Harrisburg University

Of Science and Technology

Undergraduate Catalog

2025-2026

The provisions of this Catalog, and its electronic version at www.HarrisburgU.edu, are not to be considered as an irrevocable contract between Harrisburg University of Science and Technology and the student. The University reserves the right to change any policy, provision or requirement at any time. This right to change a policy, provision or requirement includes, but is not limited to, the right to revise, reduce, or eliminate course offerings in academic programs, to change the medium of how courses and/or degrees are offered, and to add requirements for graduation. The student is responsible for adhering to the requirements, rules, policies and procedures, whether published in this Catalog, the Student Handbook, or other official media.

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About the Catalog

This University Catalog is updated annually and made available in electronic form on the Harrisburg University website (https://harrisburgu.edu/records-registration/). The University website at https://www.harrisburgu.edu/ also contains updated lists of courses, course descriptions, textbook adoptions, and other important information. Should you require a paper copy of the catalog, please contact Records and Registration at the RegHelp Student Portal (https://reghelp.harrisburgu.edu/) or 717-901-5136.

Harrisburg University has made every effort to make this catalog accurate; however, all policies, procedures or charges are subject to change at any time by appropriate action of the faculty, administration, or Board of Trustees. Each edition of the University's catalog is archived in the library.

The University

History

The University was incorporated in the Commonwealth of Pennsylvania on December 12, 2001, making it the first science- and technology-focused, non-profit, comprehensive university to be established in Pennsylvania in more than 100 years. Founded to address the Capital Region's need for increased educational opportunities in science, technology, engineering and mathematics (STEM) careers, Harrisburg University represents a major step to attract, educate, and retain Pennsylvania's diverse 21st century knowledge-based workforce. A grand concept that was championed by business leaders, government officials, and the regional news media, Harrisburg University was built from concept to reality in less than a decade. The Pennsylvania Department of Education granted the University its charter in 2005.

An independent institution, the University offers academic and research programs designed to meet the needs of the region's youth, workforce and businesses. The University serves as a catalyst for creating, attracting an expanding economic development and opportunities in Central Pennsylvania by aligning traditional undergraduate, graduate, and doctorate degrees with science and technology-based experiential learning.

Mission Statement

The Harrisburg University of Science and Technology offers innovative academic and research programs in science and technology that respond to local and global needs. The institution fosters a diverse community of learners, provides access and support to students who want to pursue a career in science and technology, and supports business creation and economic development.

Approved by the Board of Trustees on September 17, 2015.

Vision

Founded to address the need of Pennsylvania's Capital Region for increased educational opportunities in applied science and technology-related fields, the vision of Harrisburg University of Science and Technology is to provide academic programs at undergraduate and graduate levels for a diversity of learners, using student-centered, technologically advanced, and experiential learning designs that emphasize student success, with a sharp focus on specific interdisciplinary competencies and strong linkages to career development. The desired outcome is the emergence of well-qualified, technically expert graduates whose understanding of applied science and technology-related fields is honed by direct industry experience and rounded by a sound, cross-disciplinary liberal education.

Accreditation and Approvals

Harrisburg University of Science and Technology was re-accredited on March 3, 2016 by the Middle States Commission on Higher Education, 3624 Market Street, Philadelphia, PA 19104, (267) 284-5000. 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. The Doctor's Research Scholarship degree program (Ph.D. in Data Sciences) was granted by Middle States on January 4, 2017.

Program offerings are authorized by the Pennsylvania Department of Education, Division of Higher and Career Education, 333 Market Street, Harrisburg, PA 17126.

Approved to participate in the federal Title IV, HEA student assistance programs by the U.S. Department of Education, 400 Maryland Avenue, SW, Washington, DC 20202.

Approved by the Pennsylvania Department of Education for veterans and eligible dependents to obtain education benefits through the Veteran's Administration (VA).

Authorized under federal law by the Department of Homeland Security - U.S. Immigration and Customs Enforcement (DHS-USCIS-SEVP) as an eligible institution for the Student and Exchange Visitor Information System (SEVIS) to enroll non-immigrant students.

The Master of Science in Project Management program is accredited by the Global Accreditation Center from the Project Management Institute, 14 Campus Boulevard, Newton Square, PA (855-746-4849). The M.S. program in Project Management is one of only 110 programs around the world to achieve this accreditation. The Global Accreditation Center (GAC) for Project Management Education Programs is an independent academic accreditation body with policies, procedures, and standards for project, program, portfolio management and related programs.

The Computer and Information Sciences undergraduate program has been awarded ABET accreditation, a prestigious standard that guarantees HU CISC graduates are prepared to excel and lead in their field. ABET, a nonprofit organization, accredits college and university programs in applied and natural science, computing, engineering, and engineering technology at the associate, bachelor, and master-degree levels. ABET-accredited programs meet the quality standards that produce graduates prepared to enter a global workforce.

An articulation agreement with another institution of higher education permits students enrolled in certain associate degree programs to transfer credits into specific degree programs at the University.

Institutions of higher education the University has an articulation agreement with can be found at the University website at https://www.harrisburgu.edu/admissions/transferring-credits/.

A consortium agreement with another institution of higher education allows a student to remain enrolled at the University while also taking credits at the visiting institution. Institutions of higher education the University has a consortium agreement with can be found on the University website at https://www.harrisburgu.edu/admissions/transferring-credits/.

Diversity Statement

Harrisburg University of Science and Technology, in accordance with applicable federal and state laws and university policies, does not discriminate based on race, color, national origin, sex, age, disability, medical status, sexual orientation, gender identity, or status as a veteran. The university also prohibits sexual harassment. This nondiscrimination policy covers admission, access, operation of university programs and activities, and employment. This policy is in accordance with the following laws, as amended, and their implementing regulations, to the extent and in the circumstances that they are applicable to the university: Titles VI and VII of the Civil Rights Act of 1964; Title IX of the Educational Amendments of 1972; the Americans with Disabilities Act of 1990; and Section 504 of the Rehabilitation Act of 1973.

Student Responsibility Statement

A student has the responsibility to engage fully in assigned work, to be interactive in academic discussion, and to develop professional competencies both in the classroom and at internship sites. The University is new in both thought and ideas. The student should be a partner in this endeavor, now and in the future.

It is the student's responsibility to be engaged in the University's community of learners and to develop a strong professional and ethical foundation as a community member. Failure to uphold HU's rules and policies, as well as federal, state, or local laws and/or regulations, may result in disciplinary action by HU pursuant to its Code of Student Conduct (Code).

Statement of Community Values

Underlying HU's mission are basic behavioral standards that must be respected and adhered to by all HU employees as a basic tenant of their employment. These standards include, but are not limited to:

- the importance of personal integrity, honesty, and ethical decision-making;
- the right of every individual to be treated with respect and dignity as members of a learning organization;
- the freedom of intellectual inquiry in the pursuit of truth, even if it defies commonly understood theories;
- the acceptance and appreciation of diversity regarding race, gender, religion, sexual orientation, age, ability, ethnicity, and political views;
- the freedom from violence aimed at limiting, interfering with, or disrupting HU activities; and
- a recognition that civic engagement is a component of the intellectual development of students and provides a path for knowledge in the service of the community.

Admissions

The University has a centralized Admissions Office to serve all prospective student applicants - undergraduate, graduate, and non-degree. This centralized structure honors the University's commitment to lifelong learning and to offer a more fluid and comprehensive service for those seeking access to a quality educational experience.

Undergraduate Admission Process

Admissions Process for Traditional Degree Programs

DEGREE-SEEKING ADMISSION

Philosophy

Harrisburg University of Science and Technology seeks to admit students from a variety of backgrounds. Many factors are considered in the review of applicant files. The student's motivation and interest in science or technology and academic potential, which is generally assessed by the courses completed and grades earned in secondary and/or post-secondary school, are the key elements in considering the applicant for acceptance.

Admission Process

There is no application deadline. A high school student is encouraged to apply during the fall or early spring of the senior year in high school. An adult learner is encouraged to apply at least two months prior to the start of any semester. This application process allows ample time to be accepted, develop an academic schedule, and to process financial aid applications (if applicable).

Admission Requirements

Each applicant's candidacy is evaluated once all admissions materials have been received. Offers of admission are made to qualified candidates on a rolling basis. The undergraduate admission process requires the applicant to:

- complete the application online at www.HarrisburgU.edu/Apply or via the Common App; or using a paper application;
- submit an official high school transcript or equivalent* (required of applicants transferring less than 30 semester hours; encouraged of applicants transferring more than 30 semester hours). A student who has successfully completed the General Educational Development (GED) test may submit an official copy of the scores in lieu of the high school transcript. Documentation of successful completion of high school must be received prior to the end of the first semester of enrollment;
- submit official college transcript(s), if applicable, for any and all college, university or career/trade schools attended (whether or not academic credit was earned); and,
- to respond to all portions of the application process honestly and accurately.
- High school students applying for admission to the University should have a minimum high school grade point average of 2.75 or higher while transfer students should have a minimum college grade point average of 2.00 or higher.
- All transfer applicants are required to submit HU's Disciplinary Check Form to all previous institutions upon acceptance to HU. Evidence of academic dishonesty or misconduct may result in a request for more information, an interview or required statement, or the withdrawal of acceptance to HU.
- When the applicant's native language is not English or the applicant has not completed prior education in English, they must submit scores from the Test of English as a Foreign Language (TOEFL), International English Language Testing System (IELTS), or Duolingo English Test when the applicant's native language is not English. Please see the HU website

at https://www.harrisburgu.edu/admissions/international-admissions/ for a list of countries with English as their primary language and may be exempt from providing an English Proficiency exam. For specific score requirements, see TOEFL and IELTS sections at the end of this chapter.

- See programs for additional admission requirements, if any.

Optional materials:

- a personal essay or goal statement;
- be interviewed - preferably in person during a campus visit or by telephone/virtual meeting;
- submit results of standardized test scores from the SAT or ACT (optional, but recommended for those in high school); and,
- submit a letter of recommendation (preferably from someone who can attest to the student's work ethic, motivation and strengths, or from a teacher in a subject area tied to the student's academic field of interest).

*A copy of the official high school transcript must show the date when the diploma was awarded. To be considered official, the transcript must be provided to Harrisburg University from the high school (e.g., in a sealed envelope, through the Common Application, or by email directly from the high school). Home-schooled students will be required to provide a transcript from their local school district or a transcript certified by a parent. If Admissions determines that a diploma, GED, or high school transcript may have been tampered with or is otherwise invalid, Admissions will contact the high school to validate the document and confirm the graduation date.

Placement Testing

Degree-seeking undergraduate students will be placed based on a comprehensive review of their academic history, including high school GPA, grades in math courses, and the highest level of math successfully completed in high school. This evaluation process ensures students are enrolled in courses that align with their current skill level and academic preparedness. All non-degree-seeking and dual-enrollment students are required to complete placement testing to determine appropriate course enrollment.

At the sole discretion of the University, a student who has demonstrated satisfactory achievement via college transcripts or the equivalent is exempt from the placement tests. A non-native speaker of English must substitute the completion of the English placement test with the Test of English as a Foreign Language (TOEFL). Please see the HU website at https://www.harrisburgu.edu/admissions/international-admissions/ for a list of countries with English as their primary language and may be exempt from providing an English Proficiency exam.

NON-DEGREE ADMISSION

Philosophy

The University offers various non-degree programs at both the undergraduate and graduate levels, in the form of individual courses, a specialized series of courses, certificates, and advanced studies. Semester hours earned become part of the student's academic record and can be applied to a degree as defined by the appropriate policy and program requirements.

The University also offers professional development experiences in the form of certificate options, workshops, and seminars, which can be taken on a non-credit or audit basis.

In some cases, courses may have prerequisites that must be met prior to registration.

Non-Degree Admission Process

There is no application deadline. An applicant is encouraged to apply at least two months prior to the start of a session or course to allow ample time to develop a finalized course registration. Each applicant's candidacy is evaluated once all admissions materials have been received.

The undergraduate non-degree admission process requires the applicant to:

- complete the non-degree application online at www.HarrisburgU.edu/Apply; and
- when the applicant's native language is not English or the applicant has not completed prior education in English, they must submit scores from the Test of English as a Foreign Language (TOEFL), International English Language Testing System (IELTS), or Duolingo English Test Please see the HU website at https://www.harrisburgu.edu/admissions/international-admissions/ for a list of countries with English as their primary language and may be exempt from providing an English Proficiency exam. For specific score requirements, see TOEFL and IELTS sections at the end of this chapter.

If required by a specific advanced study or non-degree program, submit official college transcript(s) for any college, university, or career/trade schools attended (whether or not academic credit was earned). Some non-degree programs may require evidence of completion of an associate or bachelor's degree program. A candidate who has not yet earned at least an associate degree may be asked to take and successfully pass the required placement tests.

Non-Degree Policies

A student may enroll in up to 21 semester hours under the non-degree status when taking individual courses. Beyond 21 semester hours, a student must apply for full degree status. Non-degree admission does not guarantee admission into a degree-seeking program.

A non-degree student must maintain a 2.00 grade point average to continue from semester to semester.

DUAL ENROLLMENT ADMISSION

A student may enroll in courses at the University to earn college credit while still in high school. This program provides the student with an opportunity to be introduced to the college environment, explore majors, and get a head start on a bachelor's degree.

The University has a Secondary Schools Team to serve all prospective student applicants. The Dual Enrollment Program at the University offers diversified options for students to engage in college courses while they are in high school. Depending on the secondary school partnerships, students will have access to college courses at either of the University Campuses, which is a traditional On Campus Dual Enrollment Program, on-site at their high school through the College in the High School Program (CiHS).

Upon completion and submission of a dual enrollment application, the student will receive notification of receipt. Additional information regarding the courses available for registration will follow soon thereafter. Any questions regarding registration can be directed to the Dual Enrollment and Special Programs Coordinator at Records and Registration.

A dual-enrolled student may enroll in as many courses as the sending district approves; however, students are limited to 11 semester hours per semester or 23 semester hours in a year may be taken at a time. An applicant desiring to enroll full-time, 12 or more semester hours, must apply under the Early College Program policy.

A Parent Consent Form must be signed by the student and a parent or guardian, which provides various required releases protecting the University's interests.

Dual Enrollment Requirements

Students must submit a current transcript for review when applying. The transcript will be reviewed to ensure the minimum GPA of 2.75 has been met and if necessary, the school counselor will be contacted. To give the student, the best opportunity for success, completion of the University's placement testing program may be required for all on-campus dual enrollment. Placement tests are not an entrance examination. The tests measure skills in English,

mathematics, and reading. This will allow for the placement in the appropriate course as well as serve as prerequisite for many courses.

For students attending dual enrollment courses at either of the University locations or online, students must follow all policies and procedures as outlined in the Undergraduate Catalog, including the University schedule, laptop requirements, textbooks, Campus ID Card, etc.

All applications must be completed online by going to Dual Enrollment and clicking Apply Now at harrisburgu.edu/dual-enrollment/.

Traditional On-Campus - Dual Enrollment Courses (at Harrisburg and/or Philadelphia Locations)

Courses in the on-campus Dual Enrollment program are offered at both the Harrisburg and Philadelphia University locations, as well as some select online courses. These courses follow the university semester schedule of 14 weeks in the Fall, Spring and Summer. When participating in the on campus dual enrollment program the high school student will attend classes taught by university faculty in the university setting, including the online teaching environment.

The applicant is encouraged to apply during the available application period and coordinate the application with the appropriate high school personnel (often the School Counselor) prior to high school course selection period for the appropriate semester.

Traditional Online - Dual Enrollment Courses

The University offers opportunities for students to take dual enrollment courses via online with a University instructor. All policies for taking courses at the University Campus apply when taking courses online.

All applications must be completed online by going to Dual Enrollment, harrisburgu.edu/dual-enrollment/, and clicking Apply Now.

The applicant is encouraged to apply as soon as possible and coordinate the application with the appropriate high school personnel (often the Guidance Office) prior to high school course selection for the appropriate semester.

An applicant wishing to enroll full-time, 12 or more semester hours, must apply under the Early College Program policy.

College in the High School - Dual Enrollment

The College in the High School Dual Enrollment Program is based on a formal agreement with the University and the participating School District that ensures the approved instructor and course align to the rigor and standards of the university level credit bearing course. Upon University approval, students enrolled in the College In the High School Dual Enrollment course at their high school with the approved CiHS Corporate Faculty are eligible to register for the University course.

The application deadline for the College in the High School Dual Enrollment is based on a high school schedule. Students will register for college credit with Harrisburg University once the school year has started and approval is granted by the CiHS Corporate Instructor. All current information will be provided to the participating School District by the Secondary Schools Team.

EARLY COLLEGE PROGRAM (ECP)

A high school student who wishes to attend college on a full-time basis prior to receiving a high school diploma must be admitted under the Early College Program policy. The applicant must show strong academic preparation and personal maturity as exhibited by the high school transcript, placement test scores, and a personal interview to qualify for the Early College Program.

Any questions regarding the Early College Program can be directed to the Director of Secondary School Services.

Early College Program Requirements

The Early College Program admission process requires the applicant to:

- complete the early college program application;
- provide documentation as requested by the University for eligibility to the Early College Program;
- submit an official high school transcript showing a minimum cumulative grade point average of 3.30 on a 4.00 scale;
- successfully complete the placement examination administered by the University;
- submit written approval from the school district or diploma program describing the remaining courses required for high school graduation; and
- schedule an interview for admission.

Early College Program Policies

Participation in the Early College Program is contingent upon the results of the placement test and the availability of the course(s) in which the applicant plans to enroll.

Early College Program students are eligible for merit-based scholarships only. Students that have attained 6 college credits prior to applying for the ECP are eligible for additional financial aid. If they have not acquired college credits, they may take the Ability to Benefit Test to determine their status for financial aid. Please contact the Director of Secondary School Services or the Director of Financial Aid for additional information about financial aid.

