinology (BIOL 363); Cellular Biochemistry/Lab (BIOL 373/374) and Cell Biology/Lab (BIOL 375/376); please consult with your advisor.

† The student may pursue another approved program that allows the student to acquire all prerequisite coursework prior to anticipated RUSVM matriculation; please consult with the Pre-Health Advising Program Director to prepare an academic schedule.

Total Credits to be Completed at Gannon: 130-132

PRE-HEALTH QUALIFICATION

Gannon University offers a preparatory program for graduates with a B.A or B.S. in which students can return to school to complete the required coursework needed to enter health professional schools (i.e. chiropractic medicine, dental medicine, medicine, optometry, pharmacy, podiatric medicine, and veterinary medicine).

GU Entry Requirements

- Baccalaureate degree from an accredited university or college
- Cumulative GPA of 3.0 or higher on a 4.0 scale in undergraduate biology, chemistry, physics, and mathematics courses
- Evidence of academic and personal potential and a desire to enter one of the health professions mentioned above

This program may be completed with a part-time or full-time status and can be completed in two years. Students may transfer up to 12 credits toward the program but must complete at least 26 credits at Gannon University to complete the program. Science courses must be taken in sequence (see prerequisites for each course). This preparatory program is intended for individuals who lack all or most of the prerequisite coursework needed to apply to professional school. It is not intended for those seeking to improve their scores in undergraduate prerequisite coursework or seeking to take additional upper-level coursework in the sciences.

At the time of application to professional school, eligible students who have obtained a GPA of 3.0 or higher in the program coursework will receive a letter of recommendation from the Pre-Health Applicant Review Committee at Gannon University.

Further information and career counseling are available from the Director.

Curriculum

(Numerals in front of courses indicate credits)

CHEMISTRY

| | |
|-------|-----------------------------------|
| 3 | General Chemistry I/CHEM 111 |
| 1 | General Chemistry Lab I/CHEM 112 |
| 3 | General Chemistry II/CHEM 114 |
| 1 | General Chemistry II Lab/CHEM 115 |
| 3 | Organic Chemistry I/CHEM 221 |
| 1 | Organic Chemistry I Lab/CHEM 222 |
| 3 | Organic Chemistry II/CHEM 224 |
| 1 | Organic Chemistry II Lab/CHEM 225 |
| 3 | Structural Biochemistry/CHEM 366† |
| <hr/> | |
| 19 | |

BIOLOGY

| | |
|-------|---|
| 3 | Molecular & Cellular Biology/ BIOL 122 |
| 1 | Molecular & Cellular Biology Lab/ BIOL 123 |
| 3 | Animal Form & Function/BIOL 124 |
| 1 | Animal Form & Function Lab/BIOL 125 |
| <hr/> | |
| 8 | |

ADDITIONAL**

| | |
|-------|--|
| 3 | PSYC 111 Intro to Psychology <i>or</i> SOCI 110 Basic Sociology |
| <hr/> | |
| 3 | |

PHYSICS*

| | |
|-------|--------------------------------|
| 3 | College Physics 1/PHYS 105 |
| 1 | College Physics 1 Lab/PHYS 106 |
| 3 | College Physics 2/PHYS 108 |
| 1 | College Physics 2 Lab/PHYS 109 |
| <hr/> | |
| 8 | |

* PHYS 210, 211, 212, 213 may be taken instead.

** Students preparing to take the MCAT are also encouraged to take both *Introduction to Psychology (PSYC 111)* and *Basic Sociology (SOCI 110)*.

† Required for pre-medical students only.

PLEASE NOTE: Some courses are only offered during specific semesters throughout the academic year. Please check the course descriptions for details.

PUBLIC HEALTH

Aims and Objectives

The Bachelor of Science degree with a major in Public Health is designed for students seeking a health-related major that is more broadly-based than the focused, existing majors within the University. The major combines a foundation in health-related courses, sciences, humanities, and social sciences with a breadth of courses within one or more departments in the University. In addition to the major requirements, which represent the health and science focus of the college, students will select a concentration track that will build on students' personal and career goals and interests. There are three concentration tracks:

- 1) science,
- 2) health care with management, *and*
- 3) health education/communication.

This major is ideal for students who may envision working in a variety of settings within the health services arena during their professional careers. A major in Public Health will open doors to entry-level positions in a wide variety of health-related agencies, medical centers, long-term care facilities, assisted living facilities, private and public health organizations, as well as local, state, and federal health departments. In addition, the program is appropriate for students interested in graduate study in a variety of health-related fields, such as graduate programs in health sciences/public health.

The Bachelor of Science degree in Public Health: science option is designed for students who desire a broad, strong foundation in the core sciences that also incorporates health-related courses. Students in this track may use elective credits to complete requirements for pre-health professional programs or to prepare to enter graduate programs in health sciences/public health that require a strong science focus. Students should show an interest in science and how developments therein can help address some of the world's most complex health issues.

The Bachelor of Science degree in Public Health: health care with management option is designed for students who want to focus their efforts on the business/management side of health care. This track is desirable for students who want to move into staff and administrative positions within the health care industry or to continue with graduate education within business or management.

The Bachelor of Science degree in Public Health: health education/communication option prepares students to pursue careers as health educators. Health educators are professionals who design, conduct, and evaluate activities that help improve the health of all people. These activities can take place in a variety of settings: schools, communities, health care facilities, businesses and colleges. Graduates may also pursue graduate education in health education/communication.

Admission Requirements

The minimum requirements to be considered for acceptance into the Bachelor of Science, Public Health major include:

1. Overall GPA of 3.0 or better (high school or college if transfer student)
2. SAT scores of 950 or more (or comparable ACT)
3. Four years/courses of science and math at the high school level

COURSE DESCRIPTIONS

PUBH 300: Public Health

This course introduces the study of community and society health as a whole. It explores factors that maintain good health and factors that can be influenced to promote health and prevent disease. The population health approach is discussed throughout the course as well as factors such as individual medical care, community wide health projects, laws, and other influences.

Prerequisite: at least junior status within the Public Health major

3 credits, Fall

PUBH 310: Epidemiology for Public Health

This course will examine basic concepts of epidemiology as the study of patterns, causes and effect of health and disease in populations, and its influence on public health policy. Students will be introduced to the history, basic concepts, and methods of epidemiology as related to public health. The social, behavioral and cultural factors that influence public health will be explored.

Prerequisite: PUBH 300

3 credits, Spring

PUBH 400: Global Health

This course will introduce students to the key concepts and issues related to global health. The impact of globalization on the patterns of disease and effective control methods will be emphasized. The effect of social, economic and cultural factors on global health issues will be introduced.

Prerequisite: PUBH 300

3 credits, Fall

Public Health**Science Track***(Numerals in front of courses indicate credits)***FRESHMAN**

| <i>Semester I</i> | (15) | <i>Semester II</i> | (16) |
|-----------------------------------|------|--|------|
| ____ LENG 111 College Composition | (3) | ____ LENG 112 Critical Analysis & Composition | (3) |
| ____ First Year Seminar | (2) | ____ LTHE 101 Foundations of Theology | (3) |
| ____ CIS 170 Series or CIS 150 | (3) | ____ PSYC 111 Intro. to Psychology | (3) |
| ____ MATH 111 College Algebra | (3) | ____ MATH 112 Trigonometry | (3) |
| ____ BIOL122/123 Mol/Cellular Bio | (4) | ____ BIOL124/125 Animal Form/ Function | (4) |

SOPHOMORE

| <i>Semester III</i> | (17) | <i>Semester IV</i> | (18) |
|------------------------------------|------|---|------|
| ____ LPHI 131 Intro. to Philosophy | (3) | ____ LPHI Philosophy II Series | (3) |
| ____ SOCI 110 Basic Sociology | (3) | ____ SPCH 111 Public Speaking | (3) |
| ____ PHYS 105/106 Gen Physics 1 | (4) | ____ PHYS 108/109 Gen Physics 2 | (4) |
| ____ CHEM111/112 Gen Chem I | (4) | ____ BIOL126/127 Ecosystem Biology and Evolution | (4) |
| ____ The Bible: An Intro/LTHE 201 | (3) | ____ CHEM114/115 Gen Chem II | (4) |

JUNIOR

| <i>Semester V</i> | (17) | <i>Semester VI</i> | (18) |
|--|------|---|------|
| ____ CHEM 221/222 Organic Chem I | (4) | ____ PSYC 211 Psychological Statistics | (3) |
| ____ PUBH 300 Public Health | (3) | ____ CHEM 224/225 Organic Chem II | (4) |
| ____ LHST 111 History without Borders | (3) | ____ LPHI 237 or any LTHE 300 course | (3) |
| ____ PSYC 222 Psychology of Human Development | (3) | ____ Leadership Seminar | (1) |
| ____ Science Elective | (4) | ____ Science Elective | (4) |
| | | ____ PUBH 310 Epidemiology for Public Health | (3) |

SENIOR

| <i>Semester VII</i> | (15) | <i>Semester VIII</i> | (12) |
|-----------------------------|------|----------------------------------|------|
| ____ General Elective | (3) | ____ LBST 383 Senior Seminar | (3) |
| ____ Science Elective | (3) | ____ CHEM 366 Structural Biochem | (3) |
| ____ PUBH 400 Global Health | (3) | ____ Research/Internship* | |
| ____ LFIN Fine Arts Series | (3) | ____ or Science Elective | (6) |
| ____ LENG Literature Series | (3) | | |

* may be any department as approved by the advisor; students that do not take internship will have to fill with science elective to meet credit requirement

Science Elective may be any BIOL; MATH; or CHEM (200-level or above)

Public Health**Management Track***(Numerals in front of courses indicate credits)***FRESHMAN**

| | | | |
|--|------|--|------|
| <i>Semester I</i> | (18) | <i>Semester II</i> | (16) |
| ____ LENG 111 College Composition | (3) | ____ LENG 112 Crit Anal & Comp | (3) |
| ____ First Year Seminar | (2) | ____ LTHE 101 Foundations of Theology | (3) |
| ____ CIS 150 | (3) | ____ BCOR 111 Prin of Microeconomics | (3) |
| ____ PSYC 111 Intro. to Psychology | (3) | ____ BCOR 105 Fond of Bus Enterprise | (3) |
| ____ BIOL 122/123 Mol/ Cellular Bio | (4) | ____ BIOL 124/125 Animal Form/ Function and lab | (4) |
| ____ SOCI 110 Basic Sociology | (3) | | |

SOPHOMORE

| | | | |
|--|------|--|------|
| <i>Semester III</i> | (16) | <i>Semester IV</i> | (16) |
| ____ PSYC 211 Psyc Stats | (3) | ____ BCOR 240 Mktg in Global Envir | (3) |
| ____ PSYC 222 Psy. of Human Develop | (3) | ____ MATH 115 Calculus for Business | (3) |
| ____ BCOR 112 Princ. of Macroeconomics | (3) | ____ The Bible: An Intro/LTHE 201* | (3) |
| ____ CHEM 111/112 Gen Chem I | (4) | ____ BCOR 250 Mgmt Theory and Prac. | (3) |
| ____ LPHI 131 Intro. to Philosophy | (3) | ____ CHEM 114/115 Gen Chem II and lab | (4) |

JUNIOR

| | | | |
|--|------|---|------|
| <i>Semester V</i> | (18) | <i>Semester VI</i> | (16) |
| ____ LPHI Philosophy II Series | (3) | ____ LFIN Fine Arts Series | (3) |
| ____ PUBH 300 Public Health | (3) | ____ SPCH 111 Public Speaking | (3) |
| ____ BIOL 126 Ecosystem Biology and Evolution | (3) | ____ PUBH 310 Epidemiology for Public Health | (3) |
| ____ General Elective | (3) | ____ General Elective | (3) |
| ____ MGMT 330 Project Management | (3) | ____ LPHI 237 or any LTHE 300 course | (3) |
| ____ ACCT 101 Intro to Accounting* | (3) | ____ Leadership Seminar | (1) |

SENIOR

| | | | |
|-----------------------------------|------|---------------------------------------|------|
| <i>Semester VII</i> | (15) | <i>Semester VIII</i> | (13) |
| ____ MGMT350 Quality Management | (3) | ____ LBST 383 Senior Seminar | (3) |
| ____ General Elective | (3) | ____ Management/Business Elective | (3) |
| ____ Management/Business Elective | (3) | ____ LHST 111 History without Borders | (3) |
| ____ LENG Literature Series | (3) | ____ Research/Internship | (3) |
| ____ PUBH 400 Global Health | (3) | ____ General Elective | (4) |

* ACCT 101 is needed for a business minor

Public Health**Health Educator/Communication Track***(Numerals in front of courses indicate credits)***FRESHMAN**

| | | | |
|------------------------------------|------|--|------|
| <i>Semester I</i> | (15) | <i>Semester II</i> | (16) |
| ____ LENG 111 College Composition | (3) | ____ LENG 112 Critical Analysis & Composition | (3) |
| ____ First Year Seminar | (2) | ____ LTHE 101 Foundations of Theology | (3) |
| ____ CIS 170 Series or CIS 150 | (3) | ____ SPCH 111 Public Speaking | (3) |
| ____ PSYC 111 Intro. to Psychology | (3) | ____ LPHI 131 Intro. to Philosophy | (3) |
| ____ BIOL 122/123 Mol/Cellular Bio | (4) | ____ BIOL 124/125 Animal Form/ Function | (4) |

SOPHOMORE

| | | | |
|--|------|--|------|
| <i>Semester III</i> | (16) | <i>Semester IV</i> | (16) |
| ____ SCWK 315 Biomedical Aspects of Aging | (3) | ____ LPHI Philosophy II Series | (3) |
| ____ PSYC 222 Psy. of Human Develop | (3) | ____ LHST 111 History without Borders | (3) |
| ____ LENG Literature Series | (3) | ____ The Bible: An Intro/LTHE 201* | (3) |
| ____ CHEM 111/112 Gen Chem I | (4) | ____ BCOR 231 Bus and Prof Comm or ENGL 212 | (3) |
| ____ SOCI 110 Basic Sociology | (3) | ____ CHEM 114/115 Gen Chem II | (4) |

JUNIOR

| | | | |
|---|------|---|------|
| <i>Semester V</i> | (18) | <i>Semester VI</i> | (17) |
| ____ LFIN Fine Arts Series | (3) | ____ BIOL 191 Comm Hlth Coaches | (2) |
| ____ PUBH 300 Public Health Communication Elective | (3) | ____ PSYCH 234 Health Psychology | (3) |
| ____ SCWK 230 Human Diversity | (3) | ____ PUBH 310 Epidemiology for Public Health | (3) |
| ____ PSYC 211 Psych Stats | (3) | ____ BIOL126 Ecosystem Biology and Evolution | (3) |
| ____ General Elective | (3) | ____ Communication Elective | (3) |
| | | ____ General Elective | (3) |

SENIOR

| | | | |
|--|------|--|------|
| <i>Semester VII</i> | (16) | <i>Semester VIII</i> | (15) |
| ____ LPHI 237 or any LTHE 300 course | (3) | ____ LBST 383 Senior Seminar | (3) |
| ____ Leadership Seminar | (1) | ____ Communication Elective | (3) |
| ____ Communication Elective | (3) | ____ Communication Elective | (3) |
| ____ SCWK 221 Human Behavior & the Social Environment 1 | (3) | ____ SCWK 222 Human Behavior and the Social Environment 2 | (3) |
| ____ PUBH 418 Internship | (3) | ____ General Elective | (3) |
| ____ PUBH 400 Global Health | (3) | | |

Communication Electives: students should plan electives with prerequisites in mind.

- SPCH 225 Philosophy of Communication
- SPCH 235 Interpersonal Communication
- SPCH 313 Intercultural Communication
- SPCH 314 Persuasion
- PSYC 225 Social Psychology
- PSYC 306 Psychology of Communication
- PSYC 305 Learning and Cognition
- EDCR 101 Psychology of Teaching and Learning
- EDCR 102 Instructional Technology

RADIOLOGIC SCIENCES

SUZANNE STURDIVANT, M.Ed., RT(R), (M), (CT), *Program Director*

FACULTY: *Associate Teaching Professor*: Ronald G. Cuzzola, Suzanne Sturdivant.

Instructor: Holly Mihaly.

Practitioners in radiologic sciences are highly skilled professionals qualified by education to provide radiographic images of the human body to aid in the diagnosis of disease or injury. This practice requires development of cognitive abilities, technological skill, effective communication and interpersonal qualities that will assist the individual in this process.

The Radiologic Sciences Program, fully accredited by the Joint Review Committee on Education in Radiologic Technology, is 24 months in length. The first year is primarily didactic, with emphasis on required academic courses and introductory courses in radiologic sciences, including a clinical rotation. The professional component, which is 15 months in length, combines extensive clinical rotations with professional coursework. Clinical competency is verified through faculty assessment of student's skill level in actual performance of radiologic examinations. Students enrolled in the program must maintain an overall grade point average of 2.5. All Radiologic Science courses and required Anatomy and Physiology courses must be completed with a C or better to continue to the next sequenced professional course.