Students must maintain at least 12 semester hours per semester to remain in the Early College Program.

Early College Program students must review and adhere to all other undergraduate policies and procedures; therefore, you must review the Undergraduate Catalog as a part of your enrollment in the Program.

INTERNATIONAL STUDENTS

An international student planning to attend the University on a student (F-1) visa must satisfy the appropriate undergraduate admissions requirements and procedures, demonstrate proficiency in the English language, and provide an affidavit of financial support (bank statement of $39,006 USD or affidavit of support if applicable; applicants with dependents and children must show additional financial support of $5,000 for the first dependent, and $2,500 for each additional dependent).

Academic records should include courses studied, grades earned, diplomas, certificates, and results of comprehensive national examinations. International students must request an evaluation of their international transcripts through the World Education Services (WES), Educational Credential Evaluators (ECE), or AACRAO's Electronic Database for Global Education (EDGE) to determine authenticity and degree equivalency.

A demonstration of English language proficiency is required of any student who is not a United States citizen. Acceptable demonstrations would include one of the following:

- completion of a college degree program from a regionally accredited United States institution of higher education;
- 4 years of attendance in a United States secondary education system;
- earned a score of 4.0 or higher on the Analytical Writing section of the Graduate Record Examination (GRE);
- earned a Test of English as a Foreign Language (TOEFL) score of 80 or higher on the web-based version, 200 on the computer version, or 550 on the paper version;
- earned an International English Language Testing System (IELTS) score of 6.5 or higher;

- earned an overall score of 115 or higher on the Duolingo English Test; or
- earned a score of 59 or higher on the Pearson Test of English (PTE).

Harrisburg University of Science and Technology is authorized under Federal law to enroll nonimmigrant alien students.

This approval allows an international student to apply for entry into the United States for study on an F-1 visa only after financial documents are deemed sufficient by the University. A tuition deposit payment of at least $1,000 toward the first semester's tuition is required by HU before an I-20 will be issued. The SEVIS I-901 fee of $350 is then paid by the student directly to SEVIS prior to attending a Consulate visit for the F-1 visa.

Following entry into the United States and arrival at the University, the student will be required to provide HU with a copy of the passport, F-1 visa, the I-20, and the I-94 arrival/departure record to confirm all identification information in SEVIS. An international student is obligated to notify HU should their status change during enrollment from F-1 to any other immigration status. HU will terminate a student's SEVIS record for failure to remain eligible as required by the terms of the F-1 visa.

An international student does not qualify for Federal or State aid awards. Private education loans through participating lenders may be available, if eligible.

ADMISSION OF UNDOCUMENTED STUDENTS

Undocumented students* who meet HU's academic qualifications are eligible for admission to HU. HU will maintain the confidentiality of student citizenship and immigration status, in accordance with the provisions of the Family Educational Rights and Privacy Act (FERPA). HU will not voluntarily share a student's citizenship or immigration status unless compelled to do so by court order.
* International students admitted to HU from foreign countries must obtain a visa from the U.S. State Department before they can travel to this country. Accordingly, this policy statement relates exclusively to domestic students at HU who are entirely undocumented, who have been temporarily paroled under a Federal program or are in pending asylum status.

DISCIPLINARY APPLICATION QUESTIONS

Harrisburg University is committed to maintaining a healthy and safe learning environment. As part of supporting a safe campus, HU requires all applicants who have been convicted of a felony or have pending felony charges to provide a letter of explanation and official court documentation to the nature of the crime. The University must understand any conditions or probation or parole and any restrictions or obligations placed on the applicant before making an admissions decision. Applications will not be denied admission based solely on their disclosure of conviction.

Committee will review all pertinent information on applicants with felony convictions or pending felony charges. The Committee will make a recommendation on the applicant's suitability for enrollment and conditions that might apply to that enrollment decision.

Admissions Process for HU Online Degree Programs

DEGREE-SEEKING ADMISSION

Philosophy

Harrisburg University of Science and Technology seeks to admit students from a variety of backgrounds. Many factors are considered in the review of applicant files; the student's motivation and interest in science or technology, academic potential, prior coursework and grades earned in secondary and/or post-secondary school.

The HU Online Program Format

Harrisburg University of Science and Technology offers HU Online Degree Programs in a fully asynchronous learning environment. All program courses run on an accelerated schedule offered in two 7-week sessions each semester, including the summer. Please see the HU Online Program Academic Calendar (https://www.harrisburgu.edu/academics/academic-services/academic-calendar/) for start and end dates.

Admission Requirements

The HU Online Bachelor's Degree Program honors the University's commitment to lifelong learning and recommends that students have a minimum of 2 years work experience and a minimum of 12 earned college credits or the equivalent of work-related experience to a degree. Individuals with no previous college credits should also apply; however, an interview with the Director of Admissions and additional documentation may be required.

High School graduates wishing to enter the online degree programs directly after graduation must submit an official high school transcript or equivalent* and have a 2.75 or higher grade point average.

Application Timeline - The admission process recommends completing and submitting the application at least 30 days prior to any 7-week session start date. This application process allows ample time to be accepted, develop an academic schedule, and to process financial aid applications (if applicable). A student may enter during any one of the six sessions with no application fee. To complete the process, an applicant should:

- Meet one-on-one for an Admissions Interview with an HU Online Program Admissions Counselor.
- Complete the Online Bachelor's Degree Program application online at https//:apply.harrisburgu.edu.
- Submit all official college transcripts(s), if applicable, for high school, all college, university or career/trade schools attended (whether or not academic credit was earned)
    - GPA of 2.0 is recommended. If less than, the applicant may be required to submit additional materials outlined below:
        - Professional work and association/industry-related professional development certificates and syllabi for credit evaluation
        - Write and submit a personal goal statement that includes the following:
            - My professional goals
            - My current work experience
            - How I plan to incorporate my HU degree
- For a student whose first language is not English, submit scores from the Test of English as a Foreign Language (TOEFL), International English Language Testing System (IELTS), or the Duolingo English Test when the applicant's native language is not English. Please see the HU website at https://www.harrisburgu.edu/admissions/international-admissions/ for a list of countries with English as their primary language and may be exempt from providing an English Proficiency exam.
- See programs for additional admission requirements, if any.
- Optional materials:
    - a personal essay or goal statement;
    - be interviewed - preferably in person during a campus visit or by telephone/virtual meeting;
    - submit results of standardized test scores from the SAT or ACT (optional, but recommended for those in high school); and,
    - submit a letter of recommendation (preferably from someone who can attest to the student's work ethic, motivation and strengths, or from a teacher in a subject area tied to the student's academic field of interest).

If Financial Aid is being sought, a student must enroll in and complete at least 6 credits each semester.

* A copy of the official high school transcript must show the date when the diploma was awarded. To be considered official, the transcript must be provided to Harrisburg University from the high school (e.g., in a sealed envelope, through the Common Application, or by email directly from the high school). Home-schooled students will be required to provide a transcript from their local school district or a transcript certified by a parent. If Admissions determines that

a diploma, GED, or high school transcript may have been tampered with or is otherwise invalid, Admissions will contact the high school to validate the document and confirm the graduation date.

ADMISSION OF UNDOCUMENTED STUDENTS

Undocumented students* who meet HU's academic qualifications are eligible for admission to HU. HU will maintain the confidentiality of student citizenship and immigration status, in accordance with the provisions of the Family Educational Rights and Privacy Act (FERPA). HU will not voluntarily share a student's citizenship or immigration status unless compelled to do so by court order.
* International students admitted to HU from foreign countries must obtain a visa from the U.S. State Department before they can travel to this country. Accordingly, this policy statement relates exclusively to domestic students at HU who are entirely undocumented, who have been temporarily paroled under a Federal program or are in pending asylum status.

Readmission

The Readmission Application Form is available at Records and Registration and must be completed and submitted to that office at least two weeks prior to the start of the semester. A student who was in good academic standing, had satisfied all financial obligations to the University at the time of withdrawal, and had no disciplinary sanctions imposed will be considered for readmission. A student who left the University on probation or dismissal can only apply for readmission after an absence of one year. The application will be reviewed by a committee appointed by the Provost, who will make the readmission decision. Readmission for F1 students must also be approved by the International Student Office. Students must demonstrate compliance with F1 regulations. A student who leaves the University and returns from an absence of one year or more will be subject to the Catalog edition in effect during the year of return.

Tuition Charges, Refund Policies and Business Office Policies

All undergraduate tuition, charges and policies listed in this publication are effective as of July 1, 2024 and are subject to change, without notice, by the University's Board of Trustees.

Admission Application Charge

There is no charge to apply for admission to the University.

Tuition Deposit

A tuition deposit must be paid in advance of final course registration for the initial semester of attendance. A tuition deposit made for the Fall Semester is non-refundable after May 1. A deposit for the Spring Semester is non-refundable after November 1.

Tuition Schedule

Tuition payment or satisfactory arrangement to pay tuition, which includes financial aid resources, is due generally one week prior to the beginning of the semester. Tuition is charged according to the tuition schedule shown below.

Full-time undergraduate tuition charges are for 12 to 17 semester hours. A student registered for more than 17 semester hours is subject to an overload charge at the per-semester hour rate. For example, tuition charges for 18 semester hours will include the full-time rate of $11,950 plus $1,000 for the additional semester hour, resulting in a tuition charge of $12,950. The student activity fee brings the total fees for this example to $13,200. A part-time undergraduate student registered for 11 semester hours or fewer is charged the per-semester hour rate multiplied by the number of registered semester hours.

Graduate students are charged a per-semester hour rate. For example, a graduate student registered for 6 semester hours is charged the per-semester hour rate of $955 multiplied by the number of registered semester hours, resulting in a charge of $5,730.

Tuition Schedule		
	Per Credit	Flat Fee Per Semester
Undergraduate		
Part-Time (0-11 Credits)	1,000.00	-
Full-Time (12-17 Credits)	-	11,950.00
Full-Time Overload (18+ Credits)*	1,000.00	11,950.00
Student Activity Fee (Full-Time, Fall and Spring semesters only)	-	250.00
Dual Enrollment (1-11 Credits)	200.00	-
College in the High School	100.00	-

*Per credit charge applies to the number of credits that exceed 17.		
B.S. Exercise Science Pathway Program		
Exercise Science Program	540.00	-
Graduate		
Master's Programs	955.00	-
Doctoral Programs**	955.00	-
** For doctoral students, a 50% tuition discount applies only after completing 12 credits of Doctoral Studies dissertation courses. Once this requirement is met, the tuition rate for additional dissertation credits is $477.50 per credit. All other courses continue to be billed at the standard tuition rate.		
HU Online Programs		
Undergraduate	380.00	-
Graduate	650.00	-

Tuition Payments

Students can make tuition payments in person at the Business Office using cash, check, or money order. For added convenience, electronic payment options-including credit card, debit card, electronic check/ACH, and international payment methods-are available online through the Finance page of MyHU. Registered students can view their account information online. HU does not accept payments over the telephone.

A convenience fee applies to all credit and debit card transactions for tuition payments and other services. However, online ACH/electronic check payments do not incur this fee. HU does not retain any portion of the convenience fee; it is collected by the payment processor.

Tuition Payment Plans

A monthly, interest-free payment plan is offered to undergraduate students to make four (4) monthly installment payments during the semester. There is an enrollment fee of $50 per semester for this service. A student may enroll in a payment plan via the Finance page of MyHU.

Computer Requirements

All programs involving face-to-face or 'in-class' instruction require a laptop computer to be obtained prior to the first day of class. For any fully online programs or for any secondary machine, students are free to use desktop computers

that meet the requirements listed on the University's website at https://harrisburgu.edu/it-resource-center/. The cost is approximately $700 to $1,200.

Please note, these are the minimum requirements for the Office365 desktop software. There may be additional degree program software requirements. Some program software may be operating system dependent. Check with your advisor or program director for more information before you make any computer purchasing decisions.

Textbooks

Textbooks and other supplies (if specified for a course) must be obtained by the student prior to the start of the course; ideally one-to-two weeks prior to allow time to complete any assignment(s). Textbooks may include bound books, ebooks, journals, or software. Supplies may include a laboratory coat, goggles, gloves or any other required item specified. The estimated cost for textbooks and other supplies per course is $160. Students can find textbook information at www.harrisburgubookstore.com. Some courses have textbooks or learning materials embedded in the course structure, provided at no additional cost.

Prior Learning Assessment Charge

A student who submits an application for prior learning assessment is charged a per semester hour amount of $225 for the number of semester hours of the course equivalent sought. This charge is imposed at the time of application. No refund will be made if the application is unsuccessful. Refer to the section on Prior Learning Assessment (PLA) for further information.

Other Charges

Tuition Payment Late Charge - A late payment charge of $250 will be assessed if the student fails to make payment arrangements or pay tuition on or before the payment due date.

Returned Check Charge - A fee will be assessed if a check or electronic check/ACH transaction processed for payment is returned by the issuing bank.

Campus ID Card Replacement Charge - Upon enrollment, a student receives, at no cost, a photo-imprinted Campus ID Card to be used as an identification badge, as a library card, and for building and elevator access. A student is required to wear the Campus ID Card badge when on campus. If a student desires a photo ID, submission of a 2" x 2" photo is required and a charge of $25 is assessed to replace the card. If a Campus ID Card is lost or stolen, a charge of $25 is assessed to replace the card.

Late Registration Charge - A charge of $50 will be assessed if the student registers for a course after the Add/Drop Period has ended.

Pay to Print Charge - On-campus printing is available to the student. A charge may be assessed depending upon the nature of the print job: paper size, ink color, and quantity.

Diploma Reprints - All Harrisburg University graduates with no financial holds on their student records will receive one diploma per degree earned at no cost. Diplomas are issued to graduates after Records and Registration completes the degree conferral process (awarding of a degree once it is determined a student has met all degree requirements for graduation).

HU understands that graduates may be asked to provide a copy of their diploma for various purposes (including visa and work permit requirements). For these situations, graduates may request one of the following:

- A Degree Verification Letter, issued by Records and Registration, which outlines details of a degree obtained by a graduate (contact the RegHelp Support Portal at https://reghelp.harrisburgu.edu); or

- Requesting a reprint of the diploma by completing a Diploma Reprint Request form. The fee is $60.00 for the diploma and shipment within the U.S. (international shipments will have additional costs). For additional information about diploma reprints, contact the RegHelp Student Portal at https://reghelp.harrisburgu.edu.

Transcript Requests - The National Student Clearinghouse (NSC) provides an online transcript ordering service for Harrisburg University students and alumni 24 hours a day, 7 days a week. Please click the link below to order your transcripts:

National Student Clearinghouse Transcript Services

Transcripts are processed during business hours within two business days of placing the order. A $10.00 fee for standard domestic delivery applies to each official transcript requested, with varying costs based on delivery method and destination.

Withdrawal Policy

Full Withdrawal Refund Schedule		
A student who fully withdraws from all courses at the University may qualify for a credit of the unearned portion of the tuition charge. For refund purposes, the semester begins on the first day of the semester, subterm, or session, regardless of the student's first class day of attendance during week one. The period of time used to calculate the tuition refund is the first day of class of the semester to the University's determination date of official or unofficial withdrawal. The refund policy applies to tuition charged and does not apply separately to the various types of payments credited to the student's account. Please see the Academic Calendar at https://harrisburgu.edu/academic-calendar for specific semester start dates and withdrawal deadlines.		
14 Week Semesters		
There is a 100% tuition refund when a student fully withdraws during the add/drop period and a refund schedule for withdrawals occurring in the first three weeks of the semester.		
	Prior to the first day of the semester	100%
	Prior to the end of add/drop	100%
	During the second week	50%
	During the third week	25%
	After the third week	0%
7 Week Subterms/Sessions including HU Online Programs		
There is a 100% tuition refund when a student fully withdraws during the add/drop period, but no tuition refund when a student withdraws after the add/drop period.		
	Prior to the first day of the module	100%
	Prior to the end of add/drop	100%
	After add/drop	0%

Tuition Add/Drop Policy

Tuition Add/Drop Policy
If a student adds or reduces the number of courses and/or semester hours during the published add/drop period, tuition will be recalculated based on the adjusted number of semester hours. There is no tuition refund when a student withdraws from one or more courses after the add/drop period but remains enrolled in one or more other scheduled courses.

Tuition Add/Drop Policy for UPMC's Shadyside Nursing Program
The Add/Drop Period begins on the first day of the semester and ends after 14 days of the term. If a student adds or reduces the number of courses and/or semester hours during the published add/drop period, tuition will be recalculated based on the adjusted number of semester hours. There is no tuition refund when a student withdraws from one or more courses after the add/drop period but remains enrolled in one or more other scheduled courses.

Federal Student Financial Aid Program Refund Calculation

Traditional Program Federal Student Financial Aid Program Refund Calculation

Refunds are calculated upon official withdrawal from all classes and, if the student was deemed eligible for Title IV, Higher Education Act (HEA) student financial assistance program funds, any refund due will be paid within 45 days from the date the student is determined to have withdrawn.

A student who officially withdraws up to the 60 percent point in time of the semester will incur an adjustment to the amount of financial aid program funds awarded and/or disbursed for the term based on the percentage of time attended from the first day of class to the University's determination date of withdrawal. If a student officially withdraws after the 60 percent point in time of the 14-week semester, 100 percent of the student's financial assistance program awards are considered earned and will be applied to the total amount of institutional charges due for the term. The refund order of Title IV, HEA program funds (as applicable to the student) is: Unsubsidized Direct Loans; Subsidized Direct Loans; Direct PLUS Loans; Federal Pell Grants; and, Federal Supplemental Educational Opportunity Grant (FSEOG).

For a student who unofficially withdraws during a semester, the withdrawal date shall be the end of the semester. The student is then responsible for all tuition charges due resulting from this reduction in awards and/or payments previously credited to the student's account.

In the event that the financial aid recalculation results in an amount to be returned that exceeds the school's portion, the student will be required to repay some funds directly to the U.S. Department of Education.

In the event that a financial aid recalculation results in all outstanding tuition and fees being paid, resulting in a credit balance on the student's account, this credit balance will be refunded to the student within 14 days of the financial aid recalculation date. All refunds are sent by check via U.S. mail.

In accordance with federal regulations, if a student receives all F grades during a semester, the University is required, at the best of its ability, to perform an attendance review to determine if a student ceased attendance during the semester. If it can be definitively determined that a student stopped attending prior to the 60 percent point of the semester, as indicated above, the student will incur an adjustment to the amount of financial aid program funds awarded and/or disbursed for the term based on the percentage of time attended from the first day of class to the University's determination that the student stopped attending.

Post-Withdrawal Disbursements: A student may qualify for a post-withdrawal disbursement of their financial aid if the aid earned is more than the amount disbursed to them. The Financial Aid Office will notify a student of their potential eligibility with a post-withdrawal notification letter, sent both email and U.S. mail. The student will have 14 days from the date of the letter to accept or decline the post-withdrawal disbursement. If no response is received from the student, the post-withdrawal disbursement will be forfeited. The University will offer any post-withdrawal disbursement of loan funds within 30 days of the date the school determined the student withdrew. The University will also return any unearned funds and make a post-withdrawal disbursement of grant funds within 45 days of the date the school determined the student withdrew. Finally, if a student withdraws and is entitled to a post-withdrawal disbursement it will be applied to charges still owed to the University, and any excess will be refunded to the student.

HU Online Program Federal Student Financial Aid Program Refund Calculation

Refunds are calculated upon official withdrawal from all classes and, if the student was deemed eligible for Title IV, Higher Education Act (HEA) student financial assistance program funds, any refund due will be paid within 45 days from the date the student is determined to have withdrawn.

A student who officially withdraws up to the 60 percent point in time of the semester will incur an adjustment to the amount of financial aid program funds awarded and/or disbursed for the term based on the percentage of time attended from the first day of class to the University's determination date of withdrawal. If a student officially withdraws after the 60 percent point in time of the 14-week semester, 100 percent of the student's financial assistance program awards are considered earned and will be applied to the total amount of institutional charges due for the term. The refund order of Title IV, HEA program funds (as applicable to the student) is: Unsubsidized Direct Loans; Subsidized Direct Loans; Direct PLUS Loans; Federal Pell Grants; and, Federal Supplemental Educational Opportunity Grant (FSEOG).

For a student who unofficially withdraws during a semester, the withdrawal date shall be the end of the semester. The student is then responsible for all tuition charges due resulting from this reduction in awards and/or payments previously credited to the student's account.

Refunds are calculated upon official withdrawal from all classes and, if the student was deemed eligible for Title IV, HEA student financial assistance program funds, any refund due will be paid within 45 days from the date the student is determined to have withdrawn.

A student who officially withdraws before the 60 percent point in time of the session will incur an adjustment to the amount of financial aid program funds awarded and/or disbursed for the term based on the percentage of time attended from the first day of class to the University's determination date of withdrawal. If a student officially withdraws during or after week 4 of the 7-week session, 100 percent of the student's financial assistance program awards are considered earned and will be applied to the total amount of institutional charges due for the term. For a student who unofficially withdraws during a session, the withdrawal date shall be the end of the session. The student is then responsible for all tuition charges due resulting from this reduction in awards and/or payments previously credited to the student's account.

In the event that the financial aid recalculation results in an amount to be returned that exceeds the school's portion, the student will be required to repay some funds directly to the U.S. Department of Education.

In the event that a financial aid recalculation results in all outstanding tuition and fees being paid, resulting in a credit balance on the student's account, this credit balance will be refunded to the student within 14 days of the financial aid recalculation date. All refunds are sent by check via U.S. mail.

In accordance with federal regulations, if a student receives all F grades during a semester, the University is required, at the best of its ability, to perform an attendance review to determine if a student ceased attendance during the semester. If it can be definitively determined that a student stopped attending prior to the 60 percent point of the semester, as indicated above, the student will incur an adjustment to the amount of financial aid program funds awarded and/or disbursed for the term based on the percentage of time attended from the first day of class to the University's determination that the student stopped attending.

Post-Withdrawal Disbursements: A student may qualify for a post-withdrawal disbursement of their financial aid if the aid earned is more than the amount disbursed to them. The Financial Aid Office will notify a student of their potential eligibility with a post-withdrawal notification letter, sent both email and U.S. mail. The student will have 14 days from the date of the letter to accept or decline the post-withdrawal disbursement. If no response is received from the student, the post-withdrawal disbursement will be forfeited. The University will offer any post-withdrawal disbursement of loan funds within 30 days of the date the school determined the student withdrew. The University will also return any unearned funds and make a post-withdrawal disbursement of grant funds within 45 days of the date the school determined the student withdrew. Finally, if a student withdraws and is entitled to a post-withdrawal disbursement it will be applied to charges still owed to the University, and any excess will be refunded to the student.

Institutional Financial Assistance Awards, Payments and Refunds

Merit- and need-based financial aid assistance awarded by the University for a semester are earned ratably through week 9 of the 14-week academic term, similar to the federal student assistance program refund calculation described above.

While payments of institutional aid may be credited to the student's account on or after week 4 of a semester, the student must remain enrolled through week 9 of the semester to fully earn the award.

For example, a student with a merit award of $2,000 who officially withdraws in week 6 of the 14-week semester would only have $800 of institutional financial aid assistance applied toward tuition due for the term [$2,000 x 6/14 = $857]. The difference of $1,143 is rescinded and the student is responsible for any remaining tuition balance due.

Veteran Student Tuition and Fees Policy

Pursuant to Section 103 of the Veterans Benefits and Transition Act of 2018, a student who is entitled to education assistance under chapter 31-Vocational Rehabilitation and Employment, or chapter 33-Post 9/11 GI Bill® benefits will be permitted to attend and participate in the course of education during the period beginning on the date in which the student submits a written request to use such entitlement and ending on the earlier of the following dates:

- The date on which payment from Veterans Administration is made to the institution
- 90 days after the date the institution submitted certification of enrollment/tuition and fees to Veterans Administration

Harrisburg University will not impose any penalty, including late fees, limited access to university resources, or require additional borrowed funds on any eligible student due to the inability to meet their financial obligation to the university based on delayed disbursement of Veterans Administration funding.

A student who is entitled to education assistance under any of the available Veterans Administration Education Benefits is expected to submit a written request (VA Benefits eForm) as confirmation of their intention to use the entitlement before the Enrollment/Tuition and Fees Certification can be reported by the Certifying Official to Veterans Administration for processing.

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

Student Financial Aid Programs and Policies

The Office of Financial Aid assists qualified applicants who, without assistance, would otherwise be unable to pursue a post-secondary education. The Free Application for Federal Student Aid (FAFSA) and resulting need analysis is used to apply for federal, state and institutional award consideration for payment of tuition, housing, or other charges.

A student must apply each year to renew financial aid eligibility. The amount of financial aid awarded will reflect changes in tuition, housing, or other costs and updates to the financial profile of the student and family.

All students are encouraged to apply for federal and state grant program funding to determine the student's eligibility. A student seeking federal or state financial aid program assistance is required to contact the Office of Financial Aid at least 30 days prior to the start of a semester to complete the application process, submit all required documents and materials requested, and finalize a financial assistance plan by the end of the Add/Drop Period. A student whose financial assistance plan is not finalized by the end of the Add/Drop Period will not be allowed to attend class.

Financial Aid Awards

Traditional Program Financial Aid Awards

Financial aid awards are based on the enrollment status of the student during a semester as of the conclusion of the Add/Drop Period, defined as:

Full-time	12 or more semester hours
Three-quarter time	9 through 11 semester hours
Half-time	6 through 8 semester hours
Less than half-time	1 through 5 semester hours

Required enrollment status for federal, state and university financial aid awards:

Program	Full-time	Half-time	Less than Half-time
Pell Grant	Yes	Yes	Yes
FSEOG	Yes	Yes	Yes
Direct Loan	Yes	Yes	Not eligible
PA State Grant	Yes	Yes	Not eligible
HU Aid	Yes	No (*Available in Summer*)	No (*Available in Summer*)
Funded Scholarships	Yes	No	No

A non-degree or non-credit student is not eligible for financial aid.

Progress toward a Degree

A student is classified based upon the number of semester hours completed and reported to Records and Registration. The classification is based on credits completed, not attempted, and does not include courses for which one of the following grades has been assigned: "I", "NR", "W", "WA", "WF", "FD", or "F".

First Year	fewer than 24 semester hours earned
Second Year	greater than or equal to 24 semester hours earned but fewer than 60
Third Year	greater than or equal to 60 semester hours earned but fewer than 90
Fourth Year	greater than or equal to 90 semester hours earned

HU Online Program Financial Aid Awards

Financial aid awards are based on the enrollment status of the student during a semester as of the conclusion of the Add/Drop Period, defined as:

Full-time	12 or more semester hours
Three-quarter time	9 through 11 semester hours
Half-time	6 through 8 semester hours
Less than half-time	1 through 5 semester hours

Required enrollment status for federal, state and university financial aid awards:

Program	Full-time	Half-time	Less than Half-time
Pell Grant	Yes	Yes	Yes
FSEOG	Yes	Yes	Yes
Direct Loan	Yes	Yes	Not eligible
PA State Grant	Yes	Yes	Not eligible
Funded Scholarships	Yes	No	No

A non-degree or non-credit student is not eligible for financial aid.

Progress toward a Degree

A student is classified based upon the number of semester hours completed and reported to Records and Registration. The classification is based on credits completed, not attempted, and does not include courses for which one of the following grades has been assigned: "I", "NR", "W", "WA", "WF", "FD", or "F".

First Year	fewer than 24 semester hours earned
Second Year	greater than or equal to 24 semester hours earned but fewer than 60
Third Year	greater than or equal to 60 semester hours earned but fewer than 90
Fourth Year	greater than or equal to 90 semester hours earned

Aid Sources

Federal Pell Grant

The Federal Pell Grant is awarded based on a federal formula using the information provided on the Free Application for Federal Student Aid (FAFSA). Awards for a full-time student vary from $740 - $7,395 for the 2024-2025 academic year, depending on financial need

Federal Supplemental Educational Opportunity Grant (FSEOG)

A limited amount of funds from the SEOG program are available to supplement a Pell-eligible student with exceptional need. Awards vary depending on need and fund availability.

Federal Direct Loan

There are two types of Federal Direct Loans: subsidized and unsubsidized. The subsidized loan is interest-free while the student is in school and is awarded based on financial need. Interest accrues on the unsubsidized loan while the student is enrolled in school. The borrower may opt to pay it as it accrues or allow it to accrue and capitalize. The unsubsidized loan is a non-need based loan program.

The maximum subsidized Direct Loan per academic year is $3,500 for first-year students, $4,500 for second-year students, and $5,500 for third-year students and beyond. A dependent student may borrow an additional $2,000 unsubsidized per year. An independent student may borrow an additional $6,000 unsubsidized loan per year as a first-year and second-year student, and an additional $7,000 per year as a third-year student and beyond.

Federal Parent Loan for Undergraduate Students (PLUS) Loan

The PLUS is available for parents of an undergraduate student through the Direct Loan program. A parent may borrow up to the cost of attendance less any other financial aid received. Repayment begins 60 days after this loan is fully disbursed unless the parent requests the in-school deferment option.

Federal Work-Study

An eligible student can seek part-time employment either on-campus or in community service positions off-campus. A student may work up to 20 hours per week during a semester and up to 35 hours per week when classes are not in session.

Pennsylvania State (PHEAA) Grants & Special Programs

PA State Grants are awarded to eligible Pennsylvania residents based on need. Estimated awards will vary from $250 to $5260 for the 2024-2025 academic year. A student applies for the State Grant by completing the FAFSA. Renewal applicants must apply before PHEAA's May 1 deadline. Information from the FAFSA is automatically submitted to

PHEAA. After the initial application is filed, students should respond directly to the PHEAA Grant Division if additional information is required to process the state grant award.

Other special programs are offered to eligible applicants as determined by PHEAA. An official high school transcript, or equivalent, is required to evaluate an applicant's eligibility for these programs.

Other Programs

The following federal, state, or private financial aid sources are available to a student based upon the individual's affiliations or experiences.

Veterans Administration Education Benefits
Pennsylvania Office of Vocational Rehabilitation
Job Training Agencies
Employer Sponsorship

Institutional Grant and Scholarship Programs

The University offers a variety of merit- and need-based grant assistance programs for full-time enrollment status in the Traditional Programs during a semester. First-year student merit awards are determined using the record of high school achievement. An official high school transcript, or equivalent, is required to evaluate an applicant's eligibility for these programs. Renewal provisions apply to merit-based awards for subsequent year funding.

Need-based grants may be awarded to a student who has remaining need after receiving available federal and state grant sources of aid for the academic year. Award amounts are discretionary and may change from year to year. Although a student may meet the criteria for multiple gift aid grant awards, receiving any particular award is not assured.

Several scholarship awards are made through funded programs coordinated by the Office of Financial Aid.

Applying for Financial Aid and Financial Aid Counseling

The student is encouraged to apply for federal and state grant program funding to determine the student's eligibility. A student seeking federal or state financial aid program assistance should submit all potential aid applications at least 30 days prior to the start of a semester. Failure to submit all required applications, documentation and materials requested by the end of the semester could result in a large unpaid tuition bill. Financial aid counseling is always available by phone, Teams meeting, or in person.

Enrollment Status Determination and Financial Aid Payments

A student's enrollment status is determined at the end of the Add/Drop Period. The student is charged the applicable tuition rate for the number of semester hours in which the student is enrolled. Federal student financial aid program assistance for which the student may be eligible is then calculated and paid, in accordance with regulations, based on the student's enrollment status. All Financial Aid, including federal based aid, is disbursed after the 30th day of the term. Advance payment of an estimated credit balance resulting from anticipated institutional financial aid awards is prohibited.

Satisfactory Academic Progress for Financial Aid Recipients

Satisfactory academic progress (SAP) for federal Title IV, HEA student financial aid program assistance is defined as the minimum progress required toward the completion of a degree and must be maintained in order to receive federal and institutional financial aid. As required by federal regulations, the Harrisburg University SAP policy for federal

Title IV financial aid recipients is stricter than the University's academic progress policy for students not receiving Title IV financial aid. The Pennsylvania State Grant Program, administered through PHEAA, has different criteria to determine academic progress.

It is important to note this policy applies to both full-time and less than full-time undergraduate students. An undergraduate student must be enrolled in at least 12 credits for the semester to be considered full-time. An undergraduate student enrolled in less than 12 credits for the semester is considered to be less than full-time.

Federal regulations require the University to establish standards of academic progress in both of the following areas:

- the student's cumulative grade point average, the qualitative measure; and,
- the maximum time limit for completing the program of study, the quantitative measure.

Satisfactory academic progress is evaluated at the end of each semester. Financial aid recipients must maintain the standards in both areas, regardless of whether aid was received in the past. A student who does not meet one or both of the standards is not making satisfactory progress until the standards are met.

A student who is academically eligible to continue enrollment at the University, but does not meet the standards of academic progress, may remain enrolled without financial aid until eligibility to receive financial aid is re-established. A student should contact the Office of Financial Aid to discuss strategies for meeting the standards and to inquire about options for financial assistance that are not subject to satisfactory academic progress requirements.

Transfer credit hours from another institution that are accepted toward a program of study are counted as both attempted semester hours and earned semester hours in the program pursuit calculation to determine satisfactory academic progress for Title IV, HEA student assistance program purposes. Grades for transfer credit hours are not included in the calculation of the cumulative grade point average.

Semester hours for a grade of Incomplete (I) are counted in the total attempted semester hours in the program pursuit calculation of satisfactory academic progress for Title IV, HEA student assistance program purposes. It is the student's responsibility to contact the Financial Aid office in the event of a change of grade, for example from "I" to "B", to ensure that the SAP status is reviewed for eligibility changes.

Semester hours for a Withdrawal grade (W) are considered attempted semester hours in the calculations of satisfactory academic progress for Title IV, HEA student assistance program purposes.

When a course is repeated, the attempted credit hours are used to determine the student's enrollment status for the semester (i.e., full-time, half-time, less-than-half-time), but the repeated hours are not counted a second time as attempted credit hours in the cumulative grade point average calculation. Earned semester hours and quality points for a grade used in the cumulative grade point average calculation for a course repeat are taken from the most recent grade.

Academic Standing and Financial Aid Eligibility (qualitative)

A student with a cumulative grade point average of 2.00 or higher is in satisfactory academic standing. If a student has a cumulative grade point average below 2.00 at the end of a semester, the student has failed to meet the minimum satisfactory academic progress standard and is subject to the warning, probation or dismissal sanction, as applicable, as stated below.

After the initial semester, if at any time the cumulative grade point average falls below 1.00 the University reserves the right to dismiss the student.

Program Pursuit - Maximum Timeframe for Completing the Program of Study (quantitative)

A full-time student must successfully complete a program of study within one- and one-half times the normal time frame in semester hours attempted to continue to receive Title IV, HEA student financial aid program assistance. More simply stated, program pursuit requirements for a normal 4-year, 8-semester program consisting of 120 semester hours must be completed successfully within 6 years (i.e., 12 semesters, 180 semester hours) to maintain eligibility for federal financial aid program assistance throughout the program of study.

A student who is enrolled less than full-time will have the policy applied on a pro-rata basis in accordance with enrollment status. The quantitative measure of satisfactory academic progress is measured using the following calculation: Total Earned Semester Hours ÷ Total Attempted Semester Hours = a percentage (%).