The Associate Degree fulfills the eligibility requirements for the national certification exam administered by the American Registry of Radiologic Technologists. Upon certification, graduates may find employment in hospitals, outpatient imaging centers, and physician offices. With additional education and training, the following career paths can be pursued: computed tomography (CT), magnetic resonance imaging (MRI), mammography, cardiovascular imaging, interventional imaging, management, and education.

Prospective students should be aware that in order to successfully complete this program they will be required to perform certain physical functions in course work and/or clinical education. The following physical standards describe the physical abilities necessary to complete the program.

Physical Standards

1. Lift, assist and maneuver patients in wheelchairs, on stretchers and imaging tables (weight can vary from 20 lbs. to greater than 100 lbs.).
2. Manipulate, lift, move, and push heavy equipment (must be able to extend arms overhead and forward).
3. To ensure patient safety, hear faint sounds from a distance of 15 feet, as control panels and exposure switches are located in rooms or paneled areas separate from the x-ray table on which patients are placed.
4. Hear verbal directions/requests from physicians, patients, etc.; hear faint audible signals such as low sounding buzzers and bells to determine and recognize malfunctioning equipment.
5. See requisitions/computer screens for medical information pertaining to radiographic exams, proper equipment manipulation, proper positioning, and image evaluation of exams.
6. Manual dexterity, good motor skills, eye-hand coordination skills, and sensory function to perform skills such as taking a pulse, assisting with sterile procedures, manipulating equipment, etc.
7. Cognitive ability to perceive and deal appropriately with environmental threats and stress and ability to continue to function safely and effectively during periods of high stress.
8. Exhibit social skills necessary to interact effectively with patients, families, supervisors, co-workers and physicians of the same or different cultures.

9. Intellectual and emotional skills to exercise discretion in handling confidential medical information.
10. Prioritize multiple tasks.
11. Maintain personal hygiene.
12. Must be of sufficient health to meet the criteria of clinical affiliates.

COURSE DESCRIPTIONS

All RADS courses must be taken in the order listed in the curriculum. Clinical education includes clinical sites outside of Erie. Students are responsible for transportation to and from clinical sites.

RADS 101: Introduction to Radiologic Sciences

This course provides an introduction to medical terminology, which will weave throughout the course to provide the student with the basic principles needed to learn medical vocabulary. Topics covered include the history of medical imaging, pharmacology, basic positions, projections and body movement as related to health care and particular to radiology. Content will also include body communication, cultural diversity, and the pediatric, geriatric and terminal patients. The course also introduces professional organizations, ASRT/ARRT, and their code of ethics. There is also a service learning component relating to communication and cultural diversity.

3 credits, Fall

RADS 117: Clinical Radiography 1

This course will introduce the student to a simulated clinical setting through application of patient care skills and manipulation of standard radiologic equipment. Students will also be introduced to the basic theory and manipulation of the control panel including mA, mAs, back-up mAs, kVp, focal spot, manual technique and automatic exposure control (AEC). Students will learn and apply simple techniques and basic principles in patient care that will include body mechanics, patient transfer techniques, vital signs, oxygen administration, infection control and standard precautions, medical and sterile procedures, isolation techniques, assisting with tubes and catheters, skin and cast care and medical emergencies and how they are specifically related to the Radiology department. This course also provides an introduction to medical terminology, which will weave throughout the course to provide the student with the basic principles needed to learn medical terminology.

1 credit, Fall

RADS 118: Radiographic Exposure and Processing

This course provides the student with the knowledge base involving the acquisition of radiographic images as well as the essential qualities of a radiographic image. The problem-solving methods used by the radiographer that may affect radiographic quality are also studied.

Prerequisites: RADS 101, 117, 120, 204, 205, BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

3 credits, Fall

RADS 119: Radiographic Exposure and Processing Lab

An analysis of radiographic image quality will be studied through lab activities, image evaluation and critical thinking methodologies. Demonstrating the effect of various exposure principles and techniques are incorporated into the analytical process.

Prerequisites: RADS 101, 117, 120, 204, 205, BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

1 credit, Fall

RADS 120: Clinical Radiography 2

Sequential to RADS 117 Clinical Radiography 1. Focus on radiation safety, the legal aspects of healthcare including HIPAA and informed consent, and the accurate documentation of clinical histories which will be covered prior to assigned clinical rotations. During clinical rotations students should observe, assess and perform under direct observation, the practices

of manipulating radiographic equipment, patient communication, infection control, body mechanics, transfer techniques, radiation safety, clinical histories and patient confidentiality.

Prerequisites: RADS 101, 117

1 credit, Spring

RADS 204: Radiographic Positioning & Procedures 1

This course will require the student to implement previously learned positioning terminology and techniques used in radiography from RADS 101 and RADS 117, for utilization of proper positioning to ensure high quality images. The course will focus on correlated anatomy, positioning and image critique of the upper and lower extremities, abdomen and chest; as well as an introduction to the digestive and urinary systems.

Prerequisites: RADS 101, 117, BIOL 108, 109 or BIOL 115, 116

3 credits, Spring

RADS 205: Radiographic Positioning & Procedures Lab 1

This is a performance-based course for radiographic positioning of the upper and lower extremities, abdomen and chest. Image evaluation and anatomical correlation are integrated into proper positioning procedures and image critique.

Prerequisites: RADS 101, 117, BIOL 108, 109 or BIOL 115, 116

1 credit, Spring

RADS 206: Clinical Radiography 3

This course is sequential to RADS 120 and is designed to develop performance skills necessary for competency exams through directly supervised clinical experience. The student will start to integrate the principles and theories learned in the classroom into the clinical setting. This will include aspects of the methodology of a radiographic procedure including but not limited to the RIS/HIS system, patient care, control panel set-up (manual/AEC), room set-up, patient transfer, radiation protection, patient positioning, image evaluation, and patient discharge. Required competencies must be completed by the end of summer.

Prerequisites: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

4 credits, Summer

RADS 214: Radiographic Positioning and Procedures 2

Continuation of radiographic studies including urinary system, digestive system, proximal humerus and shoulder girdle, pelvis, hip and femur and vertebral column.

Prerequisites: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

3 credits, Summer

RADS 215: Radiographic Positioning Lab 2

This is a performance-based course for the radiographic positioning of the body parts and systems covered in RADS 214. Image evaluation and laboratory exposures on the phantom are performed to correlate the anatomy studied. Simulated competencies and proficiencies are also completed. The student will continue to set appropriate control panel techniques (manual/AEC) for specific procedures and projections. The student will make control panel adjustments based on their findings (exposure criteria) from specific image critiques.

Prerequisites: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

1 credit, Summer

RADS 216: Clinical Radiography 4

This course is sequential to RADS 206. It consists of directly or indirectly supervised clinical experience as appropriate to the student's level of competency. Students prepare for competency in more complex examinations as well as work independently in areas of completed competency. The student will continue to integrate the principles and theories learned in the classroom into the clinical setting. This will include aspects of the methodology of a radiographic procedure including but not limited to the RIS/HIS system, patient care, control panel set-up (manual/AEC), room set-up, patient transfer, radiation protection, image evaluation, correctly applying the theories and principles of digital imaging, and patient discharge. Required competencies must be completed by the end of the semester.

Prerequisite: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

4 credits, Fall

RADS 218: Advanced Exposure

This course will continue the study of digital image acquisition and display to include components, principles and operation of digital imaging systems. Additional concepts of quality assurance, quality control, PACS, digital artifacts and digital image intensification will be presented.

Prerequisites: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

2 credits, Spring

RADS 219: Imaging and Equipment

This course provides an introduction of atomic structure and the properties of x-rays. It thoroughly examines the production of x-rays, circuitry as well as x-ray equipment and basic image intensification.

Prerequisites: RADS 101, 117, 120, 204, 205; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

2 credits, Summer

RADS 224: Radiographic Positioning and Procedures 3

This course offers an in-depth study of the bony thorax, biliary system, skull, facial bones, and sinuses. Also included are the arthrography, reproductive system, specialty exams, and an introduction to the cardiovascular system, central nervous system, and sectional anatomy.

Prerequisites: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

3 credits, Spring

RADS 225: Radiographic Positioning and Procedures Lab 3

This is a performance-based course for radiographic positioning of the skull, facial bones, sinuses, bony thorax and biliary system. Radiographic exposures on the phantom are correlated with image evaluation and radiographic anatomy. A component strictly related to the identification of anatomy of the cardiovascular system and central nervous system using MRI and CT images is also included.

Prerequisites: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

1 credit, Spring

RADS 226: Clinical Radiography 5

This course is sequential to RADS 216. It consists of direct or indirect supervised clinical experience as appropriate to the student's level of competency. Students prepare for competency in more complex examinations as well as work independently in areas of completed competencies. The student will continue to work toward a higher level of proficiency for all areas of methodology of a radiographic procedure including but not limited to the RIS/HIS system, patient care, control panel set-up, room set-up, patient transfer, radiation protection, image evaluation, correctly applying the theories and principles of digital imaging, and patient discharge. Required competencies must be completed by the end of the semester.

Prerequisites: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

3 credits, Spring

RADS 252: Radiation Biology

This course is divided into two parts. The first part deals with the types of ionizing radiation and their effects at the atomic, molecular and cellular levels. Genetic and somatic effects as related to acute and chronic doses of radiation are also discussed. The second part concentrates on medical diagnostic radiation – sources, exposure, dose limits, detection & measurement, design of equipment and rooms for maximum protection and reduction of dose.

Prerequisites: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

2 credits, Spring

RADS 271: Introduction to Radiographic Pathology

A study of the common pathologies seen radiographically. This course integrates the student's previous clinical experience and classwork with specific pathophysiology within the body systems. It is designed to offer the learner basic foundations of disease or injury, including clinical, pathological, and radiographic manifestations.

Prerequisites: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

1 credit, Spring

RADS 285: Professional Issues Seminar

This course will assist the student in the development of an additional knowledge base that will assist in broadening the students' understanding of total patient care. Venipuncture will be discussed and an introduction to electrocardiography will also be discussed. The student will complete a writing assignment based on professional ethical scenarios. The student will complete exercises, quizzes, and a simulated exam to prepare for the ARRT National Certification Examination.

Prerequisite: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

1 credit, Summer

RADS 286: Clinical Radiography 6

This course is sequential to RADS 226. It consists of indirectly supervised clinical experience in all areas of completed competency. Students focus on developing efficiency and proficiency in their clinical skills. Electives to CT, MRI, sonography, cardiac and interventional procedures, nuclear imaging or radiation therapy may be arranged. Terminal competency must be completed by the end of summer.

Prerequisites: All previous RADS courses; BIOL 108, 109, 110, 111 or BIOL 115, 116, 117, 118

4 credits, Summer

RADS 441: Introduction to Radiology

This course is designed to introduce the Physician Assistant student to radiologic imaging procedures. The focus of the class will include technical, anatomical and pathologic considerations.

3 credits, Fall

RADS 495: Special Topics

Special topics courses are developed by faculty around a specific area of interest. Objectives may be defined by faculty or mutually identified by students and faculty.

1-3 credits, Fall or Spring

Associate Degree Curriculum

(Numerals in front of courses indicate credits)

Fall I

| | |
|-----------|---|
| 4 | Anatomy & Physiology I with Lab/ BIOL 108, 109 or 115, 116 |
| 3 | College Composition/LENG 111 |
| 3 | Intro Radiologic Science/RADS 101 |
| 1 | Clinical Radiography 1/RADS 117 |
| 3 | PC Applications/170-172 or CIS 150 |
| 2 | First-Year Seminar |
| 1 | Technical Communication/SPCH 110 |
| <u>17</u> | |

**Summer I*

| | |
|-----------|---|
| 4 | Rad Posit/Proc 2 with Lab/ RADS 214, 215 |
| 2 | Imaging and Equipment/RADS 219 |
| 4 | Clinical Radiography 3/RADS 206 |
| <u>10</u> | |

Spring I

| | |
|-----------|---|
| 4 | Anatomy & Physiology II with Lab/ BIOL 110, 111 or BIOL 117, 118 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 4 | Rad Posit/Proc 1 with Lab/ RADS 204, 205 |
| 3 | Intro to Psychology I/PSYC 111 |
| 1 | Clinical Radiography 2/RADS 120 |
| <u>18</u> | |

**Fall II*

| | |
|----------|-------------------------------------|
| 4 | Rad Exposure with Lab/RADS 118, 119 |
| 4 | Clinical Radiography 4/RADS 216 |
| <u>8</u> | |

****Spring II**

| | |
|----------|---|
| 4 | Rad Posit/Proc 3 with Lab/ RADS 224, 225 |
| 2 | Advanced Exposure/RADS 218 |
| 2 | Radiation Biology/RADS 252 |
| 1 | Intro to Rad Pathology/RADS 271 |
| 3 | Clinical Radiography 5/RADS 226 |
| <hr/> 12 | |

****Summer II**

| | |
|---------|--------------------------------------|
| 1 | Professional Issues Seminar/RADS 285 |
| 4 | Clinical Radiography/RADS 286 |
| <hr/> 5 | |

Total Credits: 70

This curriculum indicates that students will be required to attend summer sessions as part of the Radiologic Sciences Program.

- * *Students are advised that the courses taken in the Summer I and Fall II semesters will be combined for the purposes of billing and grading. Students will receive their bill for the Summer I and Fall II semester at the regular Fall billing time. Official final course grades will be posted at the completion of the Fall II semester. Students will see “*” grades until the end of the Fall II semester.*
- ** *Students are advised that the courses taken in the Spring II and Summer II semesters will be combined for the purposes of billing and grading. Students will receive their bill for the Spring II and Summer II semesters at the regular Spring billing time. Official final course grades will be posted at the completion of the Summer II semester. Students will see “*” grades until the end of the Summer II semester.*

RESPIRATORY CARE BACCALAUREATE

MARY REITINGER, RRT, CPFT, *Program Director*

FACULTY: *Assistant Teaching Professor:* Mary Reitinger. *Instructor:* Joshua Henry. *Adjunct Instructors:* Jacalyn Oravec, Melody Sidor.

There are few things more frightening than not being able to breathe. You can live without water for a few days, and without food for a few weeks. But, when deprived of air, you will die within minutes. In terms of survival, breathing is your most immediate need. Respiratory care practitioners are heart-lung specialists who evaluate, treat, and care for patients with breathing disorders. Many patients suffer from respiratory conditions as a result of complications due to inherited disease, heart disease, environmental exposures and many other conditions.

Students suited for a career in the Respiratory Care share a desire to help people in their time of need. Respiratory Care offers the opportunity to connect with patients and families while providing direct patient care. Respiratory Therapists work under the direction of a physician and assist in the diagnosis, treatment, and management of patients with general to the most critical cardiac and respiratory disorders. Combined with an in-depth knowledge of respiratory disease, patient assessment skills, critical thinking skills, and technical equipment understanding, the Respiratory Therapist is a vital part of the healthcare team.

The need for respiratory therapists is projected to grow faster than the national average for all job growth. Additionally, practitioners enjoy a bright future with abundant opportunities for advancement, professional development, specialty credentials, and employment in a variety of patient care settings. Some areas of this specialized profession include neonatal- pediatric care, critical care, diagnostics, pulmonary rehabilitation, flight transport, sleep medicine, disease management, homecare, research, education, management, and many others.

The Respiratory Care Program offers an entry-level Bachelor of Science degree and qualifies the student to become a Registered Respiratory Therapist. The four-year degree is designed to prepare Respiratory Therapists to become leaders in their field and work in advanced settings.

Gannon University's Respiratory Care Program also provides the option for students to pursue a Sleep Disorders Specialty Certificate.

Students enrolled in the program must maintain an overall grade point average of 2.5. Only those students with a 2.5 grade point average or higher after completing the pre-professional courses will advance to the professional phase of the program. All math, science, and courses denoted by the RSPC prefix must be passed with a "C" grade or higher to progress in the program. Applicants must meet the technical standards for admission to the program. Admission requirements may be obtained by contacting the Admission's office.

The program is accredited by the Commission on Accreditation for Respiratory Care (CoARC).

www.coarc.com
264 Precision Blvd
Telford, TN 37690
814-283-2835

Technical and Performance Standards

A candidate for admission to the Respiratory Care Program must have the use of certain sensory and motor functions to permit them to carry out the activities described in the sections that follow.

The information below includes information also available in the Respiratory Care Student Handbook.

I. Observation:

- Candidates and students ordinarily must have sufficient vision to be able to observe demonstrations, experiments, and laboratory exercises.
- They must be able to observe and assess a patient accurately in close proximity and at a distance.

II. Communication:

- Candidates and students ordinarily must be able to communicate with patients and colleagues.
- They should be able to hear, but if technological compensation is available, it may be permitted for some handicaps in this area.
- Students must be able to hear and assess faint sounds and sensations, also through touch, including but not limited to, breath sounds and faint pulses.
- Candidates and students must be able to read, write, and speak English.

III. Motor:

- Candidates and students ordinarily should have sufficient motor function such that they are able to execute movements reasonably required to provide general care, technologic therapy and maintenance, and emergency treatment to patients.
- Examples of technologic therapy include but is not limited to manipulation and administration of specialty gases and delivery devices; initiation and maintenance of life support equipment; respiratory therapeutic equipment; transport of patients that may involve manual bagging of the patient, pushing, pulling, and care of the patient, and heavy equipment; interpretation and documentation of clinical and patient data; and assist physicians with invasive and diagnostic procedures.
- Examples of emergency treatment reasonably required of respiratory therapists include but is not limited to quick response and performance of cardiopulmonary resuscitation, performance of arterial puncture or arterial catheter insertion, assistance or administration of intravenous medication and/or fluids, the application of pressure to stop bleeding, and the opening and maintenance of obstructed airways.