Students must complete their degree within 150% of the number of credits necessary to complete the educational program. As a result, students are required to be earning a minimum of 67% of their total cumulative attempted credits at the end of each payment period to remain in good satisfactory academic progress standing.

Failure to Meet One of the Required Satisfactory Academic Progress Standards

A student who fails to meet either the qualitative or quantitative measure of satisfactory academic progress at the end of a semester is subject to the following policy:

First Occurrence - Warning

Following the first semester in which the student does not meet the satisfactory academic progress standard, the student will automatically be placed in a financial aid warning status for the next semester. A letter will be issued advising the student of their financial aid warning status. No appeal is needed, but in coordination with the Office of Student Services, an academic plan may be required. The student remains eligible for financial aid program assistance during the warning semester.

Second Consecutive Occurrence - Probation

If, by the end of the warning semester, the student is not able to achieve satisfactory academic progress status, the student will not be able to receive financial aid for the next period of enrollment unless the student successfully appeals. A letter will be issued advising the student of their financial aid status, the effect of this status on the student's financial aid eligibility, and the steps the student must take to submit an appeal. If the appeal is approved, the student will be placed in a financial aid probation status for the next semester and will be eligible for financial aid during that semester. If a student is still failing to meet academic progress at the conclusion of the probation semester, financial aid will be suspended but the student will again be given the opportunity to appeal and be approved for financial aid. In addition to an approved appeal, an academic plan would be required during this semester.

Appeals

A student who becomes ineligible to participate in the financial aid programs as a result of failure to meet satisfactory academic progress after the warning semester, may file an appeal by submitting a letter outlining the nature of the appeal to the Financial Aid Office. An appeal will be considered only if the student's failure to meet the standards of academic progress is determined to be due to events beyond the student's control. Examples of circumstances for which an appeal may be considered include military obligation; death of a relative; injury or illness of the student; unusual personal hardship or other extenuating circumstances. Written documentation of the circumstances of why the student failed to make satisfactory progress and what has changed that will allow the student to make satisfactory progress by the next evaluation must be submitted with the appeal and should reference the student's name and student ID number. In addition, the evidence must be received documenting that the required academic plan was completed, the cumulative grade point average has improved, and the required satisfactory progress grade point average can potentially be achieved to complete a program of study within the maximum timeframe limitation. Appeals submitted without documentation will not be considered. A timely determination will then be made and documented in the student's file.

If the financial aid appeal is denied, a second notice will be sent to the student advising them of the denial. If the appeal is approved, a semester of financial aid probation will be awarded. The student will be notified in writing their appeal was approved. The student must achieve satisfactory academic progress by the end of the financial aid probation semester.

Academic Standing and Satisfactory Academic Progress Review and Notification

The University evaluates academic standing and satisfactory academic progress at the end of each semester. All students who receive federal and state financial aid must meet the standards for satisfactory academic progress in order to establish and retain student financial aid program eligibility. The University may establish academic policies that may be different than the policies governing academic warning, probation, and dismissal for institutional grant and scholarship aid and state student assistance program purposes. Written notification of financial aid ineligibility is mailed to a student at the most recently reported permanent address.

Re-establishing Eligibility for Federal Student Assistance Programs

Following a dismissal action, a student may re-establish eligibility by earning course credit successfully at another institution that will directly transfer into the University's program of study and the required cumulative grade point average and maximum timeframe percentage for minimum satisfactory progress is achieved by the transfer credit and grades accepted.

Student Services

Overview

The Office of Student Services provides educational, personal, and professional support to promote student development and success. The Office of Student Services, in collaboration with other staff and faculty, enhances the mission of the University by providing an inclusive campus community, promoting leadership opportunities and providing resources and programming to facilitate academic success.

Student Life

Housing and Residence Life

There are a variety of housing options available through HU and HU affiliated housing partners for the Harrisburg location. These facilities vary from the more traditional college-style apartment setting with shared living space to the more independent, fully furnished high-rise apartment. These facilities are within a few blocks of the University. The Office of Student Life can assist the student to find optional housing, if necessary, via housing@my.harrisburgu.edu.

Student Activities

Student activities promote and enhance leadership, involvement, and engagement with the campus community. The student can create, attend, and lead programs or clubs of specific interest with assistance and guidance of the Office of Student Life by reaching out to Activities@my.harrisburgu.edu.

Student Government Association (SGA)

The SGA serves as the liaison to various campus constituent groups and advocates for the student body. The SGA encourages the student to be more active in the community, to help maintain a positive image for relationships to grow within the community, and to give direction for programs or clubs to prosper.

Student Success

Academic Advising

Academic advising can be a critical component in academic progress. A Student Success Coordinator is assigned to each undergraduate student. The Student Success Coordinator guides the student to explore academic goals and assists in course selection for their academic progression. The Office of Student Success supports the faculty advisors' role in academic advising; in addition, it also supports the student to access resources and develop strategies when non-academic factors impact a student's ability to achieve. Individual student advising is provided throughout enrollment. This advising is focused on academic success strategies such as time management, study skills, career aptitude, decision making and goal setting.

New Student Orientation and First-Year Experience

New Student Orientation and Welcome Weekend provide the student an opportunity to become familiar with the University housing facilities; technology services; academic support services; policies; and local entertainment, food, and transportation options. Most importantly, these programs provide the opportunity to meet other new students and other members of the University community.

New Student Orientation begins with enrollment in our Student Orientation Portal through HU's learning technology, Canvas. The student learns about the resources available, technology requirements, and what it means to be a part of

the HU community. Following this, the student is invited to attend an on-campus orientation day to meet with student support services and complete any outstanding new student tasks.

The weekend before classes begin, students are invited to Welcome Weekend which provides students the opportunity to engage with the incoming class of new students through various activities. Activities include acclimating to the campus and surrounding area, discovering student resources, and learning the tools to be prepared for the upcoming semester.

The first-time undergraduate student is enrolled in many of the same courses as other first-year students in the initial academic year. This creates a learning community in which the student develops a bond with other students and faculty. Additionally, the student obtains the necessary foundational skills needed for academic achievement in the program. The first-year seminar, EXPL 100 - Cornerstone is designed to help the student transition to the University setting and to provide resources and guidance on how to responsibly manage all the major components of university life.

HU Peer Tutoring Program

A student may request the assistance of a tutor to supplement classroom instruction. The tutor usually meets individually with the student either in person or virtually. Students may request HU Peer Tutors by selecting the Brainfuse platform on their Canvas dashboard or by contacting tutoring@HarrisburgU.edu. Group tutoring sessions are sometimes available; the student can attend without an appointment. A student who is interested in becoming a tutor should contact tutoring@HarrisburgU.edu. For more information, contact tutoring@HarrisburgU.edu.

On-line Tutoring

Brainfuse™ is an online tutoring service that is free to students. A student may submit an essay to a professional tutor for review or feedback, meet with an ESL specialist, review GRE or MCAT prep materials, or meet with a tutor. This site is accessed directly through Canvas, the University's course management system.

Technology Literacy Program

Technology literacy tutorials at www.linkedinlearning.com are available to a student if technology skill improvement is needed.

Health and Mental Health Services

Health Services

Medical services are not provided on any campus location. Local medical facilities are listed on the Student Services SharePoint site: https://myharrisburgu.sharepoint.com/sites/StudentServices/SitePages/Resources.aspx.

Mental Health Services

Counseling Center services include consultation, crisis intervention, workshops, support groups, connecting students to resources on and off campus, and providing information on mental health-related topics. Free, confidential individual therapy for eligible students who currently reside in Pennsylvania is also available Monday-Friday on-site at the Harrisburg campus or virtually, by appointment only. The Counseling Center emphasizes a short-term counseling focus to help students reach their educational goals and work to remove barriers to this process. Counselors can also provide referrals to local or additional resources for students residing outside of the Harrisburg area, or in need of services outside the scope of the counseling center. For more information or to schedule an appointment, students may contact counseling@harrisburgu.edu or call 717-901-5100 ext. 1727 during business hours. Additional information and resources are also available online at the Counseling Center SharePoint site at https://myharrisburgu.sharepoint.com/sites/SSCounseling.

HU also provides 24/7 support for all students through a Student Assistance Program offered by BHS. BHS provides in-the-moment support for students in crisis or referrals for various services such as mental health care, medical care, legal advice, and food assistance. The BHS website also has a list of valuable resources at https://portal.bhsonline.com (Username: HarrisburgU) For more information, go to the Student Services SharePoint site at https://myharrisburgu.sharepoint.com/sites/SSCounseling/Sitepages/counseling.aspx or call or text the 24/7 BHS support line at 800-327-2251.

Student Concerns and Complaints

The Office of Student Services offers guidance to the student when uncertainty exists about the appropriate process to address a topic, concern, or problem. A request for assistance may be submitted to obtain clarification of a policy or procedure. The request is then reviewed and a recommended course of action is provided in a timely manner.

Accessibility Support Services

Harrisburg University of Science and Technology welcomes diversity among its students and, in accordance to the Americans with Disabilities Act of 1990, seeks to provide reasonable and effective support services. The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 prohibit discrimination on the basis of disability and require the University to make reasonable accommodations for those otherwise qualified individuals with a disability who request accommodations. The applicant must provide recent documentation from a medical provider (within 3 years) of any disability that may affect learning to ensure that appropriate accommodations are considered. Please reach out to ADA@harrisburgu.edu for questions regarding proper documentation as well as support services provided.

Textbook Services

A complete textbook listing is made available on the Harrisburg University bookstore (www.harrisburgubookstore.com) at the time of registration. Textbooks are made available for student purchase through the services of Ambassador, which has an online store for new and used textbook purchases or rentals. Textbooks and other supplies (if specified for a course) must be obtained by the student prior to the first day of class. Students are not required to purchase books from Ambassador.

University Library

The mission of the Harrisburg University Library is to support the University's mission by enabling excellence in teaching and learning by providing robust access to information resources, integrating information literacy skills throughout the curriculum, and providing physical and virtual spaces for free intellectual curiosity, learning, collaboration, and knowledge sharing and creation. Library services include:

- collaboration between the librarians and faculty to integrate information literacy skill development and use of information resources into the curriculum;
- access to a wide range of information sources selected to enhance course-based and independent learning, such as:
    - online databases of articles from newspapers, magazines, and scholarly journals;
    - streaming media such as documentaries and video learning courses;
    - electronic books; and
    - a self-service library located in the Learning Commons offering physical-format books, games, and periodicals;
- research guidance for students by phone, e-mail, chat, or individual consultation;
- partnerships with other libraries to provide access to their information sources, free of charge to our students and faculty; and

- group study rooms which may be reserved in advance through a librarian.

For more information, including reporting of lost or damaged items and replacement charges see the Student Handbook.

For more information, visit the library's website at http://library.harrisburgu.edu. Electronic content is available on the website 24 hours a day from on- or off-campus. Off-campus use requires authentication with valid University credentials.

Technology Services

Information Technology Services is responsible for connecting students, faculty, and staff to technology resources in support of the University's mission. Technology services include:

- a robust and reliable infrastructure to enable excellence in learning;
- a required laptop program and an entirely wireless campus to facilitate mobile computing and access to content;
- high-end classroom technologies to enhance interactivity and the capture and distribution of classroom content;
- access to enterprise software applications such as our course management system;
- MyHU; Office365 email and productivity suite; and many other course-related software programs;
- the Harrisburg University Campus Card services, which enables building access, pay-for-print, and book checkout from the library while serving primarily as the official university identification; and,
- training, orientation, and support for all university technology services.

For more information, contact the OISHelp Support Portal at ithelp.harrisburgu.edu or 717.901.5177 with questions.

Career Services & Experiential Learning

Career Services and Experiential Learning at Harrisburg University aims to support the institution's diverse community of learners by providing practical and professional experiences to foster careers in science, technology, and beyond. The office offers equitable access to experiential learning and career development opportunities for students and alumni of Harrisburg University by collaborating with faculty and industry partners, allowing students to gain valuable experience both inside and outside the classroom. To realize this commitment all Harrisburg University students - regardless of major - complete an internship or applied practice as well as two semester-long projects of at least 135 hours in their field. An internship and projects allow the student to apply classroom experiences to the workplace to real-world experiences and in projects, where students test ideas and develop competencies and skills. These requirements provide practical and applied experience with their program goals and learning objectives as they are implemented in the working world. Students collaborate with partners external to the University for their internship experiences and are highly encouraged to engage with external partners on their projects as well.

The student obtains career coaching from a variety of academic and professional advisors. Through a combination of advising and hands-on experiences, students engage in career development and program exploration. The following services are offered for enrolled students and alumni: career coaching, assessment inventories, career exploration, professional development resources, events and programs, graduate and professional school advising, mock interviews, and resume review. All these efforts are available to encourage the student to begin planning early for eventual entry into the workplace. The University partners with private sector and public sector employers and staffing agencies to provide support and resources for the student during a career search. For more information, contact CareerServices@HarrisburgU.edu.

Experiential Education Advising - The student should meet with their faculty academic advisor, student success coordinator, and the Office of Career Services & Experiential Learning each year for information about experiential programs. The student should also obtain a recommended sequence of experiences for the program of study selected.

Academic Policies

Calendar, Credit System and Final Examinations

The University operates on a semester calendar and uses the semester hour credit system. There are three semesters per twelve-month period: Fall Semester, Spring Semester, and Summer Semester. Each semester consists of fourteen weeks of classes with final examinations occurring during the two or three final examination days. Within each semester, there are two subterms listed on the Academic Calendar at https://harrisburgu.edu/academic-calendar.

Credit Hour Policy Program Instructional Equivalencies

A wide variety of course delivery is utilized. "Learning hours" are assigned to each course. Each "learning hour" represents one hour per week of student engagement, including both instructional and outside of class activities. The University reserves the right to change the delivery method of a course due to administrative needs, the health and safety of the University community, or government mandates.

Traditional 14-week semesters are offered, plus subterms and an accelerated format. Regardless of the format or delivery, all programs whether online, blended/hybrid, executive weekend, accelerated, subterms or traditional classrooms, must meet the 126-learning hours requirement for a 3-credit course (3 credits * 3 hours/credit * 14 weeks = 126 hours). Adherence to these regulations enhances the quality and rigor of the academic programs and is achieved by utilizing the "instructional equivalencies" detailed below.

Faculty establish the learning-based interactions (when, where, how and why) including frequency, duration, evaluation, and assessment techniques. These guidelines recognize the need for the faculty to actively manage the learning space, both inside and outside the classroom. This policy is extremely important in helping faculty in the design and teaching of courses and in student learning. It is the responsibility of the faculty to deliver academic quality regardless of delivery format.

Provided below is an outline of acceptable "Instructional Equivalencies":

	Description	Rate of Equivalency
Blogs, Journals, Logs	Students' opportunity to apply learned concepts or for reflection on learning experiences; to be shared with instructor and/or classmates for thoughtful analysis, feedback and assessment.	1 private online posting= ½ learning hour 1 shared online posting (required to read all classmates' postings)= 1 learning hour
Case studies & problem solving scenarios	In-depth analysis requiring utilization of higher order analytical skills which relate to course objectives and is shared with instructor and/or classmates for feedback and assessment.	1 case study analysis & posting= 1-3 learning hour
Required Online Chat rooms for group projects	Instructor-led opportunities for collaborative, synchronous learning with specific expectations for participation & feedback. (Chats are posted for review.)	1 hour online chat= 1 learning hour
Conference calls	Instructor-led opportunities for collaborative, synchronous learning with specific expectations for participation & feedback. (When possible, calls to be recorded for review.)	½ hour call = ½ learning hour

Discussion Board	Instructor-guided or mediated threaded discussion that directly relates to course objectives and which has specified timeframes, expectations for participation, and thoughtful analysis.	1 posting (requires reading all postings) = ½ learning hour 1 posting (requires reading all postings and reply to a minimum of 2) = 1 learning hour
Field trips, tours and experiential learning (to include virtual tours)	Students participate as individuals or in groups in analyzing an activity & preparing a paper or presentation, to be shared in whole or in part with instructor and/or classmates.	(Instructor-Led)- 1- hour tour= 1 learning hour (Student(s) alone without instructor)- 1-hour tour plus reflection paper= 1 learning hour
Group projects	An instructor-mediated culminating activity with specific learning objectives; students collaborate via e-mail, chat rooms, discussion boards, wikis, and/or face-to-face contact to research, analyze, synthesize, & prepare project with instructor receiving periodic updates & providing guidance to group.	1 hour = 1 learning hour
Guided Project/Thesis	An instructor-mediated culminating individual project/thesis with specific learning objectives; student and instructor collaborate via email, chat, discussion boards, and/or face-to-face to research, analyze & prepare project/thesis with instructor receiving periodic updates and providing guidance and feedback.	1 hour = 1 learning hour
In-Class Instruction, Presentations, Tests	Instruction, presentations, and tests provided in person in live classroom setting.	1 hour = 1 learning hour
Instructional CDs, PowerPoints, Videos	Instructor-mediated to expand upon and clarify course concepts and objectives.	Reviews & posts response to 1 unit= 1 learning hour
Lecture activity-written or audio	Opportunity for students to develop questions, comments, or observations, to be shared with classmates & instructor through discussion board postings or participation in chat rooms.	Reviews 1 lecture & posts response= 1 learning hour
Library Research (instructor led)	In-depth instructor led opportunity for students to research scholarly articles or professional journals that relate to course objectives; to be shared with class in a designated manner.	Research for 1 five-page project = 1 learning hour Research for 1 3-5-page paper = 1-2 learning hours
Online Quizzes	Opportunity for instructor to assess students' subject knowledge and provide feedback on students' progress.	1-hour test = 1 learning hour
Reflection Paper or Article Review	Instructor-guided activity for students to apply learned concepts and relate practices to personal experiences or apply higher order analytic skills in assessing scholarly articles or professional journals.	1 private posting = ½ learning hour 1 shared posting (required to read all

		classmates' postings) - 1 learning hour
Service Learning Project; Jr and Sr projects, capstone	An instructor-led service project with specific learning objectives that integrates community service with academic study; faculty provides guidance, support, and feedback to students and students shares experience and reflection with fellow classmates via emails, chats, discussion boards, and/or face-to-face.	1 hour = 1 learning hour
Web-conferencing	Instructor-led desktop to desktop or classroom video streaming instruction for collaborative, synchronous learning with specific expectations for participation and feedback. (i.e., Canvas, Adobe Connect, Skype, etc.)	1 hour = 1 learning hour
Web-Quest (Internet Research)	Instructor-guided opportunity for students to research information on the Internet that enhances student learning and addresses specific course outcomes; findings shared with the instructor and classmates.	1 in-depth posting = 1 learning hour

*Researching, PowerPoint/video reviews, WebQuest activities, reading articles, etc. are considered "homework" assignments. The Rate of Equivalency denoted pertains to posting, reviewing, sharing, and providing student-to-student and/or instructor-to-student feedback.

Adapted from Misericordia University, Dallas, PA and modified for Harrisburg University.

Catalog in Effect

A new student entering the University during the 2025-2026 academic year will be subject to the academic program requirements contained in this Catalog edition unless the student elects to complete a revised set of program/concentration requirements published in a future edition of the Catalog. The student is expected to fulfill the academic requirements in 6 years from the date first enrolled in the program.

A student who elects to complete a revised set of program requirements must notify Records and Registration of this intent by completing a Change of Program form.

A student who leaves the University and returns from an absence of one year or more will be subject to the Catalog edition in effect during the year of return.

Enrollment Status

Student enrollment status is defined as either full-time or part-time. The minimum full-time undergraduate student enrollment is 12 semester hours in a semester. Part-time status is any number of credits fewer than 12 semester hours. The full-time course load is 12 through 17 semester hours. A course load average of 15 earned semester hours is needed to complete the program within 4 years. Requests for a course load greater than 17 semester hours must be submitted to Records and Registration. Students must have a minimum GPA of 3.0 or higher to request an overload.

A degree-seeking student must complete their program of study within 8 years from the date first enrolled in that program or the student may be required to change to the current catalog's program requirements. A student cannot pursue more than one degree at a time.

An F1 student must remain enrolled for a minimum of 12 credit hours per semester. A minimum of 9 credit hours must be in-person format classes. Falling below 12 credit hours or failing to meet in-person class requirements is a violation of F1 status and will result in SEVIS record termination.

Part-time status is sometimes defined further using one of the following terms:

Three-quarter time	fewer than 12 semester hours but greater than or equal to 9 semester hours
Half-time	fewer than 9 semester hours but greater than or equal to 6 semester hours
Less-than-half time	fewer than 6 semester hours but greater than none

Registration Process

Course registration is completed for first-time and transfer students by Records and Registration. If a student considers a course registration change or increase or reduction in semester hour load, the student should meet with the academic advisor and complete the Add/Drop procedure.

For subsequent semesters, the student registers on-line at MyHU/Academics to indicate course selections. The selections are then reviewed by the student's academic advisor and finalized when the student and the advisor agree to the selections. The start and end dates for registration appear on the Academic Calendar and Registration Instructions which are posted on MyHU/Academics and www.HarrisburgU.edu. Students who require an Americans with Disability Act accommodation to complete registration should contact ADA@HarrisburgU.edu.

Course Delivery Modes

In-Person (IP): Required course meetings are delivered in person at a predetermined time and location.

Hybrid (HB): A combination of in-person meetings at a predetermined time and location and synchronous meetings at a predetermined time using virtual classroom technology. The ratio of in-person to virtual instruction is flexible but should be pre-determined.

Synchronous Online (OS): Required course meetings are delivered synchronously at a pre-determined time using virtual classroom technology.

Asynchronous Online (OA): Courses are entirely online, with no required synchronous course meetings (either in-person or virtual).

Notes:

- All required meeting times, both in person and virtual, should be communicated at the point of registration.
- Instructional meetings outside the course modality, if offered, must be optional and/or flexible for students.
- Asynchronous instructional elements may be used in combination with the other three modes without impacting the course delivery definition.

Experiential Learning

A student who intends to enroll in an experiential project (298 or 498) or internship (365) or applied practice (499) is required to submit an experience request through Handshake in advance of starting the experience. Once the student's request is received the designation of an appropriate academic advisor and a site supervisor (if applicable) is reviewed and approved by the Office of Career Services & Experiential Learning.

Additional approval is required for F1 students. F1 students wishing to participate in experiential learning must first consult with the International Student Office to discuss eligibility for Curricular Practical Training (CPT) authorization. Students cannot begin an internship or other experiential learning opportunity until they receive an updated I-20 with CPT authorization.

Directed Studies

A student requesting a directed study for a course from this catalog must obtain a Directed Study Request form from Records and Registration. The student must provide a rationale for requesting the directed study before approval can be granted by Records and Registration. The following guidelines are required for a directed study:

1. Directed studies are only open to juniors and seniors.
2. Directed studies must be necessary. Directed studies are deemed necessary if a student needs a specific course in their program in order to graduate that can only be met through a directed study.
3. A student must have a minimum GPA of 2.25 in order to request a directed study.
4. A student may not take more than 6 credits of independent study or directed study from one faculty member.
5. The program lead and the student's faculty advisor must agree to offer the directed study.

Add/Drop Period and Course Withdrawals

Undergraduate - The Add/Drop Period begins on the first day of the semester or subterm and ends after 6 days of classes have occurred (this includes Saturday). A student may make schedule adjustments during the add/drop period on MyHU, or in the Records and Registration office. No course may be added after the end of this period. If a student withdraws from any course after the conclusion of this period and up until the last day to withdraw from a course with a "W", a final grade of "W" will appear on the permanent record. After that period, a "WF" will appear on the permanent record. The withdrawal deadlines appear on the Academic Calendar.

UPMC Shadyside Nursing Program - The Add/Drop Period begins on the first day of the semester and ends after 14 days of the term. A student may make schedule adjustments during the add/drop period on MyHU, or in the Records and Registration office. No course may be added after the end of this period. If a student withdraws from any course after the conclusion of this period and up until the last day to withdraw from a course with a "W", a final grade of "W" will appear on the permanent record. After that period, a "WF" will appear on the permanent record. The withdrawal deadlines appear on the Academic Calendar for UPMC's Shadyside Nursing Program.

F1 students wishing to drop or withdraw from a course must first consult with the International Student Office to determine eligibility. F1 students must remain enrolled for a minimum of 12 credit hours per semester. A minimum of 9 credit hours must be in-person format classes. Falling below 12 credit hours or failing to meet in-person class requirements is a violation of F1 status and will result in SEVIS record termination.

Audit Policy

The student may choose to participate in a course on an audit basis. The student who elects this option is expected to attend and participate in class regularly and complete all course requirements. The course that is being audited carries no academic credit but is recorded on the student's academic record and will receive a Pass (P) or No Pass (NP) grade at the conclusion of the course. The student who wants to audit a course must notify Records and Registration in writing no later than the end of the Add/Drop Period. The semester hour tuition rate applies to audited courses. An audited course cannot be subsequently taken for credit.

Class Attendance

Attendance is critical to academic success, and we encourage all students to attend every scheduled class session. Regular attendance is essential for students to fully engage with course materials, participate in classroom discussions, and collaborate with classmates. By attending class consistently, students demonstrate their commitment to their

education and are more likely to achieve their academic goals. Therefore, we strongly recommend that all students prioritize attendance and make every effort to attend every class session.

All students are expected to regularly demonstrate academic engagement within each class. It is the instructor's responsibility to set forth, in writing, any special conditions regarding absences from the course at the beginning of a course and the impact on student grades. In many classes, participation in class constitutes a substantial part of the work of the course. Faculty should clarify in the class syllabus how students are expected to demonstrate academic engagement.

Excessive Absences

When a student fails to participate to such an extent that their own progress or that of the class or group is seriously impaired, they may be at risk of being academically withdrawn from the course.

If, in the judgment of the instructor, a student is absent consecutively from class for more than two weeks and fails to complete the requested participatory assignments:

1. the instructor will notify the student of this determination;
2. the student will have one week to meet with the instructor to address the situation; and
3. if the student fails to do so, the instructor will notify Records and Registration to recommend withdrawing the student from the course.

Online Courses

Students in an online course must participate in the course weekly, either by submitting assignments or doing discussion posts, quizzes, tests, chats, or team sessions, to be considered in attendance. Logging in and viewing course material is not considered participation. Students that do not participate in their online course within any 14-day period may be administratively withdrawn from their courses.

F-1 Students

F-1 Students - Undergraduate Attendance Policy:

United States immigration laws require HU international undergraduate students with F-1 status to be continually enrolled in full-time status. At HU, this requires maintaining a minimum twelve-credit course load in every semester of enrollment (nine of the twelve credits must be 100% in-person courses).

Undergraduate students with F-1 status must attend at least 80% of their in-person classes to maintain their status. Missing 20% or more of in-person classes will be reported to the International Student Office, and the student's SEVIS record will be terminated unless there is documented evidence of extenuating circumstances. Submission of documentation does not guarantee the record will not be terminated.

If an extenuating circumstance outside of the student's control prevents them from meeting the attendance requirement, the student must contact the International Student Office in advance.

Verification of Enrollment

At the beginning of each term, Records and Registration verifies the course enrollments of all students. Only students officially registered for a course may attend class. Any student attending class, but not appearing on the roster must be added to the class before the end of the add/drop period. Faculty should notify Records and Registration if a student is in attendance but does not appear on the course roster.

Students must demonstrate academic engagement during the add/drop period. Failure to participate may result in the course(s) being dropped and the student exited from the program.

Inclement Weather Notice

In the event of inclement weather, HU does not post routine delayed openings, early departures, or closures due to weather with local media outlets.

Students, faculty, and staff should dial 717-901-5199 to access HU's operating schedule commonly called "HU Snowline." Should HU open late, close early, cancel activities, or close for the day due to inclement weather or for any other emergency, a message will be left on HU's voicemail at that number. Additionally, HU will post any changes to its operating schedule on the main page of its website, www.harrisburgu.edu, and update social media outlets.

If HU remains open during or following a weather-related event or other emergency, it is up to each student and employee to make a reasonable decision about whether to travel. Safety and common sense should guide decisions. Students are expected to notify their faculty, and employees are expected to notify their supervisors if they are not reporting to class/work. HU will not make personal calls to students or employees. HU will follow all City of Harrisburg and/or Commonwealth mandated emergency procedures in the event of a weather-related emergency.

Additionally, HU will follow all City of Philadelphia mandated emergency procedures as updated on the Ready Philadelphia/ Office of Emergency Management website: ReadyPhiladelphia | Office of Emergency Management | City of Philadelphia .

Harrisburg University Unplanned Closure Statement

When faced with the unplanned physical closure of Harrisburg University (326 Market Street, Harrisburg, PA 17101, and other physical locations) due to inclement weather or other circumstances, it is understood that teaching and learning will continue. Faculty will decide whether course work will be conducted in asynchronous or synchronous (or combined) format, with equal or greater 'learning hours' to that of the traditional session. Asynchronous format refers to course work that can be done by students independent of the instructor or other students. Synchronous format refers to sessions held in real time involving the students and instructor.

Advanced Standing

A student may earn advanced standing at the University in a variety of ways: transfer of credit from another institution, the awarding of credit for armed services training, successful prior learning assessment, or by examination.

A student without a degree who has earned advanced standing is classified on the basis of total semester hours accepted by the University.

A student who has earned a baccalaureate degree and is working toward a second degree is classified as a fourth-year student.

Articulation Agreements or Transfer Credit

The maximum number of semester hours that may be transferred to the student's record is 87; no more than 70 may have been earned at a two-year institution or in a combination of a two-year institution, AP, and CLEP credits. A student must take 33 semester hours (of which a minimum of 15 hours are within the major) at Harrisburg University to meet residency and earn a degree from Harrisburg University. Unofficial or student copies of transcripts may be used to initiate the transfer credit evaluation process. However, official final transcripts from the institution of origin are required before the transfer evaluation process can be finalized by Records and Registration and academic credit is posted to the student's permanent record.

Certain 2-year associate degree programs covered under an existing articulation agreement are accepted into the University's baccalaureate degree programs that satisfy the coursework requirements of the first and second year of study. An unofficial transcript may be used to initiate this transfer credit process. The official final transcript from the

institution of origin reflecting the degree name and the date the degree was conferred is required to finalize the awarding of coursework credit or exemption.

Domestic - In lieu of articulation agreements, academic credit earned at another regionally accredited institution of higher learning for college-level work is awarded when:

- a final grade of "C" (not "C-") or higher is earned;
- a course is a reasonable substitute of a University course;
- the course is a reasonable substitute for competencies associated with one of the general education requirements; and,
- the course is considered college-level work, worthy of elective credit in the student's intended program of study and the student has sufficient unsatisfied elective credit requirements to which this course may be applied.

International - a World Education Services (WES) transcript evaluation, Educational Credential Evaluation (ECE), or AACRAO's Electronic Database for Global Education (EDGE) transcript evaluation is required. If the original evaluation received by Records and Registration from one of these evaluators deems the student's prior work to be at the college level and the quality of the completed work is assessed to be at the "C" or higher level, credit is awarded for the courses that apply to the student's intended program of study at Harrisburg University, as indicated above for domestic transfer credit. If the prior work was earned under an educational system that did not assign credit values, the Harrisburg University semester hour value is assigned for each course being accepted. If the student completed courses that are evaluated to be at the college level, but Harrisburg University has no comparable course(s), the student is granted elective credit unless all required elective credit hours have been satisfied.

Massive Open Online Courses (MOOC) - a massive open online course is an online course targeting large-scale interactive participation and is delivered via open access on the web. A MOOC that is successfully completed will be reviewed and considered for transfer credit.

Coursework at Other Institutions - A student may study at other institutions and transfer the credit to the student's record at Harrisburg University.

Process for Approval - The student must complete an Off-Campus Course Request form at the Office of Records and Registration notifying the University of the student's intention to enroll on a visiting basis at another higher educational institution. The request will be reviewed by Records and Registration, which may consult with an appropriate member of the University's faculty. Prior to enrollment, a written response will be sent to the student stating whether or not the proposed course is acceptable.

Process for Awarding of Credit - The student must arrange for an official transcript from the other college or university to be sent to Records and Registration. If the approved course was completed with a final grade of "C" or higher, the semester hours earned from the course will be posted to the student's record as transfer credits and not calculated in the student's GPA.

Armed Services Training Programs

Under the following conditions, a student may receive academic credit for training programs completed while serving in the U. S. Armed Services: 1) the student must present a copy of the discharge notice (completed DD-214 form); 2) the veteran's military occupational specialty (MOS) designation must appear on the discharge; and, 3) the student's MOS is described in the American Council on Education's Educational Experiences in The Armed Services volumes 1-3. Credit is awarded based upon the ACE recommendation and the closeness of the match between the training program and a University course.

Prior Learning Assessment

The University may award undergraduate academic credit for prior knowledge, skills and abilities acquired through non-accredited and work-related learning experience equivalent to:

- the outcomes of a specific course; or,
- the outcomes of college-level work not currently offered at the University.

The experience and evidence provided should have a direct relation to the material taught in a course in the University's curriculum and should extend over a sufficient period to provide substantive knowledge in the relevant area. A baccalaureate degree-seeking student who is in good academic standing, has completed a minimum of 6 semester hours in a program of study at Harrisburg University, and demonstrates the qualities to receive such credit may petition the Provost through the academic advisor for consideration of prior learning assessment.

The petition must include the following:

- a detailed description of the relevant experience;
- appropriate supporting evidence;
- the equivalent University program, course number, and title; and,
- the number of semester hours sought.

A student may receive a maximum of 18 semester hours of credit for prior learning. However, not more than 6 semester hours of that credit may be substituted for core courses in the program of study.

The prior learning assessment process is a way to demonstrate to a mentor, who is an expert in the field, college-level knowledge in a particular course area. These college-level skills and knowledge may be from applicable work experience, volunteer activities, training programs, hobbies, religious activities, homemaking skills, prior independent reading or special accomplishments. This process is not an independent study.

Working with a mentor, the student is guided to develop an online, electronic portfolio to demonstrate prior college-level learning. The student can choose between standard prior learning assessment and individualized prior learning assessment. Standard prior learning assessment is an option when existing course descriptions match the college-level learning that the student wants to demonstrate. Individualized prior learning assessment occurs when the student proposes a course description that does not currently exist in the course catalog for Harrisburg University.

Prior learning assessment cannot be awarded for physical education courses, field experiences, student teaching, cooperative education, practicum courses, internships, projects, seminars, independent study or laboratories. It is important for the student to understand that life and learning experiences alone are an inadequate basis for the award of prior learning credit. To be eligible for prior learning assessment, the outcomes of the non-collegiate learning experience must be documented, be applicable to the student's program of study, be related to a course, and be assessed as being similar to or meeting the requirements of learning gained through college-level learning experiences.

Approval of prior learning credit must be made in writing from the academic advisor, the appropriate faculty member, and the Provost. A per semester hour charge of $225.00 is incurred by the student for the number of semester hours sought under prior learning assessment.

For more information about prior learning assessment, contact Records and Registration.

Credit by Examination

A student is limited to earning no more than 70 semester hours of credit via standardized tests: 1) successful performance on an Advanced Placement (AP) examination; 2) successful performance on a College Level Examination Program (CLEP) examination; or 3) successful performance on a challenge examination created by the Harrisburg University faculty.