- These actions require coordination of both gross and fine muscular movements, equilibrium, and functional use of the senses of touch and vision, and frequently result in stressful situations.

IV. Intellectual, Conceptual, Integrative, and Quantitative Abilities:

- These abilities include measurement, calculation, reasoning, analysis and synthesis.
- Problem solving, the critical intellectual skill demanded of a respiratory therapist, requires all of these intellectual abilities. In addition, candidates and students should be able to comprehend three-dimensional relationships and understand the spatial relationships of structures.

V. Behavioral and Social Abilities:

- Candidates and students must possess the emotional health required for full utilization of the intellectual abilities, the exercise of good judgment and identify ethical responsibilities, needs and interventions, the prompt completion of all responsibilities attendant to the assessment and care of patients, and the development of mature, sensitive and effective relationships with patients.
- Candidates and students must be able to tolerate physically taxing workloads, adapt to changing environments, display flexibility, and learn to function in the face of uncertainties inherent in the clinical problems of many patients.
- Compassion, integrity, concern for others, interpersonal skills, interest and motivation are all personal qualities to be assessed during the admissions and educational processes.
- Demonstrate and practice professional attributes of a member of the health care team, including but not limited to legal requirements and professional code of ethics.

The Respiratory Care Department is committed to providing reasonable accommodations to students with an identifiable disability as defined by the Americans with Disability Act. In doing so, however, the Respiratory Care Program must maintain the integrity of its curriculum and preserve those elements deemed essential to educating candidates to become effective respiratory care therapists. Students in the Respiratory Care Program must be of sufficient health in order to meet the criteria of our clinical affiliates.

The Respiratory Care Program reserves the right to reassess the student's ability to meet the technical and performance standards at any time during the duration of their training and to act accordingly.

COURSE DESCRIPTIONS

All RSPC courses must be taken in the order listed in the curriculum. Clinical practicums may include clinical sites outside of Erie. Students are responsible for transportation to and from clinical sites. Clinical practicums include some evening and weekend rotations.

RSPC 201: Introduction to Respiratory Care

This introductory course will inform the student about the history of medicine and the profession of respiratory care. Additional topics will include communication in health care, medical terminology and an introduction to computers. Students will be given a basic foundation for respiratory care with topics in flow mechanics, and physical properties of gases.
3 credits, Spring

RSPC 301: Clinical Practicum I

The student will perform respiratory care procedures on patients within the clinical setting. There will be an emphasis on operating and maintaining oxygen delivery devices.

Prerequisites: RSPC 308, 309

2 credits, Fall

RSPC 302: Clinical Practicum II

The student will provide respiratory care to patients in the adult intensive care unit setting. There will be an emphasis during this course on mechanical ventilation, and cardiopulmonary diagnostics.

Prerequisites: RSPC 321, 322

4 credits, Spring

RSPC 303: Clinical Practicum III

This clinical course involves a neonatal intensive care unit setting, pulmonary rehabilitation, and observation in the operating room. Rotations will also include continued skills in intensive and general respiratory care.

Prerequisites: RSPC 350, 385

5 credits, Summer

RSPC 308: Respiratory Care Procedures:

This course includes the study of medical gases from their storage to the devices used to administer them to the patient. The different therapeutic modalities used in respiratory care will be presented. The modalities include: Humidity Therapy, hyperinflation therapy, aerosol/pharmacologic therapy, intermittent positive pressure, chest percussion, bronchial drainage, and airway care.

Prerequisite: RSPC 201 Corequisite: RSPC 309

4 credits, Summer

RSPC 309: Respiratory Care Procedures Lab

This laboratory will allow the student to practice and experience topics covered in RSPC 308 and prior to actual clinical practice.

Corequisite: RSPC 308

1 credit, Summer

RSPC 314: Cardiopulmonary Pathophysiology

This integrated course will instruct the student in patient diagnostics and assessments. The course will also include an introduction to general pathophysiology with an emphasis on pathophysiology affecting the cardiopulmonary system.

Prerequisite: RSPC 317

4 credits, Fall

RSPC 317: Cardiopulmonary and Renal Anatomy/Physiology

This course is an advanced study of the pulmonary, cardiac and renal systems. An emphasis is placed on physiology of these systems.

4 credits, Summer

RSPC 319: Pharmacology for the Respiratory Care Practitioner

A study to introduce the student to the science of pharmacology, it's terminology and administration. Emphasis will be on those agents primarily having an effect on the cardiopulmonary system. Also, antibiotics, steroids and other pharmacologic agents will be discussed.

2 credits, Fall

RSPC 321: Mechanical Ventilation and Critical Care

A study of mechanical ventilators, their operation and application in patient care will be presented. The course also includes applied critical care including monitoring techniques.

Prerequisites: RSPC 308, 309, 317 Corequisites: RSPC 322

4 credits, Fall

RSPC 322: Mechanical Ventilation and Critical Care Lab

Laboratory practice for topics covered in RSPC 321.

1 credit, Fall

RSPC 350: Neonatal/Pediatric Respiratory Care

This course will emphasize the diagnosis and care of the neonatal and pediatric patients in the intensive care setting. Mechanical ventilation of the neonate will be stressed.

Prerequisite: RSPC 301, 321, 322

3 credits, Spring

RSPC 385: Homecare/Cardiopulmonary Rehabilitation

This course will include presentations and discussions of objectives, methods and expectations of homecare and cardio/pulmonary rehabilitation. Current issues in pulmonary rehabilitation will be discussed. The course will present various community agencies that provide and assist with chronic health problems. Included will be issues in patient/family education.

Prerequisite: departmental consent

2 credits, Spring

RSPC 390: Pulmonary Function Testing

This course explores the use of various tests used to measure lung function with an emphasis on lung volume tests and spirometry evaluation. Some time will be spent in the laboratory and at the bedside utilizing equipment to measure lung mechanics.

1 credit

RSPC 393: Special Topics in Respiratory Care

This is an elective course. The course is developed by faculty around specific areas of interest. Outcomes may be developed by the faculty or mutually by student and faculty.

Prerequisite: Director permission

3 credits

RSPC 404: Clinical Practicum IV

This clinical will assist the student in synthesizing the skills learned throughout their course of study in the areas of intensive care unit, management, patient education and home care.

Prerequisite: RSPC 303

2 or 6 credits, Spring

RSPC 414: Advanced Cardiopulmonary Pathophysiology

This course is a continuation of RSPC 314 with an expansion on chest radiography and hemodynamics.

Prerequisite: RSPC 301, 302, 303, 317

3 credits, Fall

RSPC 421: Advanced Cardiopulmonary Assessment

This course will be a continuation of the RSPC 321 course where advanced skills are taught in the area of Critical Care.

Prerequisite: RSPC 321

3 credits, Spring

RSPC 426: Non-Invasive Cardiovascular Assessment

The physiological basis of the electrocardiograph will be presented. All the major arrhythmias will be emphasized. At the end of the course the student will be able to perform a basic analysis of the twelve lead EKG. A brief overview of echocardiography will also be included.

Prerequisite: RSPC 301, 302, 303, 317

2 credits, Fall

POLYSOMNOGRAPHY CERTIFICATE

The Respiratory Care Program offers a certificate in Polysomnography and prepares the student to earn specialty credentials as a Sleep Disorders Specialist (SDS). Students must be admitted to this certificate option. Polysomnography admission requirements include active enrollment in the entry-level Bachelor of Science degree program in Respiratory Care or an active Registered Respiratory Therapist (RRT) holding an Associate of Science (AS) degree in Respiratory Care.

RSPC 361: Polysomnography Science I

This course is designed to provide both didactic and laboratory training for entry-level personnel in the basics of Polysomnographic Technology. Students will become familiar with medical terminology, instrumentation setup and calibration, recording and monitoring techniques, documentation, professional issues, and patient-technologist interactions related to Polysomnographic Technology. Laboratory sessions will provide practical experience in the skills required of an entry-level Polysomnographic Technologist.

Corequisite: RSPC 362

2 credits, Fall

RSPC 362: Polysomnography Clinical I

This course is designed to provide clinical experience and training for entry-level personnel in the basics of Polysomnographic Technology. Students will become familiar with the sleep lab environment, instrumentation setup and calibration, recording and monitoring techniques, documentation, professional issues, and patient-technologist interactions related to Polysomnographic Technology.

Corequisite: RSPC 361

2 credits, Fall

RSPC 363: Polysomnography Science II

This course is designed to provide both didactic and laboratory training that will cover the skills and knowledge needed to obtain high quality sleep recordings and expands upon the topics covered in Polysomnography Science I. Students will become proficient in the technical and clinical aspects of Polysomnography, as well as the methodology used in the

sleep laboratory. This course includes patient interaction and describes the capture of bioelectric activity, over-night recording techniques, the interpretation of and data presentation for the compilation of the final report.

Prerequisite: RSPC 361, 362 Corequisite: RSPC 364

2 credits, Spring

RSPC 364: Polysomnography Clinical II

This course is designed to provide clinical experience and training for advanced aspects of polysomnographic technology. Students will become familiar with practical aspects of therapeutic interventions, sleep scoring, equipment troubleshooting, and artifact recognition.

Prerequisite: RSPC 361, 362 Corequisite: RSPC 363

2 credits, Spring

Respiratory Care Curriculum is divided into two (2) phases: The **Pre-Professional phase** and the **Professional Phase**.

- The Pre-Professional phase requires respiratory care students to complete required math, science, and core coursework and maintain the required overall grade point average (GPA) of a 2.5 and a "C" or better in all math, science, and respiratory care courses (RSPC prefix).
- Students must meet these requirements in order to progress into the Professional Phase.
- The Professional Phase of the program includes all RSPC courses taken sequentially.

This curriculum requires students to attend summer sessions as part of the Professional Phase of the Respiratory Care Program.

PRE-PROFESSIONAL PHASE

(Numerals in front of courses indicate credits)

FRESHMAN

Fall

| | |
|----------|----------------------------------|
| 3 | College Composition/LENG 111 |
| 3 | Chem of Life I/CHEM 103* |
| 1 | Chem of Life I Lab/CHEM 104* |
| 3 | College Algebra/MATH 111* |
| 3 | History Without Borders/LHST 111 |
| 1 | PC Applications/CIS 170-173 |
| <u>2</u> | First-Year Seminar |
| 16* | |

Spring

| | |
|------------|----------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Chem of Life II/CHEM 106* |
| 1 | Chem of Life Lab II/CHEM 107* |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Concepts in Physics/PHYS 101* |
| 3 | Intro Psychology/PSYC 111 |
| <u>16*</u> | |

SOPHOMORE

Fall

| | |
|----------|-------------------------------------|
| 3 | Anat & Physio I/BIOL 108* |
| 1 | Anat & Physio I Lab/BIOL 109* |
| 2 | PC Applications/CIS 170-173 |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | The Bible: An Intro/LTHE 201 |
| 3 | Intro to Micro/BIOL 106* |
| <u>1</u> | Intro to Micro Lab/BIOL 107* |
| 16* | |

Spring

| | |
|----------|----------------------------------|
| 3 | Literature Series I/LENG |
| 3 | Anat & Physio II/BIOL 110* |
| 1 | Anat & Physio II Lab/BIOL 111* |
| 3 | Intro to Resp Care/RSPC 201* |
| 3 | Fine Arts Series/LFIN |
| 1 | Technical Communication/SPCH 110 |
| <u>3</u> | Philosophy II Series/LPHI* |
| 17* | |

* An overall QPA of 2.5 and a "C" or better in all math and science courses is required to continue to the Professional Phase.

PROFESSIONAL PHASE**

** An overall QPA of 2.5 and a "C" or better in all math, science, and respiratory care courses (RSPC Prefix) is required to continue to the next sequential professional course.

*Summer Semester***

| | |
|----------|--|
| 4 | Respiratory Care Procedures/RSPC 308 |
| 1 | Respiratory Care Procedures Lab/RSPC 309 |
| 4 | Cardiopul/Renal A & P/RSPC 317 |
| <u>9</u> | |

JUNIOR***Fall*

| | |
|-----------|-------------------------------------|
| 2 | Clinical I/RSPC 301 |
| 4 | Mech Vent & Crit Care/RSPC 321 |
| 1 | Mech Vent & Crit Care Lab/RSPC 322 |
| 4 | Cardiopul Pathophysiology/RSPC 314 |
| 2 | Pharmacology for Resp Care/RSPC 319 |
| 1 | Pulmonary Functions/RSPC 390 |
| <u>14</u> | |

Spring

| | |
|-----------|---------------------------------|
| 3 | Neonatal/Peds/RSPC 350 |
| 2 | Homecare/Rehab/RSPC 385 |
| 4 | Clinical II/RSPC 302 |
| 3 | LPHI 237 or any LTHE 300 course |
| 3 | Statistics/PSYC 211 or SOCI 351 |
| 1 | Leadership Seminar |
| <u>16</u> | |

*Summer Semester***

| | |
|----------|-----------------------|
| 5 | Clinical III/RSPC 303 |
| <u>5</u> | |

SENIOR***Fall*

| | |
|-----------|---|
| 3 | Senior Seminar/LBST 383 |
| 3 | Advanced Cardio Patho/RSPC 414 |
| 2 | Non-Invasive Cardiovascular Assessment/RSPC 426 |
| 3 | Professional Elective |
| 3 | Research Methods/NURS 308 |
| <u>14</u> | |

Spring

| | |
|----------|--|
| 3 | Advanced Pulmonary Assessment/RSPC 421 |
| 6 | Clinical Practicum IV/RSPC 404 |
| <u>9</u> | |

Minimum Total BSRT Credits: 132

- Total Undergraduate CORE Credits: 78
- Total Respiratory Credits: 54
 - 37 Didactic Respiratory Credits
 - 17 Clinical Respiratory Credits

OR (if seeking Polysomnography option)

POLYSOMNOGRAPHY OPTION**SENIOR*****Fall*

| | |
|-----------|---|
| 3 | Senior Seminar/LBST 383 |
| 3 | Advanced Cardio Patho/RSPC 414 |
| 2 | Non-Invasive Cardiovascular Assessment/RSPC 426 |
| 2 | Poly Science I/RPSC 361 |
| 2 | Poly Science Clinical I/RSPC 362 |
| 3 | Research Methods/NURS 308 |
| <u>15</u> | |

Spring

| | |
|----------|--|
| 3 | Advanced Pulmonary Assessment/RSPC 421 |
| 2 | Clinical Practicum IV/RSPC 404 |
| 2 | Poly Science II/RSPC 363 |
| 2 | Poly Science Clinical II/RSPC 364 |
| <u>9</u> | |

Polysomnography Track: Total Credits: 136

- **Total Undergraduate CORE Credits: 78**
- **Total Respiratory Credits: 50**
- **Total Polysomnography Credits: 8**
 - 41 Didactic Respiratory Credits
 - 17 Clinical Respiratory Credits

SCIENCESTEVEN J. ROPSKI, Ph.D., *Advisor*

The Science curriculum is designed for those students who wish to get a broad background in the sciences. Students may choose a concentration from the fields of Biology, Chemistry, Environmental Science, Mathematics, or Physics. Students cannot declare science as a major after attaining 100 credits in a previous major without director's permission.

The curriculum in Science allows for the completion of the Liberal Studies Core, 60 credit hours of studies in the sciences and mathematics, and twenty-nine credit hours of electives to devote toward the student's educational goal(s). The student must earn a minimum of twenty-four credits in one field of the sciences, mathematics, or approved technical field, and complete a minimum of eight (8) credits in Biology, Chemistry, and Physics, and six (6) credits in Earth Science/Environmental Science and Mathematics.