Advanced Placement (AP) - a student who participates in the College Entrance Examination Board's program in association with secondary schools may earn college credit for this work by: 1) completing the course offered in the secondary school, 2) sitting for the Advanced Placement examination offered in May of each year, and 3) arranging for an official AP score report from College Entrance Examination Board (CEEB) to be forwarded to Admissions at Transcripts@Harrisburgu.edu. See the AP chart indicating the required minimum score for each discipline and the University's course equivalencies for which credit may be awarded.

AP Subject Examinations	Minimum Score	Harrisburg University Course Granted 2024-2025 Curriculum	Semester Hours
Art History	3	Art history portion of GEND 300 - The Cultured Mind	6
Art/Studio	3	elective	3
Biology	4	BIOL 102 - General Biology and BIOL 103 - General Biology Laboratory	4
Calculus AB	3	MATH 220 - Calculus I	3
Calculus BC	3	MATH 260 - Calculus II	3
Chemistry	4	CHEM 151 - General Chemistry I Lecture and CHEM 152 - General Chemistry I Laboratory	4
Chinese Language and Culture	4	elective	9
Computer Science A	3	CISC 120 - Programming I	4
Computer Science Principles	3	GEND 122 - Computational Mind	3
Economics - Macro	3	General Education Historical and Political Investigation group	3
Economics - Micro	3	General Education Leadership and Political Investigation group	3
English Language	3	ENGL 105 - College Composition	3
English Literature	3	GEND 103 - The Creative Mind II or elective	3
Environmental Science	3	ENVS 101 - Introduction to Environmental Science	4
French Language and Culture	3	elective	6
French Language and Culture	5	elective	9
Geography - Human	3	elective	3
German Language and Culture	3	elective	3
German Language and Culture	4	elective	6
German Language and Culture	5	elective	9

Government & Politics-Comparative	3	General Education Historical and Political Investigation group or elective	3
Government Politics - US	3	General Education Historical and Political Investigation group or elective	3
History - European	3	General Education Historical and Political Investigation group or elective	3
History - US	3	General Education Historical and Political Investigation group or elective	3
History - World	3	General Education Historical and Political Investigation group or elective	3
Italian Language and Culture	3	elective	6
Italian Language and Culture	4	elective	9
Italian Language and Culture	5	elective	12
Japanese Language and Culture	4	elective	9
Latin	3	elective	3
Music Theory	3	elective	3
Physics B	3	General Education Scientific Inquiry group	3
Physics C-Electricity and Magnetism	5	PHYS 350 - University Physics II	4
Physics C-Mechanics	5	PHYS 331 - University Physics I Lecture and PHYS 332 - University Physics I Laboratory	4
Physics 1	4	PHYS 121 - General Physics I Lecture and PHYS 122 - General Physics I Lab	4
Physics 2	4	PHYS 131 - General Physics II Lecture and PHYS 132 - General Physics II Lab	4
Psychology	3	GEND 130 - General Psychology	3
Spanish Language and Culture	3	elective	6
Spanish Language and Culture	4	elective	9
Spanish Language and Culture	5	elective	12
Statistics	3	MATH 280 - Introductory Statistics	3

College Level Examination Program (CLEP) - The University awards academic credit to a student who has performed satisfactorily on a College Entrance Examination Board CLEP general or subject examination when the test is a reasonable substitute for a requirement of the student's program of study under the following conditions:

- The optional essay portion of a subject examination has been completed successfully:
- For all subjects (with the exception of Level 2 French, German, and Spanish) representing the performance of the student who has earned a grade of "C" in the corresponding course, a minimum score of 50 per the American Council on Education's (ACE) credit-granting recommendations:
- For Level 2 (four-semester) foreign language examinations representing the performance of the student who has earned a grade of "C" in the corresponding course: 60 for German Language; 59 for French Language; and 63 for Spanish Language per the American Council on Education's (ACE) credit granting recommendations.

Official score reports must be sent to Admissions at Transcripts@HarrisburgU.edu before credit can be awarded.

CLEP exam	Equivalent HU Course(s)	Credits
Business		
Financial Accounting	MEBA 320- Financial and Managerial Accounting	3
Information Systems	Elective	3
Introductory Business Law	MEBA 435-Business Law and Ethics	3
Principles of Management	MEBA 220 - Principles of Business Management	3
Principles of Marketing	MEBA 230 - Marketing	3
Composition and Literature		
American Literature		3
Analyzing and Interpreting Literature	GEND 103 - The Creative Mind II; or ½ GEND 150 - The Learned Mind	3
College Composition or College Composition Modular	ENGL 105 - College Composition	3
English Literature	GEND 103 - The Creative Mind II; or ½ GEND 150 - The Learned Mind	3
Humanities	½ GEND 300 - The Cultured Mind	3
World Languages		
World Languages (French, German, Spanish)	Level 1- GEND 300 - The Cultured Mind Level 2- GEND 300 - The Cultured Mind	6 6
History and Social Sciences		
American Government	General Education Historical and Political Investigation group	3

History of the United States I: Early Colonization to 1877	General Education Historical and Political Investigation group	3
History of the United States II: 1865 to Present	General Education Historical and Political Investigation group	3
Human Growth and Development	Elective	3
Introduction to Educational Psychology	Elective	3
Introductory Psychology	GEND 102 - The Creative Mind I; or GEND 130 - General Psychology	3
Introductory Sociology	GEND 103 - The Creative Mind II; or GEND 120 - Self & Society: Introduction to Sociology	3
Principles of Macroeconomics	General Education Historical and Political Investigation group	3
Principles of Microeconomics	General Education Leadership and Political Investigation group	3
Social Sciences and History	General Education Historical and Political Investigation group	3
Western Civilization I: Ancient Near East to 1648	General Education Historical and Political Investigation group	3
Western Civilization II: 1648 to Present	General Education Historical and Political Investigation group	3
Science and Mathematics		
Biology	General Education Environmental and Life Sciences group	3
Calculus	MATH 220 - Calculus I	4
Chemistry	General Education Scientific Inquiry group	3
College Algebra	MATH 120 - College Algebra	3
College Mathematics	Elective	6
Natural Sciences	General Education Environmental and Life Sciences group	3
PreCalculus	Elective	3

Challenge Examination - The University awards academic credit to a student who has performed satisfactorily on a challenge examination created by a member of Harrisburg University's faculty. A student may do so by obtaining a Challenge Examination Form from Records and Registration, obtain the signature of the sponsoring instructor from the appropriate discipline, pay a fee equal to one-third the normal tuition charge for the course, and return the form to Records and Registration which will schedule a time and location for the examination. If successfully completed, student will receive a "P" on transcript.

Transfer Credit Appeal

A student who wishes to appeal a transfer credit decision may submit a copy of the syllabus from the course in question to Records and Registration no later than 30 days from the date of the transfer evaluation. Appeals will be reviewed and

granted or denied by the program lead and amended on the student's record. When cases of unusual or extenuating circumstances occur, a student may appeal the transfer credit decision beyond the 30-day limit.

Off-Campus Study Program

Pennsylvania Nanofabrication Manufacturing Technology Partnership Capstone Semester - This program is comprised of a 6 course, 18 semester hour, one-semester experience at The Pennsylvania State University's Center for Nanotechnology Education and Utilization on the University Park Campus focusing on nanofabrication manufacturing technology.

Policy - Any biotechnology student who is a Pennsylvania resident may choose to participate if the following criteria are met: (1) has earned a minimum of 60 semester hours; (2) has achieved a minimum 2.50 cumulative grade point average; and (3) be in satisfactory financial standing. The student is enrolled at The Pennsylvania State University during the Capstone Semester, so all registration, financial aid awards, and tuition payments must be coordinated with The Pennsylvania State University. If final grades of "C" or higher are earned at Penn State, the academic credit will be posted to the student's academic record at Harrisburg University.

Procedure - The student should express an interest in participating in this program at least one semester in advance of the desired semester of attendance. The application form is available on MyHU>Academics>Forms. The student registers for these courses in Harrisburg University's Office of Records and Registration after a letter of acceptance from The Pennsylvania State University has been received.

Additional information is available in Records and Registration.

Dual Programs

A student may elect to complete a second program while earning a Bachelor of Science degree. The student must satisfy all of the requirements of both programs. Courses may simultaneously satisfy requirements of both programs, but at least 36 semester hours must be completed unique to the core and concentration of the second program. Biotechnology with a General Biology concentration and Integrative Sciences with a Biology concentration may not be dual programs. The student must complete one additional experiential course, either an Internship or a Project II, in the second program of study, and the Foundation Math requirements for both programs. The student is required to have a minimum GPA of 3.2 and notify Records and Registration in writing of the intention to complete two programs. Dual programs cannot be completed within the minimum 120 semester hours required for a Bachelor of Science degree.

Dual Concentrations

A student may elect to complete a second concentration within the program of study. The student must complete both the primary and secondary concentration requirements. The student may simultaneously use one or more courses to satisfy the requirements of both concentrations, but at least four unique courses (a minimum of 3 semester hours each) must be completed toward the second concentration. The Chemistry concentration and the Biochemistry concentration in the Integrative Sciences program may not be dual concentrations. The student is required to have a minimum GPA of 3.2 and notify Records and Registration in writing of the intention to complete two concentrations.

Graduation Requirements

A student must satisfy all of the following requirements to receive a Bachelor of Science degree:

1. At least 120 semester hours must be successfully completed.
2. The student must successfully complete all of the requirements of the declared program of study for which the degree is to be awarded.
3. A cumulative grade point average of at least 2.00 in all coursework completed at the University is required for graduation from a baccalaureate degree program.

4. The program's required courses must be completed with a minimum GPA of 2.00.
5. A student must earn a minimum of 33 semester hours in residence toward a baccalaureate degree from Harrisburg University of Science and Technology: 9 semester hours must be completed in experiential courses, 18 semester hours must be completed in required program courses, and 6 other semester hours. The maximum number of semester hours that may be transferred to Harrisburg University is 87; no more than 70 may have been earned at a two-year institution.

Verification that the student has met these requirements is made by Records and Registration. A candidate for graduation must complete all requirements for the degree to be eligible to participate in Commencement.

A candidate should apply for graduation after registering for the last semester of the anticipated completion date by submitting an Application for Graduation via MyHU. Once degree requirements are met, the degree will be conferred.

Requirements for Earning a Second HU Bachelor's Degree

A person who has earned a bachelor's degree from HU or another accredited college or university may earn a second bachelor's degree by meeting the following requirements:

1. A student may not pursue a second degree under the same program of study (e.g., if a student already has earned a B.S. in Computer and Information Systems, the student cannot pursue a second B.S. in Computer and Information Systems). If a student intends to pursue a different concentration under the same degree, please refer to the "Dual Concentrations" section of the catalog.
2. The student must satisfactorily meet all graduation requirements for the second degree program unless there is an exception listed below.
3. Graduates from HU shall not be required to repeat any general education, foundation, or seminar course requirements of HU. Graduates who earned their first degree from another accredited college or university must submit transcripts for audit to determine if prior coursework meets the General Education and Foundation requirements.
4. A minimum of 30 additional undergraduate course semester hours and an additional 6 experiential learning semester hours (i.e., Project II and Internship) must be successfully completed at HU.
5. Coursework completed successfully as part of the first degree program may be used to satisfy the graduation requirements of the second major but will not count toward the 36 required semester hours minimum.
6. A student may not repeat a course already completed for credit during his or her first degree program.

NOTE: A student currently pursuing a second program at HU does not receive a second degree (please refer to the "Dual Programs" section of the catalog). A student who intends to earn a second bachelor's degree must meet all the requirements listed above for the second bachelor's degree and must submit a request for a second bachelor's degree to Records and Registration before beginning the second degree.

Finalizing the Academic Record

The university confers degrees at the end of each of the six semesters (Fall, Late Fall, Spring, Late Spring, Summer, and Late Summer). All final grades and official transcripts for applicable transfer work must be received in order for a degree conferral to occur. According to university policy and federal reporting requirements, degrees must be conferred and finalized once a student has fulfilled all requirements.

Once the degree is conferred, the academic record is considered complete and final. No further changes will be made unless there is a documented clerical error, or the student successfully appeals an academic grievance. It is the responsibility of the student to notify Records and Registration of a clerical error within 30 days of the conferral date.

Course repeats for the purpose of bolstering the final degree GPA are not permitted after a degree is conferred. No transfer work will be accepted after the degree is conferred.

A student may not retroactively seek to have additional majors or concentrations added to a degree after it has been posted. However, a student may seek readmission as either a non-degree seeking student or as a second degree seeker after their initial degree has been conferred.

Grades and Grading

Grades are awarded to each student for academic credit completed. A grade is assigned by the instructor responsible for the course in which the student is enrolled, using the following grading scale to indicate the quality of the student's academic work.

Grade	Description	Numerical Value
A	Superior achievement	4.00
A-		3.67
B+		3.33
B	Above average achievement	3.00
B-		2.67
C+		2.33
C	Average achievement	2.00
C-		1.67
D+		1.33
D	Minimum achievement	1.00
F	Fail	0.00
FD	Fail – Disciplinary	0.00
AU	Audit	Not applicable
CR	Credit	Not applicable
I	Incomplete	Not applicable
LB	Laboratory	Not applicable
NP	No Pass	Not applicable
NR	Not reported	Not applicable
P	Pass	Not applicable
#F	Fail – Forgiven	Not applicable

PLA	Prior Learning Assessment	Not applicable
TR	Transfer credit	Not applicable
TA	Transferred credit earned with superior achievement	Not applicable
TA-		Not applicable
TB+		Not applicable
TB	Transferred credit earned with above-average achievement	Not applicable
TB-		Not applicable
TC+		Not applicable
TC	Transferred credit earned with average achievement	Not applicable
TP	Transfer Pass	Not applicable
TS	Transfer Satisfactory	Not applicable
W	Withdrawal	Not applicable
WA	Administrative withdrawal	Not applicable
WF	Withdrawal after the period to withdraw with a "W" grade	0.00

Grades of "AU", "CR", "I", "NP", "NR", "P", "#F", "PLA", "TR", "TA", "TA-", "TB+", "TB", "TB-", "TC+", "TC", "TP", "TS", "W", or "WA" are not included in the calculation of a student's grade point average (GPA). They are used by the University in circumstances when grades of "A" through "F" are not appropriate. A WF grade is calculated into a student's GPA. The credit type of AD is not included in the calculation of the grade point average.

Audit (AU) - The audit grade is assigned by the instructor when the student has properly registered to audit the course and has met all requirements of the University's course audit policy.

Credit (CR) - A grade of "CR" is used to indicate on the student's permanent record that credit has been awarded by the University for military training or successful completion of an examination. While courses with a "CR" grade are counted toward the student's degree requirements, there are no quality points associated with this grade so there is no impact upon the calculation of the student's grade point average.

Incomplete (I) - Inability to complete coursework due to documented circumstances beyond the student's control (such as severe illness) may, at the instructor's discretion, result in a temporary grade of incomplete (I).

Laboratory (LB) - This grade is assigned by Records and Registration at the conclusion of a semester to a student who is enrolled in a non-credit developmental recitation section of a course. This grade and such a course does not appear on the student's transcript.

Withdrawal (W) - This grade is recorded by Records and Registration when the student has withdrawn from the course according to the policy set forth by the University for withdrawing from a course.

Administrative Withdrawal (WA) - The "WA" grade can be assigned only by the Provost or other designated official. It is used under extenuating circumstances and when the normal withdrawal process is not available to the student. A

request for administrative withdrawal with accompanying documentation will be submitted to Records and Registration. The "WA" grade can be submitted at any time during the semester.

Withdrawal Fail (WF) - This grade is recorded by Records and Registration when the student has withdrawn from the course after the period a student can withdraw with a "W" grade.

Fail - Disciplinary (FD) - The "FD" grade can be assigned only by the Provost or other designated official. This grade is used when a student earns a failing grade due to academic dishonesty. A request for the FD grade with accompanying documentation will be submitted to Records and Registration, at which point the student will be withdrawn from the course. This grade can be submitted at any time during the semester.

Transfer (TR) - A grade of "TR" is used to indicate on the student's transcript a block of credit that has been earned at another institution and that will count toward the degree at Harrisburg University.

Transfer with Grade Notation (Txx) - A grade of "Txx" is used to indicate on the student's transcript each course that has been successfully completed at another institution and that has been accepted toward the degree at Harrisburg University.

Not Reported (NR) - The temporary grade of "NR" is recorded by Records and Registration when the instructor does not report a grade for the student for the course. Records and Registration will advise the Provost when an "NR" grade has been recorded for the student, and will work with the student and the instructor to determine why a grade was not reported.

Pass (P) - The "P" grade is assigned by instructors for a student who successfully completes a course that is designated as a course that will be graded on a Pass/No Pass basis. A "P" grade indicates a grade of C or higher.

No Pass (NP) - The "NP" grade is assigned by the instructors for a student who does not successfully complete a course that is designated as a course that will be graded on a Pass/No Pass basis.

Fail-Forgiven (#F) - The #F grade is recorded by Records and Registration when a student fails a course that is no longer offered as a course and an equivalent credit-value course substitution is not available for the student to repeat the course.

Prior Learning Assessment (PLA) - The "PLA" grade is used to indicate credit that has been awarded by the University for prior learning. Although a course completed with a "PLA" grade is applied toward the student's degree requirements, no quality points are associated with this grade so there is no impact upon the calculation of the student's grade point average.

Grade Point Averages

A grade point average (GPA) is a statistical calculation of a student's performance in a semester. The semester grade point average summarizes the student's performance during that academic term and the cumulative grade point average (CGPA) summarizes the student's performance during all semesters completed at the University. All credit-bearing courses completed by the student are calculated into the student's CGPA.