Suggested Science Curriculum*(Numerals in front of courses indicate credits)***FRESHMAN***First Semester*

| | |
|-----------|----------------------------------|
| 3 | History Without Borders/LHST 111 |
| 3 | College Comp/LENG 111 |
| 2 | First-Year Seminar |
| 8 | Science Sequence |
| <u>16</u> | |

Second Semester

| | |
|-----------|----------------------------------|
| 3 | Crit Analysis & Comp/LENG 112 |
| 3 | Foundations of Theology/LTHE 101 |
| 8 | Science Sequence |
| 3 | Social Science |
| <u>17</u> | |

SOPHOMORE*First Semester*

| | |
|-----------|-------------------------------------|
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Literature Series/LENG |
| 3 | The Bible: An Intro/LTHE 201 |
| 8 | Science Sequence |
| <u>17</u> | |

Second Semester

| | |
|-----------|---------------------------------|
| 3 | LPHI 237 or any LTHE 300 course |
| 8 | Science Sequence |
| 3 | Elective |
| 1 | Leadership Seminar |
| <u>15</u> | |

JUNIOR

First Semester

| | |
|--------------|---------------------------|
| 3 | Philosophy II Series/LPHI |
| 3 | Fine Art Series/LFIN |
| 6-8 | Science Sequence |
| 3 | Elective |
| <u>15-17</u> | |

Second Semester

| | |
|-----------|--------------------------|
| 3 | LS elective |
| 3 | Public Speaking/SPCH 111 |
| 6 | Science Sequence |
| 6 | Elective |
| <u>18</u> | |

SENIOR

First Semester

| | |
|--------------|-------------------------|
| 3 | Senior Seminar/LBST 383 |
| 6-8 | Science Sequence |
| 6 | Elective |
| <u>15-17</u> | |

Second Semester

| | |
|--------------|------------------|
| 6-8 | Science Sequence |
| 9 | Elective |
| <u>15-17</u> | |

THE NEXT STEP PROGRAM**Baccalaureate Degree Program for Graduates of Two-Year Colleges****Science**

(Numerals in front of courses indicate credits)

PRE-SENIOR YEAR

| | |
|-----------|-------------------------------------|
| 24 | Science Sequence |
| 3 | Introduction to Philosophy/LPHI 131 |
| 3 | Foundations of Theology/LTHE 101 |
| 3 | Literature Series/LENG |
| 3 | Fine Art Series/LFIN |
| <u>36</u> | |

SENIOR YEAR

| | |
|-----------|---------------------------------|
| 27 | Science Sequence |
| 3 | Senior Seminar/LBST 383 |
| 3 | LPHI 237 or any LTHE 300 course |
| 1 | Leadership Seminar |
| <u>34</u> | |

Students will be permitted to take other courses in substitution for any course listed above that they satisfactorily completed prior to admission into the Next Step program. Students are required to complete 7-19 credits in the Liberal Studies Core. Students may transfer courses equivalent to Foundations of Theology, Introduction to Philosophy, Literature Series and/or Fine Arts Series. Students must take the Leadership Seminar, the Theology/Philosophy III Series, and the Senior Seminar or approved capstone at Gannon.

The Science sequence must include a total of 60 credits of course work. A minimum of eight credits must be taken in Biology, Chemistry, and Physics, and a minimum of six credits must be taken in mathematics and earth science/environmental science. At least 24 credits must be earned in one of the following fields: Biology, Chemistry, Environmental Science, Mathematics, or approved technical area.

Six credits of the total of 60 credits of science course work may be earned prior to admission to this program.

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Admissions, Financial Aid Liaison
B.A. The Ohio State University
M.Ed. Gannon University

Patrick C. Washington, Senior
Enrollment Advisor
B.S. Gannon University

Margo Wolfe, Staff Instructor, English
Language and Global Training
B.S. Edinboro University
M.A. Gannon University
Ph.D. Walden University

Mission and Ministry

Rev. Michael T. Kesicki, Associate
Vice President for Mission and Ministry
B.S. Gannon University
S.T.B. St. Mary's Seminary and University
M.Div. St. Mary's Seminary and University

Allison Cyphert, Assistant Director
Center for Social Concerns and
Global Exploration
B.S. Bowling Green State University
M.Ed. Kent State University

Brent D. Heckman, Director,
Campus Ministry
B.S. University of Toledo
M.Div. St. John's University

Emily L. Muntean, Resident Campus
Minister/Retreat Coordinator
B.A. St. Edward's University
M.A. Boston College

Elizabeth C. Nawrocki, Assistant Director,
Campus Ministry
B.A. Wheeling Jesuit University
M.T.S. Loyola University Maryland

Sara J. H. Nesbitt, Program Coordinator and
Research Assistant
Center for Social Concerns and
Global Exploration
B.A. Thiel College
M.A. Gannon University

Rebecca M. Perry, Director, Center for
Social Concerns and Global Exploration
B.A. Gannon University
M.A. Ohio University

Office of Disability Services

Lisa R. Laird, Director, Office of Disability
Services, ADA/504 Coordinator
B.A. Edinboro University
M.A. Edinboro University

Office of Learning Abroad and International Academic Programs

Meagan Gania, Director, Learning Abroad
and International Academic Programs
B.A. Saint Mary's College
M.A. Gannon University

Planning and Finance

Carolyn Cartwright, Associate Director,
Human Resources
B.A. Mercyhurst University

Mary Beth Danowski, Assistant to the
Vice President for Planning and Finance,
and Coordinator for Risk Management and
Insurance Programs

Michael P. Dougherty, Director,
Enterprise Risk Management
B.S. Gannon University
M.B.A. Gannon University

Les Fetterman, Director, Campus Police
and Safety
B.A. Gannon University

Jon M. Habursky, Assistant Director,
Campus Police and Safety
A.S. Edinboro University

Angela Joyce, Assistant Director,
Student Accounts

Michelle Klemm, Grant Accountant
B.S. The Pennsylvania State University

Brenda Learn, Accountant
BSBA, Geneva College

Katie Leonard, Associate Vice President
for Finance
B.S. Gannon University
M.B.A. Gannon University

Natalie Rose, Director, Student Accounts
B.A. Gannon University

Trevor Schultz, Business Analyst*B.S. Pennsylvania State University***Bridget Seth, Purchasing Director***B.A. Mercyhurst University**M.Ed. Gannon University***Jeffrey Taylor, C.P.A., Contoller***B.A. Indiana University of Pennsylvania**M.B.A. Robert Morris University***Wendy Topel, Payroll Supervisor****Robin Murray-Williams, Executive Director,***Human Resources**B.S. Edinboro University**M.A. Indiana University of Pennsylvania*

**Student Development
and Engagement**

Christine Agnello, Counselor /*Staff Therapist**B.A. Gannon University**M.S. Gannon University***DeAnna Bryfogle, Resident Director,***Office of Residence Life**B.A. Bucknell University**M.S. Northeastern University***Angela Coustillac, Director, Leadership***Development and Campus Engagement**B.S. Gannon University**M.B.A. Gannon University***Alyson Eagle, Counselor/Staff Therapist***B.A. Penn State University –**The Behrend College**M.S. Gannon University***Kathleen M. Gausman, Associate Vice***President for Student Development**and Engagement**B.S. Villa Maria College**M.S. Gannon University***Jodi Giacomelli, Associate Director,***Student Counseling Services, Counseling**Psychologist, Counseling Services; Lecturer**in Psychology**B.A. Gannon University**M.S. Gannon University**Ph.D. Gannon University***Denise Golden, Director, Office of***Residence Life**B.A. Coastal Carolina University**M.A. The University of South Carolina**Ed.D. Texas A&M University – Commerce***Katie Grooms, Area Coordinator,***Office of Residence Life**B.A. Case Western Reserve University**M.Ed. University of South Carolina***Kristen Guballa, Resident Director,***Office of Residence Life**B.C.J. Tiffin University**M.O.L. Lourdes University***Samuel Hyman, Director, Waldron Campus***Center and Extended Operations**B.S. Mercyhurst University***Megan Loibl, Coordinator of Business***Operations, Office of Residence Life**B.A. University of Central Florida**M.A. University of Central Florida***Susan Majocka, Student Conduct Officer &***Special Initiatives**B.S. Robert Morris University**M.S. Gannon University***Heidi Noyes, Director Commuter Life***and REAP**B.S. Allegheny College**M.S. Gannon University***A'Darius Porter, Business Operations and***Auxiliary Development Specialist, Office of**Residence Life**B.S. Gannon University**M.B.A. Gannon University***Bryan Prior, Assistant Director of Student***Accountability and Prevention Education**(S.A.P.E.), Deputy Title IX Director,**Adjunct Professor**B.A. St. Bonaventure University**J.D. University of Pittsburgh***Denise Simon, Nurse, Health Center***B.S.N. Gannon University***Alexis Totleben, Assistant Director for***Fraternity and Sorority Life**B.A. Edinboro University of Pennsylvania**M.A. Edinboro University of Pennsylvania***Brigid Wilcox, Nurse, Health Center***A.D.N. Gannon University**B.A. Mercyhurst College*

Student Learning Commons

Elizabeth Kons, Director, Writing*and Research Center**B.A. Mercyhurst College**M.A. Gannon University*

Adam Nogaj, Director, STEM Center
B.S. State University of New York at Fredonia
M.S. Rochester Institute of Technology

Student Support Services (SSS/TRIO)

Chelsie Houghton, Advisor,
 Student Support Services
B.S. Kingston University London
M.S. Lancaster University
M.Ed. Penn State University

Laura Rhodes, Advisor,
 Student Support Services
B.A. Indiana University of Pennsylvania
M.A. Edinboro University

Dennis Williams, Director Student
 Support Services
B.A. Edinboro University
M.A. Edinboro University

University Advancement

John Bauer, Associate Director
 of Annual Giving
B.S. Pennsylvania State University

Barbara Beuscher, CFRE, Vice President
 for University Advancement
B.A. University of Wisconsin Oshkosh
M.B.A. University of Wisconsin Oshkosh

Lori Bly, Associate Director, Stewardship
 and Planned Giving
A.S. Pennsylvania State University,
the Behrend College
B.S. Pennsylvania State University,
the Behrend College

Almitra Clerkin, Associate Vice President
B.S. Gannon University
M.A. Gannon University

Anthony DiPasqua, Director of
 Constituent Engagement
B.A. Gannon University
M.A. Kent State University

Cathy Fresch, Director of Development
B.A. Hiram College
B.S.N. Thomas Jefferson University

Mark J. Gaeta, Coordinator of Capital
 Support and Athletics Liaison
B.S. Gannon University

Donna Green, Director of Sponsored
 Programs and Research
A.S. Gannon University
B.S. Gannon University
M.S. Gannon University

Jana Hunt, Associate Director of
 Advancement Services

Tammy Knox, Assistant to the VP
 for University Advancement

Karen McKenna, Proposal
 Development Specialist
A.S. Mercyhurst University
B.A. Gannon University

Judy Minichelli, Business Analyst
B.S. Gannon University
M.S. Case Western Reserve University

Allison Mosier, Associate Director,
 Alumni Engagement
B.S. University of Phoenix

Michaelyn Orlando, Associate Director,
 Research and Prospect Management
B.S. Gannon University

Kim Pfadt, Assistant Director, Alumni Data
A.S. Gannon University

Jordan Saeli, Annual Fund Coordinator
B.A. Edinboro University

Melanie Vadzemnieks, Associate Director,
 Donor Relations and Events
B.A. Gannon University
M.A. University of Pittsburgh

Bethany Wisinski, Information
 Data Assistant
B.A. Case Western Reserve University

University Marketing & Communications

Haley Figurski, Media Relations
 and Marketing Manager
B.S. Edinboro University

Michael Gorski, Webmaster
B.S. Allegheny College
M.B.A. Gannon University

Mallory Hedlund, Marketing
 and Communication Specialist
B.A. Gannon University

Laura Hinsdale, Marketing
 & Creative Specialist
A.S. Full Sail University

Matt King, Multimedia Specialist
B.A. Temple University

Andrew Lapiska, Creative and Brand Strategist
B.S. Mercyhurst University
M.B.A. Gannon University

Nicole Lossie, Marketing and Social Media Specialist
B.A. Gannon University

Raechel Miller, Marketing and C.H.A.O.S. Strategist
B.S. Slippery Rock University

Doug Oathout, Chief Marketing and Communications Officer
B.A. State University of New York at Buffalo

Brianna Rice, Marketing and Content Strategist
B.A. The Pennsylvania State University

FACULTY

Heather Adams, Associate Professor of Physician Assistant Program
B.S. University of Pittsburgh
M.P.A.S. Chatham College

Mahesh C. Aggarwal, Professor and Chairperson of Mechanical Engineering, Director of Mechanical Engineering Graduate Program
B.S. I.I.T. Kanpur, U.P. India
M.S. Marquette University
Ph.D. University of Michigan

Bernadette Agresti, Associate Teaching Professor of Legal Studies, University Ombudsman
B.A. Gannon University
M.S. Gannon University

Peter Agresti, Assistant Teaching Professor of Legal Studies & Pre-Law and History, Program Director for Legal Studies and Pre-Law Programs
B.A. University of Pittsburgh
J.D. University of Pittsburgh Law School

Jennifer R. Allen-Catellier, Assistant Professor of Communication and the Arts, Program Director for Strategic Communication
B.A. Mercyhurst University
M.A. Edinboro University
Ph.D. University at Buffalo

Carol Amann, Ph.D., RN, Assistant Professor
A.S.N. Villa Maria College
B.S.N. Pennsylvania State University
M.S.N. Gannon University
Ph.D. Oklahoma City University

Gregory M. Andraso, Professor and Associate Director of Biology
B.A. Hiram College
Ph.D. Indiana University

Quyen Aoh, Associate Professor of Biology
B.S. James Madison University
Ph.D. University of Virginia

Ki-Hwan G. Bae, Assistant Professor of Industrial and Robotics Engineering
B.S. Yonsei University
M.S. Purdue University
PhD Virginia Tech

Parris Baker, Assistant Professor of Social Work, Program Director of Social Work, Mortuary Science and Gerontology
B.A. Gannon University
M.S.W. Case Western Reserve University
Ph.D. University of Pittsburgh

Valerie Baker, Assistant Professor of Nursing
B.S. Gannon University
B.S.N. Villa Maria College
M.S.N. University of Pittsburgh

Stephanie Barnhizer, Assistant Teaching Professor of Philosophy
A.A. Northwestern Michigan College
B.A. Grand Valley University
M.A. Bowling Green State University

Carolyn G. Baugh, Associate Professor of History, Women's Studies Program Director
B.A. Duke University
M.A. University of Pennsylvania
Ph.D. University of Pennsylvania

LTC Michael P. Bentley, Professor of Military Science
B.S. Northern Arizona University
M.B.A. University of Phoenix
M.S. Naval War College

Gary Berringer, Assistant Professor of Nursing
B.S. Indiana University of Pennsylvania
B.S.N. Indiana University of Pennsylvania
M.S.N. University of Pennsylvania

Ria J. Betush, Associate Professor
of Chemistry

B.S. Grove City College

M.S. University of Rochester

Ph.D. University of Rochester

David T. Blaetz, Jr., Instructor of
Communication and the Arts

B.A. Gannon University

M.Ed. Gannon University

Mark C. Blair, Assistant Teaching Professor
of Computer and Information Science

B.A. Mercyhurst University

M.S. Gannon University

Jeffrey H. Bloodworth, Professor of History,
Co-Director of School of Public Service and
Global Affairs, Director of Public Service and
Global Affairs program

B.A. Missouri State University

M.A. Missouri State University

Ph.D. Ohio University

Ann M. Bomberger, Associate Professor
of English, Director of Honors Program

B.A. Allegheny College

Ph.D. State University of New York

at Stony Brook

Eric Brownlee, Associate Professor
of Sport Management and Marketing

B.S. Slippery Rock University

M.S. Slippery Rock University

Ph.D. University of Louisville

Amy Brzuz, Associate Professor and Program
Director of Occupational Therapy

B.S. Gannon University

O.T.D. Chatham University

Jeremy Christopher Cannell, Instructor
of Computer and Information Science,
Instructor of Foreign Languages

B.Sc. University of Surrey, Guildford, England

M.S.E.S. Gannon University

Natasha Camera, Assistant Teaching
Professor and Director of Clinical Education
of Physician Assistant Program

B.S. Gannon University

MPAS Gannon University

Kaylene Cartney, Instructor
of Respiratory Care

B.S. Boise State University

Mathew Caster, Instructor of

Physical Therapy

B.S. University of Pittsburgh

DPT Chatham University

Renee M. Castrigano, Assistant Professor
of Accounting

B.S. John Carroll University

M.S. Cleveland State University

D.B.A. Cleveland State University

T. Andrew Caswell, Associate Professor
of Psychology

B.S. Bethany College

M.A. Marshall University

Ph.D. University of South Florida

Michael J. Caulfield, Professor
of Mathematics

B.A. Mount St. Mary's College

M.A. University of Maryland

Ph.D. West Virginia University

Kimberly Cavanagh, DHSc, PA-C, Associate
Professor and Chairperson,
Physician Assistant Program

B.S. Siena College

P.A. Alleghany University of the Health Sciences

(now Drexel University)

MPAS University of Nebraska Medical Center

DHSc Nova Southeastern University

Christine Cedzo, Assistant Professor
of Mathematics

B.S. Gannon University

M.A. University of Arizona

Betty Jo Chitester, Assistant Professor

of Chemistry

B.A. Lock Haven University of Pennsylvania

M.S. Youngstown State University

Ph.D. Kent State University

Lindsay Church, Instructor and Academic
Fieldwork Coordinator of Occupational

Therapy

B.S. Gannon University

M.S. Gannon University

Gerald C. Clark, Jr., Associate Professor
of Criminal Justice

B.A. Edinboro University

M.A. C.U.N.Y. John Jay College

of Criminal Justice

Ph.D. Capella University

Rev. Shawn Jeffrey Clerkin, Associate
Professor and Co-Director of School

Communications and the Arts

B.A. Gannon University

M.F.A. Virginia Commonwealth University

M.Div. Bexley Hall Seminary

Adrienne Colabuno, Assistant Teaching Professor and Clinical Coordinator, Physician Assistant Department
B.S. Gannon University
MPAS Gannon University

Nicholas Conklin, Associate Professor and Chairperson of Physics
B.S. Grove City College
Ph.D. Pennsylvania State University