Calculation of the Semester Grade Point Average

Course	Sem. Hrs. Attempted	Grade	Numerical Value	Quality Points
Course A	6	C	2.00	12.00
Course B	4	B	3.00	12.00

Course C	3	B +	3.33	9.99
Course D	1	A -	3.67	3.67
Total	14			37.66

Total Quality Points = 37.66/14 = 2.69

1. Compute the quality points earned for each course by multiplying the semester hours attempted for the course by the numerical value of the grade earned in the course. *Example: A student registered for a course worth 6 semester hours who earns a final grade of "C" in that course will earn 12 quality points for that course (6 semester hours x 2.00).*
2. Add quality points earned for each course in which the student is registered in the semester.
3. Add the number of semester hours attempted for all courses in which a grade of "A" through "F" and "WF" was earned.
4. Divide the total number of quality points earned by the total number of semester hours attempted. The result is the grade point average for the semester.

The cumulative grade point average (CGPA) is determined in a similar way using the cumulative attempted semester hours and cumulative quality points earned. GPA and CGPA are truncated to the hundredths.

Incomplete Grade

A grade of Incomplete (I) is a discretionary decision. The guidelines for incomplete grades are:

- The Incomplete Grade may be assigned if the student's work is of non-failing quality and there is a reasonable likelihood that the student will complete the course material.
- The student must have extenuating circumstances such as illness, accident, serious personal problems, etc.
- The deadline for submitting the outstanding work is up to the discretion of the instructor, but it must be before the end of the add/drop period of the subsequent semester.
- Once the outstanding work has been submitted, the faculty must submit a Change of Grade Form to Records and Registration for the grade to be updated.
- If the outstanding work is not submitted by the end of the add/drop period of the subsequent semester, the instructor should submit a Change of Grade Form so that the grade is changed from the I grade to the grade earned in the course.
- If the instructor fails to submit the change of grade form one week after the end of the add/drop period of the subsequent semester, Records and Registration will convert the Incomplete grade to an F.
- If a student needs additional time to submit the work after the add/drop period of the subsequent semester ends, they must submit a Petition for Extension of Coursework for Incomplete Grade. This form can be obtained from Records and Registration by submitting a ticket to https://reghelp.harrisburgu.edu. Students will need to work with faculty to complete the form and obtain approval for the extension. The completed and signed form must be sent to Records and Registration for approval.

Early Warning

Each instructor notifies Records and Registration of a student's poor academic performance in a course by submitting early warning deficiencies of "C-", "D+", "D", "F" or "I" at the end of the fifth week of classes, as indicated on the Academic Calendar. The student is notified of the deficiency in writing. A student who receives a five-week early warning is encouraged to consult with the instructor and academic advisor and seek assistance offered by the Office of Student Services.

Deferred Examination Policy

This section applies to all examinations, including mid-term and take-home examinations, whether or not administered during the final examination period.

No Right to Defer

No student has a right to defer an examination. A student who fails to take an examination when scheduled will receive a failing grade of "F" on the examination unless the examination has been deferred according to the procedure outlined in this policy.

Policy on Deferral of Examinations

Examinations will be deferred only for "good cause." "Good cause" will be determined by the instructor of the course. Examples of "good cause" include:

- serious personal injury or illness with appropriate documentation;
- serious injury, illness, or death in the immediate family that can be documented; or,
- other extenuating mitigating circumstances beyond the student's control.

Procedure for Requesting Deferred Examination

If a student desires to request deferral of an examination, the student shall file a timely request with the instructor. Each student requesting deferral of an examination must provide evidence of the event or situation that the student believes is justification for the deferral request.

Emergency Deferral of Examination

If a student is unable to take an examination for good cause (as defined previously) that arises within 24 hours immediately prior to the examination time, the student may appear in person, communicate by electronic mail, or telephone the instructor and the Office of Student Services to obtain permission to defer an examination.

If a student cannot appear in person, communicate by electronic mail, or by telephone, the student may miss the examination and apply for a deferral after the examination date. Such application for deferral must be made to the instructor within 24 hours of the administration of the examination for which the student seeks the deferral.

Timing of Make-up Examination

The deferred examination will be taken at a time determined by the instructor, in conjunction with the student. The make-up examination must be completed in no more than five (5) business days after the original test date. Make-up examinations for documented emergencies can be arranged to be proctored through the Office of Student Services by emailing exams@harrisburgu.edu or through the faculty member directly.

Illness During an Examination

If a student becomes ill during an examination and is unable to continue, the student shall notify the proctor and leave all examination materials with the proctor. The student shall seek medical attention immediately and obtain medical documentation describing the illness that prevented the student from completing the examination. The student will be permitted to complete the exam at a time determined by the instructor, no more than five (5) business days after the original test date.

Final Examination Policy

Final exams are administered over a three-day period for the Fall and Spring semesters, and a one-day period for the summer semester following the last day of the semester. A final exam schedule is distributed during week 8 of the semester, reflecting those courses for which a 2-hour final exam period was requested. Courses not listed on the final exam schedule typically have a project, oral presentation, or term paper as the final grade assessment.

Conflicting Exams

Students are responsible for reviewing their final exam schedule, which is available 8 weeks after the start of the semester. If a student has two final exams scheduled at the same time, it is the student's responsibility to notify the instructors of both courses and the Records and Registration Office. The student will work with the instructors and the Records and Registration Office to coordinate a solution.

Final Grading Process

After the conclusion of each semester, the instructor notifies Records and Registration of a student's academic performance in a course by entering grades via MyHU. Records and Registration make these grades available on MyHU according to the dates noted on the Academic Calendar posted on MyHU.

Final Grade Appeal

A final grade is assigned by the instructor upon completion of coursework to earn credit during a semester or other term. A student who disagrees with the final grade assigned by the instructor should first contact the faculty member directly to resolve the grade dispute informally. The student that cannot approach the faculty member because of perceived discrimination, cannot reach the faculty member, or has received a response with which the student still disagrees, may seek remedy using an evidence-based argument, with any supplemental documentation, within five (5) days after grades are posted on one of the following grounds:

1. Discrimination: defined as unfair treatment or assignment of grade on the basis of race, religion, national origin, sex, age, ancestry, handicapped status, gender identity, sexual orientation, or political affiliation.
2. Capricious evaluation: defined as a significant or unjustified departure from grading procedures outlined in the course syllabus or by the University or arbitrary assignment of grades. Capricious evaluation cannot be claimed if a student merely disagrees with the subjective evaluation of the instructor.
3. Errors: including clerical errors or errors in grade calculations that can be demonstrated in an objective manner.

A student who chooses to appeal a grade must email the Office of Student Success at studentsuccess@harrisburgu.edu with an explanation forming the basis of the appeal. All documentation for the appeal should be attached in an organized manner with a detailed explanation of the rationale for the appeal. A final grade appeal must be initiated on or before the fifth (5th) business day after grades are posted, or other terms as specified in the Academic Calendar posted on MyHU.

The Office of Student Services will review the Final Grade Appeal. The Office of Student Services may ask for additional information for the student, instructor, or program lead and will access Canvas to verify any student submissions or faculty comments.

- If the original final grade is improved and satisfies the student's appeal, the instructor or program lead shall submit a Grade Change Form to Records and Registration, the grade will be posted, and the academic record hold status will be released.
- If the original final grade is reaffirmed and both the instructor and student agree with the grade determination, Office of Student Services will notify Records and Registration confirming the original grade.

- If the Office of Student Services upholds the original grade, the student may request a review of the grade appeal investigation report by the Office of the Provost in email to studentsuccess@harrisburgu.edu. The determination by the Provost or designee will be final.
- If a student would like to appeal a grade during the semester, students should approach the faculty member to resolve this informally. All documentation should be saved. If at the time the final grades is insufficient, the student can file a formal appeal at that time.

Release of Grades

In accordance with the requirements of the Family Educational Rights and Privacy Act (FERPA), reports of the student's grades are not routinely sent to the student's parents or guardians. The parent or guardian of a student in our high school programs may obtain grades by writing to Records and Registration. The grades of a student over 18 years of age will be sent to the parents only with the written consent of the student.

Repeated Courses

A student may repeat a course in which a final grade of C- or below was received. The original grade remains on the student's academic record. After a course has been repeated, the most recent grade is used in the calculation of the student's cumulative grade point average. A student cannot repeat a course for the sole purpose of improving the overall GPA if the degree requirement has already been met.

Course Substitutes

In situations where a student's progression may be impacted or a course substitution may align with the student's research or career development, a faculty advisor may request a course substitution.

Course substitutions for Experiential Learning requirements, would need to meet the appropriate designated Experiential Learning course options which have been approved by Curriculum Committee.

Guidelines for Consideration

1. The student is expected to satisfy the requirements of the declared program of study and all other required University degree requirements for the academic year the student is pursuing as a degree candidate.
2. The course to be substituted should be in the same area as the required course or in a closely related area.
3. Substitution of a course for a previously failed required course is seldom granted.
4. Failure to schedule a required course is not sufficient reason for granting permission for a course substitution.
5. Student must have successfully completed or be in progress of the course being considered for substitution.

Steps for Requesting Course Substitution

1. Initiation of Request
    - The faculty academic advisor identifies the need for a course substitution based on the student's individual circumstances.
    - The faculty academic advisor discusses the proposed substitution with the student to ensure understanding and agreement.
2. Documentation
    - The faculty academic advisor prepares a written request for course substitution, including the following details:
        1. Student's name and student HU ID number.
        2. Course requiring substitution.
        3. Proposed substitute course.
        4. Rationale for the substitution, including any relevant supporting documentation.

3. Submission to Records and Registration
    - The completed course substitution request, along with all supporting documentation, is submitted to Records and Registration at RegHelp@Harrisburgu.edu
4. Review Process
    - Records and Registration reviews the course substitution request to ensure compliance with university policies.
    - Records and Registration may consult with relevant academic functional areas as needed to evaluate the academic appropriateness of the proposed substitution.
    - The decision of Records and Registration is communicated to the faculty academic advisor and the student in writing.
5. Implementation
    - If the course substitution is approved, Records and Registration updates the student's academic record accordingly.
    - The faculty academic advisor ensures that the student is aware of any additional requirements or steps resulting from the approved substitution.

Academic Honors

Honors List A student is eligible for the Honors List at the conclusion of the fall and spring semesters when:

1. the semester grade point average is 3.50 or higher; and,
2. a minimum of 9 semester hours of coursework was completed, excluding those courses in which final grades were earned that are not included in the calculation of the grade point average.

Graduation Honors A student who has earned consistently superior grades will be recognized for this achievement at graduation with the designation listed below representing the student's level of achievement. Both the student's diploma and university record will carry the appropriate honors designation as follows:

Summa Cum Laude for a cumulative grade point average between 3.95 and 4.00
Magna Cum Laude for a cumulative grade point average between 3.75 and 3.94
Cum Laude for a cumulative grade point average between 3.50 and 3.74

Academic Standing Policy

A student with a cumulative grade point average (CGPA) of 2.0 or higher at the end of the semester is in satisfactory academic standing. A student with a CGPA below 2.00 at the end of a semester is not in satisfactory academic standing and is subject to warning, probation, or dismissal according to the following policy:

First Occurrence - Warning

Following the first semester in which the student does not meet the satisfactory academic progress standard, the student will automatically be placed on academic warning for the next semester. A letter will be issued advising the student of their academic warning status. No appeal is needed, but in consultation with the Office of Student Services, an academic plan may be required.

Second Consecutive Occurrence - Probation

If, by the end of the warning semester, the student is not able to achieve satisfactory academic progress status, a letter will be issued placing the student on academic probation status for the next semester. An academic plan is required during the probation semester. The student should work with the Office of Student Services to create the academic plan.

Third Consecutive Occurrence - Dismissal

If a student after three consecutive semesters has a cumulative grade point average that remains below 2.00 or fails to meet the program pursuit percentage, a letter of dismissal will be issued.

If an F-1 student is academically dismissed from Harrisburg University, their SEVIS record will be terminated.

Failure to Make Academic Progress

A student that fails to make any academic progress and have a cumulative GPA of 0.00 after two semesters will be dismissed and have the opportunity to appeal as outlined below.

Dismissal Appeals

A student who is dismissed as a result of failure to meet satisfactory academic progress may file an academic appeal by submitting a letter outlining the nature of the appeal to the Office of Student Services within five (5) days of notification. An appeal will be considered only if the student's failure to meet the standards of academic progress is determined to be due to events beyond the student's control. Examples of circumstances for which an appeal may be considered include military obligation; death of a relative; injury or illness of the student; unusual personal hardship or other extenuating circumstances. Written documentation of the circumstances of why the student failed to make satisfactory progress and what has changed that will allow the student to make satisfactory progress by the next evaluation must be submitted with the appeal and should reference the student's name and student ID number. In addition, the evidence must be received documenting that the required academic plan was completed, the cumulative grade point average has improved, and the required satisfactory progress grade point average can potentially be achieved to complete a program of study within the maximum timeframe limitation. Appeals submitted without documentation will not be considered. A timely determination will then be made and documented in the student's file.

If the academic appeal is denied, a second notice will be sent to the student advising that their appeal was denied. If the academic appeal is approved, a semester of academic probation will be awarded, and the student will be notified in writing that their appeal was approved. The student must achieve satisfactory academic progress by the end of the probation semester.

If after the academic probation semester, a student is still not making satisfactory academic progress, but the evidence is provided showing the academic plan was successfully executed, the cumulative grade point average has improved, and the required satisfactory academic progress grade point average can potentially be achieved within the maximum time frame limitation required by federal regulations then a second probation semester may be granted.

Withholding of Records

Student records may be withheld by Records and Registration when directed by the appropriate University officials. More specifically, the student's diploma will not be released, and a student cannot register for courses if tuition or other charges remain unpaid to the University. Additionally, a student may not be able to register for courses while the hold is on their record. The Office of Student Services determines when a student's record should be placed on hold for disciplinary reasons, and the Business Office determines when a student's record should be placed on hold for financial reasons.

Official Withdrawal from the University Procedure

A student is encouraged to contact the Financial Aid and Business Offices in advance of any decision to withdraw from the University to obtain an explanation of the tuition and financial aid adjustments that will occur, if any, as the result of withdrawal from the program of study.

A student on an F-1 Visa should contact the International Student Office prior to submitting a withdrawal form to understand the impact it may have on their SEVIS status.

A student who intends to officially withdraw is encouraged to contact the Records and Registration Support Portal at https://reghelp.harrisburgu.edu or in person. A withdrawal form should be completed. The determination date for withdrawal purposes shall be the actual date of formal notification by the student unless other evidence is provided to Records and Registration. The determination date is used to calculate the tuition refund, if any, and the student financial assistance program refund, if applicable. Withdrawn courses cannot be reinstated.

Military Personnel Called to Active Duty Policy

If a student is called to active duty by the National Guard or the reserve forces of the United States during an active semester, they should provide documentation of their call to active duty to the Certifying Official. The below procedure will then apply:

1. Course Registration/Grades: The student will be given the option to have courses dropped or an "I" (Incomplete) grade assigned to each of their courses. The assigning of an "Incomplete" is by mutual consent of the faculty member and the student and an appropriate completion date are to be assigned. If the active duty call occurs late in the term, the faculty member also has the option of assigning a final grade rather than the "I" grade.

2. Tuition: Tuition charges will be canceled or refunded in full- for all courses dropped. Courses in which the grade of "I" or a final grade is assigned will have applicable tuition assessed. The student must coordinate with the Certifying Official to address any overpayment or other financial considerations with Veterans Administration funding

3. Housing: If the student resides in campus housing, they should initiate a discussion with Residence Life Staff.

4. Student Record: The Student record will be kept active for one year from the later of the following dates, after which the student would be eligible for re-admission: - Effective date of dropped course(s) - End of the final completed semester - Latest deadline of assigned "I" grade

Medical Withdrawal

A student requesting to withdraw for medical reasons must complete a medical leave request through the Office of Student Services by contacting StudentServices@harrisburgu.edu. Student services will obtain official documentation from a doctor supporting the student's request. To return from medical leave, the student must provide student services with documentation from a doctor supporting the student's return. The student will have up to a year to return without having to apply for readmission.

An F1 student wishing to drop or withdraw from a course for medical reasons must first consult with the International Student Office for options.

Unofficial Withdrawal

A student who discontinues attendance in all courses during a semester and does not officially withdraw from the University is considered to have unofficially withdrawn. The determination date for unofficial withdrawals shall be the end of the semester unless other evidence is provided to Records and Registration. Federal student financial aid program implications for a student who unofficially withdraws can be provided by the Financial Aid Office.

An F1 student who unofficially withdraws will have their SEVIS record terminated immediately.

Standards of Academic Integrity

Harrisburg University expects a student to act honorably and in accordance with the standards of academic integrity. Academic integrity is grounded in mutual trust and respect. Therefore, it is expected that a student will respect the rights of others and will only submit work that is their own, refraining from all forms of lying, cheating, and plagiarism.

A violation of the Standards of Academic Integrity could result in academic consequences. Please see the Student Handbook for details about academic conduct and the procedures in cases of a violation of Harrisburg University's Standards of Academic Integrity.

Disciplinary/Academic Dismissal

The University reserves the right to exclude at any time a student who has misrepresented any part of his or her admission materials, whose academic record is unsatisfactory, or whose behavior or conduct is found to be detrimental to the orderly functioning of the University. When misconduct may constitute a threat to a person or property within the University community or under other circumstances, it may result in disciplinary action. The University assumes the responsibility to regulate the private conduct of the student when such conduct could constitute a hazard to or an infringement on the rights of others, a violation of the law, of University policy or instructions, or is a disruption of the legitimate academic and administrative processes of the University. Please see the Student Handbook, available at https://myhu.harrisburgu.edu/ics, for details on the policies regarding the Student Code of Conduct, the Academic Code of Conduct, or Sexual Misconduct Policies.

If an F-1 student is dismissed from Harrisburg University, their SEVIS record will be terminated.