Diann Cooper, Instructor of Nursing
B.S.N. Gannon University
M.S.N. Edinboro University of Pennsylvania

Stephen F. Corsi, Assistant Teaching Professor of Education, Coordinator of Graduate Education Programs
B.S. Indiana University of Pennsylvania
M.M. Duquesne University

George G. Couch, Assistant Teaching Professor of Healthcare Management, Director of Graduate Healthcare Administration Program
B.A. Bethany College
M.B.A. West Virginia University
D.H.A. Medical University of South Carolina

Carmella Covell, Assistant Professor of Education
B.A. Clarion University of Pennsylvania
M.A. Indiana University of Pennsylvania
Ed.D. Slippery Rock University

Ronald Cuzzola, Associate Teaching Professor and Clinical Coordinator of Radiologic Sciences
B.S. Gannon University
M.S. Mercyhurst College

Prasad S. Dalvi, Assistant Professor of Biology
M.D. Donetsk State Medical Institute/University
Ph.D. University of Toronto

Matthew Darling, Assistant Professor of English
B.A. University of Kentucky
M.A. Michigan State University
Ph.D. Marquette University

Eric Dart, Assistant Professor of Theology, Program Director of Pastoral Studies, Chairperson Theology Department
B.A. Gannon University
M.A. Gannon University
Ph.D. Duquesne University

Christopher Dempsey, Assistant Professor of Biology, Program Director of Freshwater and Marine Biology
B.S. Lycoming College
M.S. Lehigh University
Ph.D. Lehigh University

Geoffrey D. Dietz, Professor and Chairperson of Mathematics
B.S. University of Dayton
Ph.D. University of Michigan

Derek F. DiMatteo, Assistant Teaching Professor of English
B.A. Wesleyan University
M.A.T. Tufts University
M.A. Indiana University Bloomington
Ph.D. Indiana University Bloomington

Lindsey J. DiTirro, Assistant Professor of Communication Arts
B.A. University of Dayton
M.A. University of Dayton
Ph.D. Purdue University

Robert J. Dobiesz, Assistant Professor, University Archivist, and Assistant Director, Nash Library
B.A. Gannon University
M.L.S. University of Pittsburgh

Amy L. Doolan, Associate Dean of the College of Engineering and Business
B.S. Gannon University
M.B.A. Gannon University
D.B.A. Anderson University

Sarah J. Ewing, Associate Professor of Biology, Dean of the Morosky College of Health Professions and Sciences
B.S. Pennsylvania State University
Ph.D. North Carolina State University

Tina Fitzgerald, Instructor of Respiratory Care
B.S., Slippery Rock University

Tania S. Flink, Assistant Professor of Sport and Exercise Science
B.S. University of Illinois at Urbana
M.S. University of Illinois at Urbana
Ph.D. Arizona State University

Renee Foradori, Instructor of Biology
B.S. Indiana University of Pennsylvania
M.S. University of Massachusetts

Leighann S. Forbes, Associate Professor of Education, Associate Dean for Faculty and Development College of Humanities, Education and Social Sciences

*B.S. Edinboro University of Pennsylvania
M.Ed. Edinboro University of Pennsylvania
Ed.D. Duquesne University*

Matthew Gacura, Assistant Professor of Biology

*B.S. Youngstown State University
M.S. Youngstown State University
Ph.D. Kent State University*

Carolyn Galleher, Assistant Professor of Physical Therapy, Program Director Pre-Physical Therapy, Associate Director of Physical Therapy

*B.S. St. Louis University
M.H.S. University of Indianapolis
DHS. University of Indianapolis*

Mike Ganger, Professor of Biology

*B.S. Siena Heights University
M.S. University of New Hampshire
Ph.D. University of New Hampshire*

Frank P. Garland, Assistant Professor of Communication and the Arts, Director of Journalism Communication Program

*B.A. San Francisco State University
M.S. West Virginia University*

Elizabeth A. Garloch, Instructor and Systems Librarian

*B.A. Edinboro University
M.S.L.S. Clarion University*

Lauren M. Garski, Assistant Teaching Professor of English

*B.A. Walsh University
M.A. University of North Carolina at Charlotte
Ph.D. Bowling Green State University*

Lorraine Gdanetz, Instructor of Nursing

*B.S.N. Pennsylvania State University,
The Behrend College
M.S.N. Mansfield University*

David J. Gee, Associate Professor of Mechanical Engineering

*B.S. University of California at Davis
M.S. Boston University
Ph.D. Boston University*

Mary Carol Gensheimer, Assistant Professor and Co-Director of the School of Communication and the Arts

*B.S. Clarion University of Pennsylvania
M.S. Clarion University of Pennsylvania*

Shreelina Ghosh, Assistant Professor of English

*B.A. University of Calcutta, India
M.A. University of Calcutta, India
Ph.D. Michigan State University*

Terry Giles, Professor of Theology

*B.A. Grand Rapids Baptist College
M.Div. Grand Rapids Baptist Seminary
Th.M. Grand Rapids Baptist Seminary
Ph.D. Michigan State University*

Janna Gonwa, Assistant Professor of Theology

*B.A. University of North Carolina
M.Div. Regent University
M.A. Tufts University
M.A. University of Chicago School of Divinity*

Kristen Grippe, Associate Professor of Physician Assistant Program

*B.S. Gannon University
MPAS Gannon University*

Lori Grossholz, Assistant Professor and Technical Services Librarian

*B.A. Edinboro University of Pennsylvania
M.S.L.S. Clarion University of Pennsylvania*

Beth Gustafson, Assistant Professor of Physical Therapy

*B.S. Quinnipiac College
M.S.Ed. University of Dayton
DHSc University of Indianapolis*

Melanie Gustafson-Ropski, Associate Professor of Biology, Director of Pre-Health Advising Program, Director of Medical Laboratory Science Program

*B.S. Montana State University
M.A. Indiana State University*

William P. Haggerty, Associate Professor of Philosophy

*B.A. University of Scranton
M.A. Boston College
Ph.D. Boston College*

William Hallock, Assistant Professor and Program Director Organizational Learning and Leadership, Co-Director of Public Service and Global Affairs

*B.S. Northwestern Missouri State
M.S. Northwestern Missouri State
Ed.D. University of Kansas*

Julie Hartmann, Assistant Professor of Physical Therapy, Director of Clinical Education

*B.S. Marquette University
M.Ed. Pennsylvania State University
D.S.C. University of Maryland*

Jessica L. Hartnett, Associate Professor
of Psychology

B.S. Pennsylvania State University

M.A. Northern Illinois University

Ph.D. Northern Illinois University

Bernadette Hattjar, Associate Professor
of Occupational Therapy

B.A. Edinboro University of Pennsylvania

M.Ed. The Pennsylvania State University

Dr.OT. Nova Southeastern University

Richard P. Hauser, Associate Professor
of Finance

B.S. Purdue University

M.B.A. California Coast University

Ph.D. Kent State University

Julia Hawkins, Assistant Professor
of Occupational Therapy

B.S.O.T. University of Scranton

O.T.D. Chatham University

Carol A. Hayes, Associate Teaching
Professor of English

B.A. Oakland University

M.F.A. Vermont College

Patrick Headley, Associate Professor
of Mathematics

B.S. Case Western Reserve University

Ph.D. University of Michigan

Matthew S. Heerboth, Associate Professor
of Chemistry

B.S. Truman State University

Ph.D. Florida State University

Joshua Henry, Instructor
of Respiratory Care

B.S. Gannon University

Kurt E. Hersch, Assistant Teaching
Professor of Entrepreneurship

B.S. Pennsylvania State University

M.B.A. New York University

Perry Hilburn, Assistant Teaching
Professor of Physics

B.S. Gannon University

M.S. Gannon University

Alexandra L. Holbrook, Assistant
Teaching Professor of History

B.A. University of Guelph

M.A. McMaster University

Ph.D. McMaster University

Terry S. Holmes, Assistant Professor
of Accounting

B.S. University of Toledo

M.B.A. University of Toledo

J.D. University of Toledo

Michelle M. Homan, Professor and Chair
of Environmental Science and Engineering,
Director of Graduate Environmental Health
and Engineering Program

B.S. Pennsylvania State University

M.S. State University of New York at Albany

Ph.D. University of Michigan

Blake Hoppe, Assistant Professor and
Associate Director of Physician Assistant
Program

B.S. Edinboro University

M.S. Lake Erie College of Medicine

D.O. Lake Erie College of Medicine

David Horne, Assistant Professor
of Physics

Bsc. University of Hertfordshire

M.S. University of Toledo

Ph.D. University of Toledo

Angela Howell, Assistant Teaching Professor
and Theatre Technical Director

B.A. Gannon University

M.F.A. University of North Carolina Greensboro

Xiaoxu Ji, Assistant Professor of
Biomedical Engineering

*B.S. Beijing Information Science and Technology
University*

M.S. Lakehead University

Ph.D. Western University

Richard W. Johnson, Associate Professor
of Physical Therapy, Ruskin Campus

B.S. Cornell University

M.A. New York University

D.Ed. Dowling College

Dawn Joy, Assistant Professor of Nursing,
Director of Villa Maria School of Nursing

B.S.N. Villa Maria College

M.S.N. West Virginia University

Ph.D. Gannon University

Mark A. Jubulis, Associate Professor
of Political Science Program

B.A. Canisius College

M.A. University of Notre Dame

Ph.D. University of Notre Dame

Yong-Kyu Jung, Associate Professor of
Electrical and Computer Engineering

B.S. Korea University

M.S. Georgia Institute of Technology

Ph.D. Georgia Institute of Technology

Celene M. Kalivoda, Assistant Professor
in Business Administration

*B.S. Pennsylvania State University,
the Behrend College*

M.B.A. Gannon University

D.B.A., Liberty University

Varun Kasaraneni, Assistant Professor of
Environmental Science and Engineering

B.S. Acharya Nagarjuna University

M.S. Youngstown State University

Ph.D. University of Rhode Island

Aaron K. Kerr, Associate Professor and
Chairperson, Department of Philosophy

B.A. Otterbein College

M.Div. Garrett-Evangelical

Theological Seminary

M.T.S. Garrett-Evangelical

Theological Seminary

Ph.D. Duquesne University

Bruce A. Kibler, Assistant Professor
of Management

B.A. University of Maryland

M.A.S. John Hopkins University

Ph.D. Matej Bel University

Hwidong Kim, Associate Professor of
Environmental Science and Engineering

B.S. Inha University

M.S. Inha University

Ph.D. University of Florida

Douglas J. King, Professor of English

B.A. State University of New York at Buffalo

M.A. George Washington University

Ph.D. Duquesne University

Barbara Kitcey, Instructor of Learning
Disabilities Program

B.S. Edinboro University of Pennsylvania

Reading Specialist Certification, Edinboro

University of Pennsylvania

Suzanne Kitts, Associate Professor of Sport
and Exercise Science, Program Director of
Nutrition & Human Performance

B.S. The Pennsylvania State University

M.A. Edinboro University of Pennsylvania

Ph.D. Walden University

Elisa M. Konieczko, Professor of Biology

B.S. Gannon University

Ph.D. University of Pittsburgh School of Medicine

Martha Kosir, Professor and Director of
Global Languages and Cultures Program

B.A. Duquesne University

M.A. University of Notre Dame

Ph.D. Vanderbilt University

Keith Krise, Assistant Professor
of Chemistry

B.S. Gannon University

Ph.D. The Pennsylvania State University

Stephanie Kubiak, Instructor of
Occupational Therapy

B.A. Ohio State University

M.S. Gannon University

Michelle Kuns, Instructor of Biology

B.S. University of Minnesota

M.S. University of Minnesota – Duluth

Joseph T. Kuvshnikov, Visiting Faculty
in Business Administration

B.S. Pennsylvania State University

M.B.A. Pennsylvania State University

Ph.D. Gannon University

Timothy Laher, Associate Professor
of Chemistry

B.S. Vanderbilt University

Ph.D. University of Mississippi

Michael J. Latzer, Associate Professor
of Philosophy

B.A. McMaster University

M.A. University of Ottawa

Ph.D. University of Toronto

Nicole Lavery, Assistant Professor
of Occupational Therapy

B.S. Gannon University

M.S. Gannon University

O.T.D. Chatham University

Wookwon Lee, Professor of Electrical
and Computer Engineering Program

B.S. Inha University, Korea

M.S. George Washington University

D.Sc. George Washington University

Kristine S. Legters, Associate Professor
and Chairperson of Physical Therapy

B.A. Northwestern College

B.S. S.U.N.Y. Upstate Medical Center

M.S. Gannon University

*D.Sc. Rocky Mountain University of Health
Professions*

Ryan Leonard, Assistant Professor
of Psychology

B.A. Louisiana State University

B.S. Louisiana State University

M.S. University of Louisiana – Lafayette

Ph.D. University of Alabama

David R. LeVan, Associate Professor
of Occupational Therapy

B.S. Gannon University

M.Ed. Gannon University

D.H.S. University of Indianapolis

Sara Lichtenwalter, Associate Professor
of Social Work

B.A. LaRoche College

M.S.W. University of Pittsburgh

Ph.D. University of Pittsburgh

Richard G. Ligo, Assistant Professor
of Mathematics

B.S. Westminster College

M.S. University of Iowa

Ph.D. University of Iowa

Lori Lindley, Associate Professor of
Psychology and Dean of College of
Humanities, Education and Social Sciences

B.A. University of Notre Dame

M.S. Iowa State University

Ph.D. Iowa State University

He Liu, Associate Professor and
Chairperson of Biology

B.S. University of Science and

Technology of China

Ph.D. The University of Texas at Austin

Yunkai Liu, Professor of Computer and
Information Science

B.S. University of Science and Technology (China)

M.S. University of Science and Technology
(China)

M.S. University of Illinois at Chicago

Ph.D. West Virginia University

Emmett J. Lombard, Professor and
Outreach Librarian

B.A. Pembroke State University

M.S.L.S. Clarion University

M.A. Gannon University

Karen Lumia, Assistant Professor
of Nursing

B.S.N. D'Youville College

M.S. State University of New York at Buffalo

Melissa Lund, Assistant Professor
of Nursing

B.S.N. Gannon University

M.S.N. Gannon University

Dianna Lunsford, Assistant Professor of
Occupational Therapy, Ruskin Campus

B.S. Eastern Michigan University

M.Ed. Grand Valley State University

OTD Rocky Mountain University

Julia M. Mack, Assistant Professor and
Director of Criminal Justice Program,
Program Director of Sociology, Associate
Dean for Curriculum and Student Affairs
College of Humanities, Education and
Social Sciences

B.S. Saint Francis University

M.A. Bowling Green State University

Ph.D. Bowling Green State University

Donald MacKellar, Assistant Teaching
Professor of Electrical and Computer
Engineering

B.S. New Mexico State University

M.S. Gannon University

Kate MacPhedran, Assistant Professor
of Physical Therapy

B.S. Gannon University

M.P.T. Gannon University

Ph.D. Western Michigan University

Mahboobe Mahdavi, Assistant Professor
of Mechanical Engineering

B.Sc. University of Tehran

M.Sc. Amirkabir University of Technology

Ph.D. Temple University

Christopher N. Magno, Associate Professor
of Criminal Justice, Chairperson of Criminal
Justice & Social Work Department

B.S. Philippine Normal University

M.A. University of the Philippines

Ph.D. Indiana University Bloomington

Jennifer D. Majewski, Associate Teaching
Professor of Physician Assistant Program

B.S. Grove City College

M.S. Arcadia University

Fong-Kiong Mak, Professor of Electrical
and Computer Engineering

B.S.E.E. West Virginia University

M.S. University of Illinois at

Urbana-Champaign

Ph.D. University of Illinois at

Urbana-Champaign

Antonio Malito, Instructor Nursing

B.S.N. Gannon University

M.S.N. Indiana University of Pennsylvania

Carlos Mamani, Associate Professor
of Foreign Languages

B.A. Brown University

M.A. University of Cincinnati

Ph.D. University of Cincinnati

Alaina Manchester, Assistant Teaching Professor of Communication and the Arts, Director of Performing and Visual Arts
B.A. Gannon University
M.S. University of Florida

Patricia A. Marshall, Assistant Professor of Nursing
B.S.N. University of Wisconsin-Milwaukee
M.S.N. California State University at Long Beach

Rev. T. Shane Mathew, Teaching Instructor of Theology, Director of Interdisciplinary Studies Program
B.S. Gannon University
M.Div. St. Mary's Seminary and University
S.T.B. St. Mary's Seminary and University
M.Ed. Gannon University

Lawrence R. Maxted, Assistant Professor and Collection Development Librarian
A.B. Oberlin College
A.M. University of Chicago

William P. McAndrew, Assistant Professor of Economics, Chair of Financial & Economic Analysis
B.S. Pennsylvania State University, the Behrend College
Ph.D. West Virginia University

Kenneth G. McCurdy, Associate Professor of Clinical Mental Health Counseling
B.A. Clarion University of Pennsylvania
M.S. University of Scranton
Ph.D. Ohio University

Stephanie McElhaney, Instructor Nursing
B.S.N. Gannon University
M.S.N. Gannon University

Patricia McMahan, Assistant Professor Nursing
B.S.N. Villa Maria College
M.S.N. University of Pennsylvania
Ph.D. Duquesne University

Amber Mecca, Instructor Nursing
B.S.N. Waynesburg University
M.S.N. Gannon University
D.N.P. Gannon University

Jill Merritt, Associate Professor of Education
B.S. Edinboro University of Pennsylvania
M.Ed. Youngstown State University
Ph.D. Capella University

Michael J. Messina, Professor of Marketing, Director of Graduate Business Studies
B.S. John Carroll University
M.B.A. Youngstown State University
Ph.D. Kent State University

Robert Michael, Associate Professor of Mechanical Engineering
B.S. University of Akron
M.S. Case Western Reserve University
Ph.D. Case Western Reserve University

Holly Mihaly, Instructor Radiological Sciences
B.S. Gannon University
M.Ed. Gannon University

Elizabeth Miller, Instructor in Sport and Exercise Science
B.S. Manchester University
M.S. Gannon University

Russell L. Minton, Associate Professor and Associate Director of Biology
B.S. University of Wisconsin-Parkside
M.S. University of Wisconsin-Parkside
Ph.D. University of Alabama

Janet Minzenberger, Instructor of Nursing, Associate Director of Villa Maria School of Nursing
B.S.N. Edinboro University
M.S.N. Indiana State University

Fr. Jason A. Mitchell, Assistant Professor of Philosophy
Ph.L. Pontifical Athenaeum Regina Apostolorum
Ph.D. Pontifical Athenaeum Regina Apostolorum
S.T.L. Pontifical Athenaeum Regina Apostolorum

Rebecca Mokris, Assistant Professor of Sport & Exercise Science and Program Director of Athletic Training
B.S. Indiana University
M.S. West Virginia University
M.S. California University of PA
D.Ed. Indiana University of PA

Richard W. Moodey, Assistant Professor of Sociology
B.A. Xavier University
M.A. University of Chicago
Ph.D. University of Chicago

Michelle Moore (Shellie), Assistant Professor and Program Director of Respiratory Care
B.S. Boise State University
M.Ed. Edinboro University

Nancy Morris, Assistant Professor of Education

*B.S. Gannon University
M.S. University of Akron
M.P.A. Gannon University
Ph.D. Gannon University*

J. David Mosinski, Associate Professor, Sport & Exercise Science

*B.S. Gannon University
Ph.D. Case Western Reserve University*

Kaustav Mukherjee, Assistant Professor of English

*B.A. Dinabandhu Andrews College
M.A. Calcutta University
Ph.D. Michigan State University*

Blaise A. Nicolia, Assistant Teaching Professor of Accounting

*B.B.A. Niagara University
M.B.A. State University of New York at Buffalo*

Lisa Nogaj, Associate Professor and Chairperson of Chemistry, Program Director of Biochemistry, Program Director of Chemical Engineering

*B.S. State University of New York at Fredonia
M.S. University of Rochester
Ph.D. University of Rochester*

David A. Nordquest, Assistant Professor of Philosophy

*B.A. Oberlin College
M.A. Duke University
Ph.D. Duke University*

Joshua C. Nwokeji, Assistant Professor of Computer and Information Science

*B.Eng. Namdi Azikiwe University, Nigeria
M.Sc. Middlesex University, London
Ph.D. Middlesex University, London*

Ikechukwu P. Ohu, Associate Professor of Industrial and Robotics Engineering, Program Director of Industrial and Robotics Engineering

*B.Eng. Ambrose Alli University
M.S. Southern Illinois University
Ph.D. Southern Illinois University*

Anne O'Neill, Associate Teaching Professor of Communication and the Arts, Director of Advertising Communication and Public Relations programs, Coordinator of the Speech program

*B.A. Mercyhurst College
M.A. Edinboro University of Pennsylvania*

Jacalyn Oravec, Instructor of Respiratory Care, Polysomnography

*B.S. Pima Medical Institute
MPA. Grand Canyon University*

Michael J. Panza, Professor of Mechanical Engineering

*B.M.E. Gannon University
M.S. Gannon University
Ph.D. University at Buffalo, State University of New York*

Edward Phillips, Professor of Biology

*B.S. Clarion University
M.S. Clarion University
Ph.D. University of Arkansas*

Davide Piovesan, Professor of Biomedical Engineering, Chair of the Department of Biomedical, Industrial and Systems Engineering

*M.S. University of Padua
Ph.D. University of Padua*

Dominic Prianti, Assistant Teaching Professor of Philosophy

*A.A. Suffolk County Community College
B.A. State University of New York
M.A. North Illinois University*

David Prier, Professor of Mathematics

*B.S. University of Dayton
M.S. Auburn University
Ph.D. Auburn University*

Karen Probst, Assistant Teaching Professor

*B.S. Gannon University
M.S. Gannon University
O.T.D. Gannon University*

Duane Prokop, Assistant Professor of Marketing; Chairperson of the Department of Market-Focused Systems and Analytics; Chairperson of the Department of Operational Systems

*B.S. Youngstown State University
M.B.A. Youngstown State University
D.S.L. Regent University*

Lisa Quinn, Associate Professor of Nursing, Associate Director of Villa Maria School of Nursing

*B.S.N. Villa Maria College
M.S.N. Edinboro University of Pennsylvania
Ph.D. Kent State University*

John D. Ranney, Assistant Professor of Psychology

*B.A. Northwestern College
M.A. University of Northern Colorado
M.S. North Dakota State University
Ph.D. North Dakota State University*

Robert S. Rawding, Professor of Biology
B.S. Stonehill College
Ph.D. University of Oklahoma

Tania C. Reis, Assistant Professor of
 Organizational Learning & Leadership
B.A. Eastern Michigan University
M.S. Teachers College Columbia University
Ph.D. University of Nebraska – Lincoln

Suzanne Richard, Professor of History
 and Theology
B.A. Gannon University
Ph.D. Johns Hopkins University

Courtney Roca, Instructor of
 Physical Therapy

Steven J. Ropski, Professor of Biology
B.S. Gannon University
Ph.D. Indiana State University

Luke Rosielle, Associate Professor
 of Psychology, Program Director;
 Undergraduate Psychology, Chairperson of
 Psychology and Counseling Department
B.S. Iowa State University
M.S. Iowa State University
Ph.D. Iowa State University

M. Garrett Roth, Assistant Professor
 of Economics
B.S. Lehigh University
M.S. Lehigh University
Ph.D. State University of New York
at Binghamton

Michele Roth-Kauffman, Professor and
 Program Director of Developing Physician
 Assistant Program, Ruskin Campus
B.S. Saint Francis College
M.P.A.S. The University of Nebraska
Medical Center
J.D. Duquesne University

Laura E. Rutland, Associate Professor and
 Chairperson of English Department
B.A. Emory University
M.A. Georgia State University
Ph.D. University of Tennessee

Christine Saber, Assistant Professor
 of Chemistry
B.S. Wheeling Jesuit University
Ph.D. Virginia Commonwealth University

Anjali Sahay, Associate Professor and
 Program Director of Political Science
B.A. Delhi University
M.A. Delhi University
Ph.D. Old Dominion University

Sreela Sasi, Professor of Computer
 and Information Science
B.S. University of Kerala, India
M.S. University of Idaho
Ph.D. Wayne State University

Shannon Scully, Instructor
B.S.N. Gannon University
M.S.N. Duquesne University

Lisabeth Searing, Assistant
 Professor Nursing
B.S.N. Case Western University
M.S.N. University of Illinois at Chicago
Ph.D. University of Illinois at Chicago

Donna Skelly, Assistant Professor
 of Physical Therapy
B.S. University of Pittsburgh
M.S. University of Pittsburgh
Ph.D. Nova Southeastern University

David J. Smith, Instructor of Risk
 Management and Insurance
B.A. Gannon University
M.S. The American College

Kristen Snarks, Assistant Professor
 of Physical Therapy
B.S. Ithaca College
M.H.S. University of Indianapolis
Ph.D. Rocky Mountain University
of Health Professions

Brenda Snyder, Instructor Nursing
B.S.N. York College
M.S.N. York College
D.N.P. Case Western University

Richard D. Stachel, Assistant Professor
 of Healthcare Management
B.A. Duquesne University
M.B.A. Point Park University
D.Sc. Robert Morris University

Natalie Stano, Assistant Professor in
 Chemistry
B.S. University of Dayton
M.S. Ohio State University
Ph.D. University of Medicine and
Dentistry of New Jersey, Robert Wood Johnson
Medical School

Mackenzie Starns, Assistant Professor
 and Clinical Coordinator of Physician
 Assistant Department
B.S. Baldwin-Wallace College
MHS Drexel University

Kory Stauffer, Professor of Sport & Exercise Science, Program Director of Master in Sport & Exercise Science Graduate Program
B.S. Ursinus College
M.S. University of Pittsburgh
Ph.D. University of Pittsburgh

Scott Steinbrink, Associate Professor of Mechanical Engineering
B.S. University of Colorado
M.S. Auburn University
Ph.D. Virginia Polytechnic Institute and State University

Sofia T. Stepanyan, Assistant Professor of Psychology
B.A. University of California, Los Angeles
M.A. University of California, Riverside

Suzanne Sturdivant, Associate Teaching Professor and Program Director of Radiological Sciences
B.S. Gannon University
M.Ed. Gannon University

Ramakrishnan Sundaram, Professor of Electrical and Computer Engineering
B.S. Indian Institute of Technology, New Delhi
M.S. Massachusetts Institute of Technology
Ph.D. Purdue University

Weslene Tanner Tallmadge, Professor of Chemistry
B.A. Washington & Jefferson College
Ph.D. University of Pittsburgh

Mei-Huei Tang, Associate Professor of Computer and Information Science
B.A. National Cheng Chi University
M.S. State University of New York
Ph.D. State University of New York

Saeed Tiari, Associate Professor of Biomedical Engineering
B.S. University of Tehran
M.S. Amirkabir University of Technology
Ph.D. Temple University

Hamid Torab, Professor of Mechanical Engineering
B.S. University of Tehran
M.S. University of Michigan
Ph.D. University of Michigan

Barbara M. Townsend, Associate Teaching Professor of Psychology
B.S. Pennsylvania State University
M.S. Gannon University

Jonathan Ulrich, Instructor of Physical Therapy
B.S. Northeastern University
MS Northeastern University
DPT Shenandoah University

Mary C. Vagula, Professor of Biology
M.Sc. Osmania University, India
Ph.D. Osmania University, India

Kristin Anne Valdes, Assistant Professor of Occupational Therapy, Ruskin Campus
B.S. Florida International University
Dr.OT Rocky Mountain University of Health Professions

Gary Vanderlaan, Assistant Professor of Biology
B.S. Truman State University
Ph.D. University of Missouri–Columbia

Karinna M. Vernaza, Professor of Mechanical Engineering, Interim Dean of the College of Engineering and Business
B.S. United States Merchant Marine Academy
M.S. University of Notre Dame
Ph.D. University of Notre Dame

John M. Vohlidka, Associate Professor of History
B.A. Montclair State College
M.A. Northeast Missouri State University
Ph.D. University of Akron

Xiangjing (Emma) Wei, Assistant Professor of Risk Management and Insurance
B.S. University of International Business and Economics
M.S. Graduate School of People's Bank of China
M.A. Georgia State University
Ph.D. Georgia State University

Deborah West, Associate Professor and Reference and Instruction Librarian
A.S. Jamestown Community College
B.A. State University of New York at Albany
M.L.S. State University of New York at Albany

Janice M. Whiteman, Associate Teaching Professor of Education, Director School of Education, Coordinator of Clinical Experiences
B.A. Saint Francis College
M.Ed. Gannon University

Jason P. Wick, Teaching Instructor of Criminal Justice
B.S. Indiana University
M.S. West Virginia University

Kathleen Williams, Instructor of Athletic Training and Sport and Exercise Science
B.S. Mercyhurst University
M.A. Edinboro University of Pennsylvania

Jason Willow, Assistant Professor and Chairperson of Sport and Exercise Science
B.A. Edinboro University of Pennsylvania
M.S. Miami University
Ph.D. The Pennsylvania State University

Rebecca A. Willow, Associate Professor of Clinical Mental Health Counseling, Program Director of Clinical Mental Health Counseling
B.A. Allegheny College
M.A. Bowling Green State University
MA. Edinboro University of Pennsylvania
Ed.D. Duquesne University

Megan Woller, Assistant Professor of Communication and the Arts, Director of Liberal Studies
B.M. Saint Mary's College
M.M. University of Illinois
Urbana-Champaign
Ph.D. University of Illinois
Urbana-Champaign

Rev. Casimir J. Wozniak, Assistant Professor of Theology
B.A. Saint Bonaventure University
M.A. Gannon University
M.Div. Christ the King Seminary
S.T.L. Saint Paul University
Ph.D. Duquesne University

Theodore Yeshion, Teaching Professor of Criminal Justice, Director of Criminalistics Program
B.S. York College of the City University of New York
M.S. The George Washington University
Ph.D. State University of New York at Buffalo

Jinhee Yoo, Assistant Professor of Sport Management and Marketing
B.A. Kangwon National University
M.A. Kangwon National University
Ph.D. University of Minnesota

Mengzhong Zhang, Associate Professor of Public Administration and Program Director, Public Administration
B.S. Lanzhou University, China
M.L. Renmin University of China
Ph.D. Rutgers University

Lin Zhao, Professor and Chair of Electrical and Computer Engineering, Director of Graduate Electrical and Computer Engineering Program

B.Sc. Shandong University, China
M.Sc. Shandong University
Ph.D. University of Western Ontario, Canada

Michelle M. Zimmerman, Assistant Teaching Professor in Graduate Business Studies, and Associate Director of Graduate Business Studies
B.S. Gannon University
M.A. Gannon University
Ph.D. University of Akron

ADJUNCT FACULTY

Jillian Abata, Instructor Nursing
B.S.N. Gannon University
M.S.N. Walden University

Catherine Amick, Lecturer in English
B.A. Pennsylvania State University
M. A. Pennsylvania State University

Rosemary Arant, Lecturer in Graduate Business Studies
B.S. Ohio State University
M.B.A. Indiana Wesleyan University

Harold G. Ashcroft, Medical Director, Conemaugh School of Medical Technology
M.D. West Virginia University

Tyler Babcock, Instructor Nursing
B.S.N. Gannon University
M.S.N. Carlo University

Sheldon T. Bailey, Lecturer in Physics and IRE
BS Penn State Erie, The Behrend College
MS The Ohio State University
PhD The Ohio State University

Pamela Baldwin, Lecturer in Education
A.A. Illinois Central College
B.S. Gannon University

Mike Beiter, Lecturer in Computer and Information Science
B.A. Pennsylvania State University

Charles A. Bennett, Lecturer in Business Administration
B.A. St. Francis College
M.A. Fordham University

Dana Bennett, Lecturer in Communication and the Arts and Director, Gannon Concert Band

B.A. State University of New York (SUNY) at Fredonia

M.A. Ithaca College

Edward J. Betza, Lecturer in Business Administration and Sociology

B.A. Pennsylvania State University

J.D. University of Wisconsin Law School

Ryan Bookhamer, Lecturer in Industrial and Robotics Engineering

B.Tech. Art Institute of Philadelphia

M.I.D. Pratt Institute

M.Ed. Mercyhurst University

Tinukwa Boulder, Instructor in Computer and Information Science

B.A. Leeds Trinity College

M.S.T. Mississippi State University

Ph.D. Mississippi State University

Michael A. Bova, Lecturer in Business Administration, Environmental Science & Engineering

B.S. Indiana University of Pennsylvania

M.B.A. University of Hartford

Linda Brown, Lecturer in Foreign Language

B.A. Gannon University

M.A. Edinboro University

Karen Bukowski, Lecturer in Business Administration

B.A. Gannon University

M.P.A. Gannon University

Jean Bulmer, Instructor Nursing

B.S.N. University of Pennsylvania

M.S.N. University of Pennsylvania

D.N.P. Case Western Reserve University

Cleveland

Brian Camodeca

B.S. Mercyhurst College

M.S. Gannon University

Michele Campbell, Lecturer in Education

B.A. Lake Erie College for Women

M.S. Gannon University

Ed.D. Indiana University of Pennsylvania

Jim Caputo, Lecturer in Physician Assistant

B.S. University of Pittsburgh

Ph.D. University of Pittsburgh

Erik D. Christensen, Lecturer in

Criminal Justice

B.A. Edinboro University of Pennsylvania

Danielle Clark, Lecturer in Psychology

B.A. State University of New York

M.A. Edinboro University

John Coffman, Lecturer in Computer and Information Science

B.A. Duquesne University

M.Ed. Gannon University

Lori A. Coleman, Lecturer in Biology

B.S. Marquette University

M.S. Gannon University

David J. Conde, Lecturer in Criminal Justice

B.A. Gannon University

Veronica Connor, Lecturer in Education

B.A. Gannon University

M. Ed. Gannon University

Timothy E. Coppock, Lecturer of Clinical Mental Health Counseling

B.A. Earlham College

M.Div. United Theological Seminary

M.A. Bowling Green State University

Ph.D. The University of Toledo

Tracy L. Couse, Lecturer in Nursing

B.S.N. Gannon University

M.S.N. University of Phoenix

M.B.A. University of Phoenix

Hon. Stephanie Domitrovich, Lecturer in Legal Studies

B.A. Carlow College

J.D. Duquesne University

Ph.D. University of Nevada

Nicholas Emmanuele, Lecturer in Education

B.S. Gannon University

M. A., Gannon University

M. Ed., Penn State World Campus

David A. Fair, CPA, Lecturer in

Business Administration

B.S. Pennsylvania State University

Shawn W. Feiock, Lecturer in Chemistry

B.S. Pennsylvania State University

Asith Fernando, Lecturer in Physics

B.S. Edinboro University

B.A. Edinboro University

M.S. Gannon University

Richard Fetzner, Lecturer in Physics

B.S. Pennsylvania State University,

the Behrend College

M.S. Edinboro University

Kimber Forrester, Lecturer in

Communication and the Arts

B.A. Edinboro University

M.A. American Military University

M.A. Edinboro University

Fulgenzio, Gina, Lecturer in
Physician Assistant Department
B.S. Gannon University
MPAS Gannon University

Paul Gambill, Lecturer in Criminal Justice
B.A. Gannon University
M.S. Mercyhurst University

Mary Gavacs, Assistant Professor in
Occupational Therapy
B.S. SUNY Buffalo
M.Ed. Penn State University

William A. Geary, Medical Director, UPMC
Chautauqua WCA Medical Laboratory
Science Program
Ph.D. Washington University
M.D. University of Virginia

Laura Gerow, Lecturer in Business
Administration
B.S. Mercyhurst University
M.S. Mercyhurst University

Fr. Jason A. Glover, Lecturer in Theology
B.A. Gannon University
S.T.B. Saint Mary's Seminary and University
M. Div. Saint Mary's Seminary and University
S.T.L. Saint Mary's Seminary and University

Melissa Goodwill, Lecturer in Education
B.S., Allegheny College
M. Ed., Slippery Rock University
M.S., Slippery Rock University

Very Rev. Joseph C. Gregorek, Professor
Emeritus, Biology
B.A. St. Bonaventure University
M.S. Catholic University of America
Ph.D. Medical College of Virginia

Emily Greci, Lecturer in Theology
B.S. Edinboro University
M.A. Gannon University
M.Ed. Gannon University

Eric Grulke, Lecturer in Business
Administration
B.A. City University of New York
M.A. Washington State University
M.S. City University of New York
Ph.D. Washington State University

Caleb D. Gundlach, Lecturer in Theology
M.A. University of Dallas
M.Div. Knox Theological Seminary

Venu G. Gupta, Lecturer in
Mechanical Engineering
M.S. University of Akron

David Gustafson, Associate
Professor Emeritus, Biology
B.S. Gannon University
M.Ed. Gannon University

Keith A. Hardner, Instructor
in Criminal Justice
B.A. Gannon University
M.S. Gannon University

Michele G. Harms, Program Director, UPMC
Chautauqua WCA Medical Laboratory
Science Program
A.S. Jamestown Community College
B.S. State University of New York at Fredonia
*M.T. Rochester General Hospital School
of Medical Technology*
M.S. State University of New York at Fredonia

Sharon Heidecker, Lecturer in Nursing
B.S.N. Villa Maria College
M.S.N. Gannon University

Sara Hester, Lecturer in Biology
B.S. Penn State Erie, The Behrend College
B.S.N. Edinboro University of Pennsylvania
*M.S.N. Clarion/Edinboro Universities
of Pennsylvania*
Ph.D. Pennsylvania State University

Emily Hirsch, Instructor Nursing
B.S.N. Edinboro University
M.S.N. University of Phoenix

David M. Hoch, Lecturer in Physics and of
Environmental Science and Engineering
A.B. Haverford College
M.Phil. University of Cambridge
Ph.D. University of Cambridge

Robert Hodgson, Lecturer in Chemistry
B.A. University of Iowa
M.S. Edinboro University
J.D. University of Iowa

Melinda B. Holliday, Lecturer
in Education and English
B.S. Indiana University of Pennsylvania
M.A. Gannon University

Amie Hornaman, Lecturer in Nutrition and
Human Performance
B.A. Pennsylvania State University
M.S. Westbrook University

Margaret Horne, Lecturer in
Business Administration
A.S. Pennsylvania State University
B. S. Pennsylvania State University
M.B.A. Pennsylvania State University

Donna Huckno, Instructor Nursing

*B.S.N. Gannon University
M.S.N. Gannon University*

Joseph Hudson, Lecturer in Environmental Science

*B.S. Gannon University
M.S.E.H. Gannon University*

Samuel Hyman, Lecturer in School of Communication and the Arts

B.S. Mercyhurst University

John Jageman, Medical Director, Physician Assistant Program

M.D. Temple University

Stephen M. Johnson, Program Director, Saint Vincent Hospital School of Medical Technology

*B.S. The Pennsylvania State University
M.T. Saint Vincent Health Center School of Medical Technology
M.S. Ohio State University*

Timothy B. Johnson, Lecturer in Psychology

*B.S. Indiana University-Purdue University
Ph.D. Purdue University*

Jessica Joy, Instructor of Occupational Therapy

*B.S. Gannon University
M.S. Gannon University*

Emily Kaminske, Instructor of Occupational Therapy

*B.S. Gannon University
M.S. Gannon University*

Rev. Michael T. Kesicki, Lecturer in Philosophy and Foreign Languages

*B.S. Gannon University
S.T.B. St. Mary's Seminary and University
M.Div. St. Mary's Seminary and University*

Ivonne H. Kio, Lecturer in Business Administration

*B.S. University of Tampa
M.B.A. Saint Leo University*

Bruce Kobal, Lecturer in Psychology

*B.A. Mercyhurst College
M.A. Edinboro University of Pennsylvania
Ph.D. Gannon University*

Elizabeth Kons, Lecturer in English

*B.A. Mercyhurst College
M.A. Gannon University*

Michele Kretzing, Lecturer in Education

B.A. University of Pittsburgh

Brian Krowicki, Lecturer in Legal Studies

*B.A. University of Dayton
J.D. University of Pittsburgh*

Tatyana Kryachkov, Instructor Nursing

*B.S.N. Gannon University
M.S.N. Gannon University*

Marietta L. Kuehn, Lecturer in Respiratory Care

*A.S. Gannon University
B.S. Gannon University
M.Ed. Gannon University*

Janet L. Laboda, Lecturer in English

*B.S. Clarion University of Pennsylvania
M.Ed. Edinboro University of Pennsylvania*

Shawn Lafferty, Lecturer in Communication and the Arts

B.F.A. Kent State University

Lisa Lanning-Lowther, Lecturer in Physician Assistant

*B.S. Western Oregon University
M.S. Pacific University*

Chet LaPrice, Lecturer in Communication Arts

*B.A. Gannon University
M.B.A. Gannon University*

Teck Meng Liaw, Lecturer in Electrical and Computer Engineering and Physics

*B.S. Portsmouth Polytechnic University
M.S. Gannon University
M.S. University of Wyoming*

Christine Linkie, Assistant Professor of Occupational Therapy

*B.A. Colgate University
M.S. Columbia University
Ph.D. Texas Woman's University*

Kimberly Lytle, Lecturer in Theology

*B.A. Edinboro University
B.A. Mercyhurst University
M.A. Gannon University
M.A. Ursuline College*

Diane MacWilliams, Lecturer in Biology

*B.S. Gannon University
M.Ed. Gannon University
M.S. University of Florida*

Allen Madura, Lecturer in Physics and BME

B.S. Gannon University

Vesna Manjic, Nursing

B.S.N. Gannon University

David Marino, Lecturer in Computer and Information Science

B.S. Gannon University

Nicole Marton, Instructor in Respiratory Care

B.S. Gannon University

Sarah Matson, Instructor of
Occupational Therapy
B.A. Gannon University
M.S. Occupational Therapy

Allison McDonald, Lecturer
in Physician Assistant
B.S. Gannon University
MPAS Gannon University

Jon D. McEnroe, Lecturer in Criminal Justice
B.A. Gannon University

A. Tiggy McLaughlin, Lecturer in
Theology and History
A.B. Georgetown University
M.A. University of Michigan
Ph.D. University of Michigan

Audrey McLaughlin, Lecturer in
Social Work
B.A. Pennsylvania State University
M.A. Gannon University

Christina Mealy, Lecturer
in Physician Assistant
B.S. Gannon University
MPAS Gannon University

Anthony J. Miceli, Lecturer in
Communication and the Arts
B.A. University of Detroit
M.B.A. Gannon University

Adam Mook, Lecturer in Business
B.S. Slippery Rock University
M.B.A. Gannon University

Berwyn Moore, Lecturer in English
B.A. University of North Carolina
M.F.A. Bowling Green State University

William T. Morton, Lecturer in
Business Administration
B.A. Pennsylvania State University
J.D. University of Baltimore School of Law

Richard J. Mueller, Lecturer in Business
Administration and Management
B.S. Canisius College
M.B.A. Canisius College

Mary Mullen, Lecturer in Chemistry
B.S. University of Pittsburgh
M.S. Gannon University

Charles M. Murphy, Lecturer
in Social Work
B.A. Gannon College
*M.S.W. State University of New York
at Albany*

Patrick F. O'Connell, Lecturer in English,
Theology & Foreign Languages
B.A. The College of the Holy Cross
M.A. Yale University
M.A. Fordham University
Ph.D. Yale University
Ph.D. Fordham University

George A. Ogeka, Lecturer in Education
B.S. Indiana University of Pennsylvania
M.Ed. Edinboro University of Pennsylvania

Khadijat Okasime, Instructor Nursing
B.S.N. Edinboro University
M.S.N. Gannon University

Patricia J. Pollifrone, Lecturer in Education
B.S. Edinboro University of Pennsylvania
M.Ed. Edinboro University of Pennsylvania
Ph.D. State University of New York at Buffalo

Bryan Prior, Lecturer in Philosophy
B.A. St. Bonaventure University
J.D. University of Pittsburgh

Julie Prokopchak, Lecturer in Biology
B.S. Gannon University
PA Master Equivalency Diploma

Pamela Reynolds, Professor of
Physical Therapy
B.S. University of Pittsburgh
M.S. University of Pittsburgh
Ed.D. Duquesne University

Jeffrey A. Richmond, Medical Director,
Saint Vincent Hospital School of
Medical Technology
B.A. West Virginia University
M.D. West Virginia University

Charlotte Riddle, Nursing
D.N.P. Capella University
A.P.R.N. Gannon University
FNP-BC Gannon University

Catherine Rodgers, Lecturer in Nursing
M.S.N. Walden University

Emilee Rotko, Instructor Nursing
B.S.N. Penn State Behrend

Joseph E. Rowane, Medical Director,
Respiratory Care Program
B.S. Gannon University
*D.O. University of Osteopathic Medicine
and Health Sciences*

Elizabeth K. Rula, Lecturer in Biology
B.S. Gannon University
M.S. Gannon University

Penny Sanford, Instructor Nursing
B.S.N. Western Governors' University
M.S.N. Western Governors' University

Nicholas R. Schultz, Lecturer in Electrical & Computer Engineering
B.S. Pennsylvania State University, the Behrend College
M.S. Gannon University

Melissa M. Shaffer, Program Director, Conemaugh School of Medical Technology
B.S. University of Pittsburgh at Johnstown
M.B.A. St. Francis University

Jeffrey Shaw, Lecturer in Criminal Justice
B.A. Edinboro University
M.S.W. University of Pittsburgh

Penelope Smith, Lecturer in English
B.A. Bucknell University
M.A. Gannon University
Ph.D. Indiana University of Pennsylvania

Mark Soliday, Lecturer in Communications and the Arts
B.A. Gannon University

Jessica A. Spanogle, Lecturer in Business Administration
B.S. Gannon University
M.B.A. Gannon University

John Spaziani, Lecturer in Business Administration
B.S. Stevens Institute of Technology
M.S.M.E. State University of New York
M.B.A. Lynchburg College
M.A. Walsh University

Michael Stafford, Lecturer in Physics
B.S. Gannon University
M.S. University of Pittsburgh

Robert Stallbaum, Lecturer in Chemistry
B.A. Culver-Stockton College
M.A. Gannon University

Ann Stancliff, Lecturer in Criminal Justice
B.A. Mercyhurst College
M.A. Mercyhurst College

Richard States, Lecturer in Psychology and Sociology
B.A. Gannon University
M.A. Edinboro University

Lee Steadman, Lecturer in Communication and the Arts
B.F.A. Edinboro University of Pennsylvania

Lori Steadman, Lecturer in Communication and the Arts
B.F.A. Edinboro University of Pennsylvania

Lauren Stephan, Instructor Nursing
B.S.N. Indiana University of Pennsylvania

Christina Socash, Nursing
R.N. Gannon University
M.S.N. Gannon University

Katherine Stockton, Instructor, Occupational Therapy
B.S. SUNY Brockport
M.S. D'Youville College

John Stone, Lecturer in Business Administration
B.S. Pennsylvania State University
M.B.A. Pennsylvania State University

Anne Styn, Lecturer in Criminal Justice
B.S. Mercyhurst University
M.S. Mercyhurst University

George R. Sucha, Lecturer in Education
B.S. Slippery Rock University of Pennsylvania
M.Ed. Edinboro University of Pennsylvania

Keith D. Sundberg, Lecturer in Theology
B.A. Grove City College
M.Div. Louisville Presbyterian Theological Seminary

Ronald Swift, Lecturer in Management
B.S. Edinboro University
M.Ed. Edinboro University

Mary Jean Taylor, Lecturer in Physical Therapy and Public Health
B.S. Ithaca College
M.A. New York University

Kimberly J. Timer, Lecturer in Education and History
B.A. Denison University
M.B.A. University of Akron
J.D. University of Akron
M.Ed. Gannon University

David Tobin, Lecturer in Clinical Mental Health Counseling
B.A. Gannon University
M.Ed. Gannon University
Ph.D. University of Pittsburgh

John Trucilla, Lecturer in Criminal Justice
B.A. University of Dayton
J.D. University of Dayton School of Law

Kenneth G. Vasil, Lecturer in Business Administration
B.A. University of Michigan
J.D. Temple University School of Law

Daniela Vassileva, Lecturer in Foreign Languages
B.A. Balkantourist, Bulgaria
M.A. University of Sofia, Bulgaria

Emily A. Wachter, Lecturer in Psychology

B.A. Roberts Wesleyan College

M.A. Edinboro University

Vinesky, Kaleigh, Lecturer in
Physician Assistant

B.S. Mercyhurst University

B.A. Mercyhurst University

MSPAS Daemen College

Mary Wagner, Lecturer in English

B.A. Gannon University

M.A. Gannon University

Kimberly Walter, Instructor Nursing

B.S.N. Gannon University

M.S.N. Gannon University

Debra Weismiller, Instructor Nursing

M.S.N. Gannon University

Matthew Wolford, Instructor in
Environmental Science and Engineering

B.A. Pennsylvania State University

J.D. Temple University

Trisha Yates, Lecturer in Education

B.A. Edinboro University of Pennsylvania

Grant Yochim, Lecturer in Legal Studies

B.A. Penn State University

J.D. Cleveland State University

Sr. Charlotte Zalot, Lecturer in Theology

B.A. Chestnut Hill College

M.A. Saint Joseph College

M.Phil Drew University

Ph.D. Drew University

Lora H. Zill, Lecturer in English

B.A. Allegheny College

M.A. Gannon University

Brian A. Ziroli, Lecturer in Business

Administration and Management

B.S. Gannon University

M.B.A. Gannon University

EMERITI FACULTY

Abdelrahman Aburachis,

Professor Emeritus, Economics

B.S. American University

M.A. Detroit Institute of Technology

Ph.D. University of Pittsburgh

Michael J. Acri, Professor Emeritus,

Philosophy

A.B. Youngstown State University

M.A. Duquesne University

Kenneth W. Andersen, Professor

Emeritus, Biology

B.S. Fort Hays Kansas State College

M.S. Fort Hays Kansas State College

Ph.D. University of New Mexico

Lydle Brinkle, Professor Emeritus,

Geography

B.S. Southeast Missouri State College

M.A. Memphis State University

Michael L. Bucholtz, Professor

Emeritus, Chemistry

B.S. Manchester College

Ph.D. Florida State University

Mehmet Cultu, Professor Emeritus,

Electrical and Computer Engineering

B.S. Middle East Technical University

M.S. Middle East Technical University

Ph.D. Northwestern University

Grace Davies, Associate Professor

Emeritus, Archivist

B.S. Edinboro University of Pennsylvania

M.L.S. Case Western Reserve University

Paul J. DeSante, Professor Emeritus, English

A.B. Saint Mary's Seminary University

M.A. Catholic University of America

Ph.D. Saint John's University

Harry R. Diz, Professor Emeritus,

Environmental Science and Engineering
Department

B.A. Duke University

M.A. Northern Arizona University

M.S. Virginia Polytechnic Institute

and State University

Ph.D. Virginia Polytechnic Institute

and State University

David Eichelsdorfer, Associate Professor

Emeritus, Management

B.A. Gannon University

M.B.A. State University of New York

at Buffalo

David R. Frew, Professor Emeritus,

Management

B.A. Gannon University

M.A. Gannon University

D.B.A. Kent State University

Kenneth R. Gamble, Associate Professor

Emeritus, Psychology

B.A. Gannon University

M.A. Boston College

Ph.D. Loyola University

Richard A. Gammon, Professor

Emeritus, Biology

B.S. Saint Bonaventure University

M.S. Saint Bonaventure University

Ph.D. Saint Bonaventure University

Very Rev. Joseph Gregorek, Professor

Emeritus, Biology

B.A. St. Bonaventure University

M.S. Catholic University of America

Ph.D. Medical College of Virginia

Paul B. Griesacker, Professor Emeritus,

Physics

B.S. Loyola College

M.S. The Pennsylvania State University

Ph.D. The Pennsylvania State University

David Gustafson, Associate Professor

Emeritus, Biology

B.S. Gannon University

M.Ed. Gannon University

Samuel L. Hazen, Professor Emeritus,

Electrical and Computer Engineering

B.S. The Pennsylvania State University

M.S. University of Buffalo

Ph.D. University of Michigan

Richard L. Herbstritt, Professor

Emeritus, Education

B.A. Gannon University

M.S. Saint Bonaventure University

Ph.D. Purdue University

M. Jude Kirkpatrick, Professor Emeritus,

Anthropology and Sociology

B.A. Saint Francis College

M.A. Saint Francis College

M.A. University of Colorado

Janet Klempay, Professor Emeritus, Mental

Health Counseling

B.A. Mercyhurst College

M.A. John Carroll University

Ph.D. University of Ottawa

Halit M. Kosar, P.E., Professor Emeritus,

Mechanical Engineering

B.S. Istanbul Technical University

M.S. Istanbul Technical University

Ph.D. Istanbul Technical University

David Kozak, Professor Emeritus,

Political Science

B.A. Gannon University

M.A. Kent State University

Ph.D. University of Pittsburgh

Joseph A. Leu, Associate Professor

Emeritus, Physics

B.S. Michigan Technological University

M.S. University of Alberta

Ph.D. University of Alberta

Thomas M. McDonald, Associate Professor

Emeritus, Mathematics

B.S. State University of New York

at Stony Brook

M.S. Syracuse University

Ph.D. Syracuse University

Joan M. Miller, Professor Emeritus,

Philosophy

B.A. Carlow College

Ph.L. Institut Catholique de Paris

Graduate Degree, Universite Catholique de Louvain

Walter S. Minot, Professor Emeritus, English

A.B. Providence College

Ph.D. University of Nebraska

Robert J. Nelsen, Associate Professor

Emeritus, Psychology

B.S. University of Scranton

M.S. University of Scranton

Ed.D. West Virginia University

Geraldine L. Orton, Professor Emeritus,

Mental Health Counseling

B.S. Indiana University of Pennsylvania

M.S. Edinboro University of Pennsylvania

Ph.D. State University of New York at Buffalo

Thomas Parthenakis, Associate Professor

Emeritus, History

B.A. Heidelberg College

M.A. Kent State University

Ph.D. Kent State University

Francis Pelczar, Professor Emeritus,

Chemistry

B.S. Merrimack College

M.S. University of Connecticut

Ph.D. University of New Hampshire

Gregor M. Reinhard, Professor Emeritus,

Political Science

B.A. Catholic University of America

Ph.D. Catholic University of America

Miguel A. Sague, Professor Emeritus,

Languages

University of Havana

Jerry A. Selvaggi, Associate Professor

Emeritus, Electrical Engineering

B.S. Pratt Institute

M.S. The Pennsylvania State University

Robert Vales, Professor Emeritus, English

*B.A. Western Reserve University
M.A. Western Reserve University
Ph.D. Western Reserve University*

Roy E. Voshall, Professor Emeritus,

Electrical Engineering
*B.S.E.E. Carnegie Mellon University
M.S. Carnegie Mellon University
Ph.D. Carnegie Mellon University*

Robert A. Wehrer, Professor
Emeritus, Education

*B.A. Seattle University
M.A. Columbia University Teachers College
Ph.D. Columbia University Teachers College*

Stanley J. Zagorski, Professor

Emeritus, Biology
*B.S. Slippery Rock University of Pennsylvania
M.S.Ed. Edinboro University of Pennsylvania*

CLINICAL EDUCATORS

John Almquist, MD

*North East Health Care
North East, Pennsylvania*

Donna Anderson

*St. Vincent Health Center
Erie, Pennsylvania*

Robert Baker, MD

*Greenville Orthopedic Center
Greenville, Pennsylvania*

Julie Bargielske

*St. Vincent Health System
Erie, Pennsylvania*

Kim Bennett, MSN, CNM

*OB/GYN Associates
Erie, Pennsylvania*

Debbie Bishop

*Elk Valley Medical Center
Girard, Pennsylvania*

Mark Bloomstine

*Orthopedic Surgeons, Inc.
Erie, Pennsylvania*

Rich Boland

*University of Pittsburgh Medical Center
Pittsburgh, Pennsylvania*

Daniel Borison, MD

Willoughby, Ohio

Dennis Brown, MD

Washington, PA

Joanne Bruno

*Hamot Medical Center
Erie, Pennsylvania*

Marshall Burke, MD

New Brighton, Pennsylvania

Dennis Bush

*WCA Hospital
Jamestown, New York*

Mary Lou Carson

*Family Health Council
Seneca, Pennsylvania*

Barbara Counts

*WCA Hospital
Jamestown, New York*

Karen Crossley

*WCA Healthcare System
Jamestown, New York*

Chester Crump, MD

Hopkinsville, KY 42240

Carmen D'Angelo, MD

*D'Angelo/Diloretto Med. Ctr.
West Irondequoit, New York
Joseph Daday, MD*

*Cornerstone Family Practice
Cranberry, Pennsylvania*

E. Michael Dail, MD

*Lakeside OB/GYN
Erie, Pennsylvania*

Robert Daniels

Jamestown, New York

Richard DeFranco, MD

*Bayside, Inc. Obstetrics
Erie, Pennsylvania*

Joseph DeSanctis, MD

*Department of Plastic Surgery
Danville, Pennsylvania*

Ellen S. Dickinson, MD

*Erie County Medical Center
Buffalo, NY 14215*

Ruth Dismuke-Blakely

*Skyline Therapy
Sandia Park, NM 87047*

Robert DiVencenzo, DO

*Family Care Physicians
Williamsville, New York*

Craig Donghia, MPA

Pittsburgh, Pennsylvania

John Dorsky, MD

Willoughby, Ohio

Michael Doss, MD

Ashtabula County Medical Center
Ashtabula, Ohio

Robert DuBois

Corry Memorial Hospital
Corry, Pennsylvania

Kathleen Durnell

WCA Hospital
Jamestown, New York

Kate Dykhuizen

Meadville Medical Center
Meadville, Pennsylvania

Gary Eggleston, MD

Westfield, New York

Jason Fowler, PA-C

Meadville Medical Center
Meadville, Pennsylvania

James France, MD

Partners in Health
Level Green, Pennsylvania

Deanna Fuller

WCA Hospital
Jamestown, New York

Elaine Ghazinour

Gertrude Barber Center
Erie, Pennsylvania

Timothy Gorman, MD

Westfield, New York

Dan Gottwald, MD

Warren, Pennsylvania

Tina Gregory

St. Vincent Health Center
Erie, Pennsylvania

Jeanette Gretta

Resource Center
Dunkirk, New York

Tim Grode

Hamot Medical Center
Erie, Pennsylvania

Mary Grotkowski

Hamot Medical Center
Erie, Pennsylvania

Jill Gryskervicz

Achievement Center
Erie, Pennsylvania

P. William Haake, MD

The Genesee Hospital
Rochester, New York

Mark Hagen, MD

Westfield, New York

Kristopher Hartwig, MD

Westfield, New York

Barb Hayes, CRNP

Family Health Council
Clarion, Pennsylvania

Laurie Herbst, RPA-C

Westfield, New York

Marjorie Hill

NW IU #5
Edinboro, Pennsylvania

Nancy Hunt

WCA Hospital
Jamestown, New York

Anthony Ignocheck, MD

North East Health Care
North East, Pennsylvania

Boris Jelercic, PA-C

Lake Hospital System
Willoughby, Ohio

Van Johnson, MD

Warren, Pennsylvania

Gerald Kahler, MD

Franklin, Pennsylvania

Elizabeth Karan

Hewes Education Center
Ashville, New York

Timothy Kitchen, MD

Westfield, New York

Mary Koza

Hamot Medical Center
Erie, Pennsylvania

Marietta Kuehn

Hamot Medical Center
Erie, Pennsylvania

Ajay Lall, MD

Ashtabula County Medical Center
Ashtabula, Ohio

Cindy Larson

Hamot Medical Center
Erie, Pennsylvania

Sharon Lavin

Resource Center
Jamestown, New York

Tammi Lavin

Sharon Regional Rehabilitation
Hermitage, Pennsylvania

Andrea Lehman

Corry Memorial Hospital
Corry, Pennsylvania

Donna LoConte

*HealthSouth Rehab of Mechanicsburg
Mechanicsburg, Pennsylvania*

Tracy Lohr

*Jones Memorial Health Facility
Jamestown, NY*

Frank Lubresky

*Hamot Medical Center
Erie, Pennsylvania*

Charles MacKenzie, MD

Warren, Pennsylvania

Dave Markov

*Hamor Sports Medicine
Erie, Pennsylvania*

Carl Marnatti, MD

*West Penn Comprehensive Health Care
North Suburban Family Health Center
Allison Park, PA*

Gregg Mason, MD

Erie, Pennsylvania

Carol Masters

*HealthSouth Great Lakes Rehab
Erie, Pennsylvania*

Nicole Mazza, MD

*Rochester Park Medical Group
Caledonia, New York*

James McGeary, MD

*Family Medicine of Warren
Warren, Pennsylvania*

Judy McGuire

*Trumbull Memorial Hospital
Warren, Ohio*

Rockland Milne

*WCA Hospital
Jamestown, New York*

Alan Mortellaro

*IHS of Erie at Bayside
Erie, Pennsylvania*

Denise Mott

*St. Vincent Health Center
Erie, Pennsylvania*

Janice Mowery

*Hamot Medical Center
Erie, Pennsylvania*

Michael Ocilka

*Ashtabula County Medical Center
Ashtabula, Ohio*

Dean Pahr, DO

*Ashtabula County Medical Center
Ashtabula, Ohio*

Vito Palumbo, DO

*Family Care Physicians
Williamsville, New York*

Marge Peterson, M.N., MBA

*Hamot Medical Center
Erie, PA*

K. Possai, MD

New Castle, Pennsylvania

George Poutous, MD

Monroeville, Pennsylvania

Cindy Priester

*Gertrude Barber Center
Erie, Pennsylvania*

Elaine Puzar

*Gertrude Barber Center
Erie, Pennsylvania*

Terri Rankin

*The Medical Center % Hopewell Clinic
Aliquippa, Pennsylvania*

Maureen Riggle

*Sharon Regional Health System
Hermitage, Pennsylvania*

Brian Roach

*Select Specialty of Erie
Erie, Pennsylvania*

Kathy Rudd

*Hamot Medical Center
Erie, Pennsylvania*

Anthony Ruffa, DO

*Lakeshore Family Practice
Erie, Pennsylvania*

Anne Saturnino

*NW IU #5
Edinboro, Pennsylvania*

Peter Schmidt

*Pediatrics Place/CM HealthCare Resources
Deerfield, Illinois*

John Scullin, MD

*Greenville Orthopedic Center
Greenville, Pennsylvania*

Thomas Skelly, CRNP

*Northshore Clinical Association
Erie, Pennsylvania*

David Snyder, MD

*New Brighton, Pennsylvania
William Sonnenberg, MD
Titusville Area Hospital
Titusville, PA*

Lori Spencer

*Springs Manor Care Center
Cambridge Springs, Pennsylvania*

Linda Spronatti

*Hamot Medical Center
Erie, Pennsylvania*

Stan Spurgeon, MD

*Buffalo General Hospital
Buffalo, New York*

Sean Su, MD

*Hamot Institute for Behavioral Health
Diagnostic and Evaluation Center
Erie, PA*

Pam Talley

Meadville, Pennsylvania

Fred Taylor, MD

*Family Medicine of Warren
Warren, Pennsylvania*

Joe Thompson

*Hamot Medical Center
Erie, Pennsylvania*

Lisa Treusch

*Elk Valley Medical Center
Girard, Pennsylvania*

Susan Van Doornik

*Shadyside Hospital
Pittsburgh, Pennsylvania*

Julie Weiland

*Warren General Hospital
Warren, Pennsylvania*

Colleen White

*UPMC Health Systems (CORE)
Pittsburgh, Pennsylvania*

Jeanne Wiebenga, MD

Jamestown, New York

Natalie Woznicki

*VA Medical Center
Erie, Pennsylvania*

**PAST PRESIDENTS,
GANNON UNIVERSITY**

- Rev. Msgr. Joseph Wehrle, 1933-1956
- Rev. Msgr. Wilfrid J. Nash, 1956-1977
- Joseph P. Scottino, Ph.D., 1977-1987
- M. Daniel Henry, Ph.D., 1987-1991
- Rev. Msgr. David A. Rubino, Ph.D., 1991-2000
- Thomas S. Ostrowski, Ph.D., (Acting Pres.) 2000-01
- Antoine M. Garibaldi, Ph.D., 2001-2010
- Phillip H. Kelly, D.A. (Interim President) 2010-2011

SUBJECT CODES

| | | | |
|-------|--------------------------------|-------|-----------------------------------|
| ACCT | Accounting | LEGL | Legal Studies |
| ARABI | Arabic | LENG | LS English |
| ARCH | Archaeology & Cultural Studies | LFIN | LS Fine Arts |
| ARTS | Arts & Theatre | LHST | Liberal Studies |
| BCOR | Business Core | LIBR | Library |
| BIOL | Biology | LPHI | LS Philosophy |
| BME | Biomedical Engineering | LTHE | LS Theology |
| CHEM | Chemistry | MATH | Mathematics |
| CHIN | Chinese | MDTC | Medical Technology |
| CIS | Computer & Info Sci | ME | Mech Engineering |
| COMM | Communication | MGMT | Management |
| CRJS | Criminal Justice | MIC | Innovation & Creativity |
| CS | Computer Science | MKTG | Marketing |
| CYENG | Cyber Engineering | MLED | Middle Level Education |
| CYSEC | Cyber Security | MLTD | Multidisciplinary |
| DIET | Dietetics | MLTS | Military Science |
| ECE | Elect Engineering | MORT | Mortuary Science |
| ECED | Early Childhood Education | MUSC | Music |
| ECON | Economics | NHP | Nutrition & Human Performance |
| EDCR | Education Core | NURS | Nursing |
| EDFL | Field Education | OCCT | Occupational Therapy |
| EDUC | Education Electives | PHAS | Physician Assistant |
| ELED | Elementary Education | PHIL | Philosophy |
| ENG | Engineering | PHYS | Physics |
| ENGL | English | PLAW | Pre-Law |
| ENTR | Entrepreneurship | POLI | Political Science |
| ENV | Environmental Science | PSGA | Public Service & Global Affairs |
| FINC | Finance | PSYC | Psychology |
| FREN | French | PT | Physical Therapy |
| FRSH | Freshmen Studies | PUBH | Public Health |
| GEOG | Geography | RADS | Radiologic Sciences |
| GERO | Gerontology | RISK | Risk Management |
| GLOBL | Global Cultures | RSPC | Respiratory Care |
| GRMN | German | SCMG | Supply Chain Management |
| HCMG | Healthcare Management | SCWK | Social Work |
| HIST | History | SE | Software Engineering |
| HLS | Health Science | SEECs | Engineering & Computer Science |
| HNRS | Honors | SMGT | Sport Management & Marketing |
| IBUS | International Business | SOCI | Sociology |
| IE | Industrial Engineering | SPAN | Spanish |
| IMGT | International Management | SPCH | Speech |
| INTS | International Study | SPED | Special Education |
| LATN | Latin | SPRT | Sport & Exercise Science |
| LBST | Liberal Studies | THEO | Theology |
| LEAD | Leadership | UNDL | Undeclared |
| LCEB | Leadership | WMST | Women's Studies |
| LHES | Leadership | | |
| LHPS | Leadership | | |

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| Podiatry | 603 | Supply Chain Management | 126 |
| Political Science | 404 | Theatre & Communication Arts | 286 |
| Pre-Chiropractic | 559 | Theater Design & Technologies | 288 |
| Pre-Dental | 559 | Theater Performance Media & Stage | 289 |
| Pre-Law | 408 | The Gannon Knight | 37 |
| Pre-Medical | 559 | The Knight Club | 42 |
| Pre-Pharmacy | 559 | Theology | 437 |
| Pre-Podiatry | 559 | Transcript | 63 |
| Pre-Optometry | 559 | Transfer Student | 15 |
| Pre-Veterinary | 559 | Tuition | 20 |
| Psychology | 413 | UMHS Medical | 584 |
| Public Health | 612 | Undeclared Major | 44 |
| Public Relations | 279 | Undecided Students | 62 |
| Public Service/Global Affairs | 425 | Veterans Assistance | 27 |
| Pre-Health Qualification Program | 611 | Waldron Campus Center | 42 |
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