Curriculum Overview

CHARACTERISTICS OF LEARNING EXPERIENCES

The goal of learning at Harrisburg University is to obtain the relevant knowledge, competence, and experiences to best be prepared for an enriching career. Learning is, therefore, a multi-faceted activity that occurs throughout and across the college experience; it integrates both academic learning (acquiring and applying new knowledge) and student development (learning about one's self). Competency-based learning outcomes with programs that are intentionally designed to be engaging, integrative, and experiential are emphasized. There are five inter-dependent program characteristics that help define the Harrisburg University experience:

HIGHLY ENGAGED

Learners are not passive recipients of knowledge, but active participants in their learning. Learning experiences are built upon interactions that engage learners with content, other learners, and faculty. These engagement strategies support learners in mastering new content and skills while demonstrating their learning through multiple means and contexts.

- Courses provide diverse interactions with content using strategies such as hands-on laboratories, exercises, simulations, and games.
- Courses provide opportunities for learners to co-construct and clarify knowledge, as well as build a supportive class community, by collaborating with their fellow learners. Strategies include active learning activities such as group discussions, debates, roleplays, group projects, and group laboratory work.
- Courses provide opportunities for learners to ask questions and receive timely and meaningful feedback from faculty. Faculty presence is essential for learner success, especially in online environments.

HIGHLY AVAILABLE

HU serves a diverse community of learners. To support the needs of these learners, the University provides a variety of experiences and programs. Educational opportunities are available through multiple delivery methods (including face-to-face and online), in multiple modalities (synchronous and asynchronous), in multiple locations (including Harrisburg, Philadelphia, high schools across the region, etc.).

- Course policies, schedules, and expectations are learner-friendly and clearly communicated.
- Course design seeks to achieve Universal Design for Learning.

HIGHLY COLLABORATIVE

Learners develop knowledge and skills best through shared experiences, as opposed to learning in isolation or in competition with one another. Faculty create learning environments based upon the premise that knowledge can be gained from anyone.

- Coursework requires students to work together to solve problems using teamwork, thereby developing skills essential to their future careers.
- Coursework provides opportunities for learners to receive feedback from their peers.
- Learners' achievements are assessed against a common standard rather than against other learners' achievements, such as by grading on a curve.
- Learners have the advantage of learning from classmates, business mentors, and future employers.

- Faculty work together to develop and share learning resources, activities, materials, feedback, and innovative methods that promote student learning.

HIGHLY EXPERIENTIAL

The University deliberately ensures that learning is highly linked to both practical and professional experience. The students benefit from a robust learning model that deliberately prioritizes experience, both inside and outside the classroom.

- Experiential learning is emphasized through research, industry-related experiences, and practica.
- Course activities allow learners the flexibility to explore topics of interest and gain relevant professional experience.
- Courses encourage learners to reflect on their own learning.
- Learners' prior experiences are incorporated into the learning process.

HIGHLY APPLIED

The learning conversation focuses on the practical application of knowledge. The intention is to shift focus from "How do I remember this information?" to "How can I apply this information to create knowledge that is both useful and actionable?" In this way, learning becomes an exercise in both preparation for career and readiness for life.

- Courses provide practical, meaningful learning experiences that are relevant to the learners' current or future careers.
- Courses deliberately tie theoretical content to relevant, real-world cases and examples via authentic activities and assessments.

LEARNING ASSESSMENT AT HARRISBURG UNIVERSITY

Harrisburg University's model for the assessment of student learning is structured to support learning goals. The goals of the programs and courses are clearly defined and are relevant to the mission of the University. Course syllabi establish specific learning objectives, articulate the instructor's expectation of the student, and outline the standards against which the student's learning will be measured. Learning assessment of coursework and experiential learning is creative, in that it goes beyond instructor-driven evaluation through examinations and papers in most cases and is done both inside and outside the classroom by faculty, business and academic professionals. Further, student learning around each of the University competencies is a focus of assessment activities. Student learning assessment is anchored in the use of ePortfolios throughout the student's program of study. The University is committed to improve its program offerings by comparing student assessment outcomes to the program and course goals.

COMPETENCIES AND EPORTFOLIO

Competency-Driven and Across-the-Curricula: A hallmark of the Harrisburg University experience is competency-driven education. The student will be expected to demonstrate mastery of eight university-wide competencies:

CIVIC ENGAGEMENT

Definition: Civic engagement is "working to make a difference in the civic life of our communities and developing the combination of knowledge, skills, values and motivation to make that difference. It means promoting the quality of life in a community through both political and non-political processes." (Excerpted from Civic Responsibility and Higher Education, edited by Thomas Ehrlich, published by Oryx Press, 2000, Preface, page vi.). In addition, civic engagement is participation in personal and public activities that are both life enriching and socially beneficial to the community.

WRITTEN AND ORAL COMMUNICATION

Definition: Written communication is the development and expression of ideas in writing. It involves writing in a variety of styles, genres, and technologies and mixing text, data, and images. Written communication abilities develop through repeated writing experiences across the disciplines.

CRITICAL THINKING

Definition: Critical thinking is the use of deliberative thought, characterized by the comprehensive exploration of topics, ideas, artifacts, or events before accepting or formulating an opinion or conclusion. Using reason and experience to form informed judgments, the critical thinker combines or synthesizes existing ideas, images, or expertise in original ways; and reacts to experience in imaginative ways, characterized by innovation, divergent thinking, and risk-taking. The critical thinker solves problems by designing, evaluating, and implementing a strategy to answer an open-ended question or achieve a desired goal. Quantitative Literacy (QL) - also known as Numeracy or Quantitative Reasoning (QR) - is a "habit of mind," competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

ENTREPRENEURSHIP

Definition: Entrepreneurship is the process of organizing tangible and intangible resources in order to pursue opportunities that generate value, meet an identified need, or satisfy an organizational or societal market (such as the creation of a business, organization, or laboratory). At Harrisburg University, entrepreneurship represents a "frame of mind" demonstrated by both thinking and action.

ETHICAL AWARENESS AND REASONING

Definition: Ethical decision making actualizes the realization and inclusion of the moral dimension for personal decision-making. "Reasoning about right and wrong human conduct requires students to be able to 1) assess their own ethical values and the social context of problems, 2) recognize ethical issues in a variety of settings, 3) think about how different ethical perspectives might be applied to ethical dilemmas, and 4) consider the ramifications of alternative actions." Ethical self-identity evolves both on individual and organizational (e.g., corporate) levels.

* Source: AAC&U / VALUE rubric

GLOBAL AWARENESS

Definition: Global awareness is knowledge of the world citizenry's common interests in community, social, political, information, and financial systems of different scales; appreciation and respect for diversity, culture, and environment; and the interactions and impacts of individuals, global systems, and cultures.

INFORMATION LITERACY

Definition: Information literacy encompasses knowledge and familiarity with different media types, efficient data storage, retrieval methods, and research techniques. For the purposes of this rubric, "information" is not only text-based information, but also includes images, sounds, data sets, databases, artifacts, numerical and statistical data.

TEAMWORK AND COLLABORATION

Definition: Teamwork and Collaboration encompass the ability to work effectively with others in a concerted effort toward a common goal. "Behaviors under the control of individual team members" include efforts put into team tasks, manner of interacting with others on the team, and the quantity and quality of contributions to team discussions.

* Source: AAC&U / VALUE rubric

Regardless of the student's program of study, employers and community leaders desire these competencies; they also serve the broader purpose of preparation for life and citizenship.

ePortfolio Requirement: Harrisburg University defines an ePortfolio *as an organized, media-rich collection of documents that allows the student to demonstrate competence to a multitude of audiences.* The ePortfolio will be central in how the student organizes, develops, and reflects upon learning. It will also be a lever for assisting the way in which faculty develop curricula, view teaching, and deliver content. Ultimately, the ePortfolio will be a coalescing force for making tangible and visible the University-wide competency program while serving as a key tool in evaluating student success.

STRUCTURE OF THE PROGRAM

The undergraduate program structure is designed to provide the student with foundational knowledge, program specific knowledge, opportunities to apply new knowledge, and the flexibility to explore interesting topics. All undergraduate degree programs have the same five structural elements: 1) Foundation courses, 2) General Education courses, 3) Program Requirement courses, 4) Experiential courses, and 5) Elective courses. The number of semester hours covered by the structural elements adds up to the total of 120 semester hours needed for graduation. Each structural element has specific semester hour and course requirements associated with it. Generally, the breakdown of semester hours by structural element is 18 semester hours in Foundation courses, 30 semester hours in General Education courses, 40 - 50 semester hours in Program Requirement courses, 13 semester hours in Experiential courses, and 9 - 19 semester hours in Electives.

Foundation

The purpose of the Foundation courses is to provide the student with mathematics and communication knowledge and skills that will be used throughout the selected program of study. More importantly, mastery of foundational knowledge and skill is required for success in science and technology careers.

Every student must complete 9 semester hours of mathematics courses based on the program of study.

(Refer to program requirements for foundation mathematics course requirements)

MATH 081-Prealgebra may not be used to satisfy any portion of this requirement because it is a developmental course. The course is included in the student's semester course load, which determines the student's enrollment status. The final grade earned is calculated in the student's term and cumulative grade point averages. The credit value associated with the course is not applicable toward the minimum 120 semester hours needed for graduation.

Additionally, every student must complete 9 semester hours of English and Communication:

- ENGL 105-College Composition or ENGL 106-Academic Writing and Critical Thinking
- COMM 110-Speech
- ENGL 200-Advanced Composition and Technical Writing

General Education

The purpose of general education is to offer the undergraduate student a dynamic platform for both foundational and skill-based learning to prepare them for a well-rounded life during which they will make informed decisions, contribute to society, and become lifelong learners. General education is a degree requirement for each undergraduate student.

Given the sheer vastness of knowledge and the rate at which new knowledge is developed, the student typically cannot command mastery or deep expertise in the broad areas known as the sciences, social sciences, humanities, or applied knowledge domains such as entrepreneurship or leadership. The purpose of general education is not to produce experts.

Instead, the goal is to integrate contributions from multiple fields to give the student more comprehensive explanations and understandings of the world. In essence, general education - and all academic work at the University, begins within a framework of applied and self-directed learning.

The Mind courses are cross-disciplinary, applied courses. The student is required to successfully complete at least 30 semester hours of general education.

Four courses totaling 12 semester hours are part of the first-year program.

- GEND 102-The Creative Mind I
- GEND 103-The Creative Mind II
- Environmental and Life Sciences (3 semester hours)
- Scientific Inquiry (3 semester hours)

Four additional courses, two from each 6 semester hours group (totaling 12 semester hours).

- Historical and Political Investigation (6 semester hours)
- Leadership and Business (6 semester hours)

The remaining 6 semester hours can be additional Mind courses or General Education (GEND) electives.

Experiential Learning

The student will complete 13 semester hours of experiential learning. The University is committed to preparing students for careers in science and technology fields. Part of what makes the degree program unique is an emphasis on experiential learning, which includes an internship or applied practice, two projects, and seminar courses. By connecting the classroom, workplace, and research experiences within the program, the student can gain a range of marketable skills.

These skills are linked to the eight competencies at the heart of the University's curriculum in addition to the learning goals within the student's program of study. The experiential courses are expected to provide the student with an enhanced resume prior to graduation from the University.

Guidelines for Experiential Learning - Multiple Components in One Semester

In order for a student to be able to complete two experiential learning components in one semester, the student must comply with the following:

1. Student must have a GPA of 3.0 or above.
2. Student must not have an "I" or incomplete in any previous Experiential Learning component (Project, Internship, or Applied Practice).
3. Student must not have previously failed any Experiential Learning component (Project, Internship, or Applied Practice).

Seminar Courses - The seminar courses integrate the student's academic, personal, and professional development success. These courses provide the student with the support and skill development needed to complete experiential learning courses and achieve the university core competencies. Additionally, seminars facilitate the completion of a reflective ePortfolio that includes evidence of experiential and competency-based learning.

Projects - Each project challenges the student to identify, investigate and analyze a particular topic or problem in the program of study and concentration. A key objective is to apply skills, methods, and knowledge obtained in previously completed courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. Projects are undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analyses or development plans for external organizations, the development of software applications, or market studies and business proposals. The student develops a unique plan and contract and establishes individual learning goals in consultation with a member of the faculty.

Internships or Applied Practice - An internship allows the student to apply classroom experiences to the workplace at an off-site placement, where ideas are tested, and competencies and skills are developed. For one semester, the student interacts with professionals in an external organization to explore career options related to the student's program of study. An applied practice allows the student the opportunity to reflect upon previous experiences and build on current experience to enhance professional and career development. Each student is responsible for finding and/or completing an internship or applied practice. The Office of Career Services & Experiential Learning and the student's Faculty Advisor provide guidance through the process of obtaining and completing the internship or applied practice. A student is able to enhance post-graduation career prospects by integrating this external experience into the academic program.

Electives

The elective component of the curriculum provides the student opportunities: 1) to explore disciplines not included in the foundation, general education, and program requirements; 2) for study beyond the minimum requirements in the program discipline; or 3) to independently pursue an area of interest under the supervision of a faculty member. The number of elective semester hours required for graduation is specified by each program.

OUTLINE OF BACHELOR DEGREE PROGRAMS

The curriculum requires a minimum of 120 earned semester hours to fulfill the Bachelor of Science degree requirements. The courses are distributed in the following required areas: foundation, general education, experiential, program, and electives. Each requirement is detailed as follows:

Foundation Courses - 18 semester hours

Mathematics (9 semester hours)

(9 semester hours from the following courses depending on the program of study - refer to program requirements for foundation mathematics course requirements)

- MATH 120 - College Algebra (3 semester hours)
- MATH 140 - Precalculus (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 375 - Statistics for Managers (3 semester hours)

English and Communication (9 semester hours)

- COMM 110 - Speech (3 semester hours)
- ENGL 105 - College Composition (3 semester hours) or ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)

General Education Courses - 30 semester hours

Complete the following courses - 30 semester hours:

- GEND 102 - The Creative Mind I (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- GEND Group - Leadership and Business (6 semester hours)
- General Education Electives (6 semester hours) *(additional General Education (GEND) electives)*

Experiential Courses - 13 semester hours

- Project I (3 semester hours)
- Project II (3 semester hours)
- Internship or Applied Practice (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)
- EXPL 200 - Steppingstone (1 semester hour)
- EXPL 300 - Keystone (1 semester hour)
- EXPL 400 - Capstone (1 semester hour)

Electives - 9 - 19 semester hours

Program Requirements - 40 - 50 semester hours

Bachelor of Science Degree - total of 120 semester hours

Academic Programs

Faculty and Administration

Members or Administration, staff, and full time and part time faculty, their titles, and areas of instruction are available on the University's website at: https://harrisburgu.edu/faculty-and-staff-listing/.

B.S. Advanced Manufacturing

Advanced manufacturing is the application of information, computation, automation, devices, software, sensing, and networking to the manufacturing process. Advanced manufacturing can include cutting edge materials and emerging technologies that are enabled by the physical and biological sciences. This involves both traditional and tailored solutions in order to enhance manufacturing for existing products and new products emerging from new advanced manufacturing technologies. Advanced manufacturing is not limited to emerging technologies; it is also comprised of efficient, productive, highly integrated and controlled processes across a spectrum of globally competitive manufacturers and suppliers. Advanced manufacturing results in new markets, new products, new technologies, and new ways to position manufacturing to support societies that are or will be connected globally in the future.

Program Goals

Graduates of the Bachelor of Science in Advanced Manufacturing program are able to:

- Produce simple and complex solutions to issues in manufacturing;
- Communicate research-based information in oral and written formats to both advanced manufactures and non-manufactures;
- Collect and analyze data gathered from industry and industrial-related issues;
- Evaluate the ability to analyze metallic and nonmetallic materials needed to produce prototypes and advanced manufacturing solutions; and,
- Create solutions that support global awareness and ethical decision making when resolving issues.

As part of the Advanced Manufacturing Program, the student completes a professional portfolio as a means for assessing learning outcomes and enhancing personal and professional development.

Advanced Manufacturing Requirements

This program requires a total of 47 semester hours. The semester hour value of each course appears in parentheses ( ).

Complete all of the following courses - 47 semester hours:

- ADMA 115 - Introduction to Computers & Research in Manufacturing (3 semester hours)
- ADMA 135 - Manufacturing Technology and Society (2 semester hours)
- ADMA 160 - Metallic Materials and Manufacturing Processes (3 semester hours)
- ADMA 230 - Applied Analog and Digital Electronics (3 semester hours)
- ADMA 240 - Computer-Aided Design and Drafting (3 semester hours)
- ADMA 310 - Basics of Manufacturing Simulation (3 semester hours)
- ADMA 323 - Computer Assisted Product Design and Rapid Prototyping (3 semester hours)
- ADMA 338 - Non-Metallic Materials and Processing (3 semester hours)
- ADMA 345 - Designing and Rapid Prototyping with Solid Modeling (3 semester hours)
- ADMA 370 - CAD/CAM and Industrial Robotics I (3 semester hours)

- ADMA 410 - CAD/CAM and Industrial Robotics II (3 semester hours)
- ADMA 420 - Advanced Manufacturing I (3 semester hours)
- ADMA 430 - Programmable Logic Controllers and Integrations (3 semester hours)
- ADMA 455 - Manufacturing Automation Systems (CIM/FMS) (3 semester hours)
- ADMA 465 - Simulation of Systems and Integrations (3 semester hours)
- ADMA 480 - Advanced Manufacturing II (3 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Advanced Manufacturing Program

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- ADMA 115 - Introduction to Computers & Research in Manufacturing (3 semester hours)
- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- ADMA 135 - Manufacturing Technology and Society (2 semester hours)
- ADMA 240 - Computer-Aided Design and Drafting (3 semester hours)
- Electives (3 semester hours)

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)

Total semester hours: 14

Spring Semester

- ADMA 160 - Metallic Materials and Manufacturing Processes (3 semester hours)
- ADMA 230 - Applied Analog and Digital Electronics (3 semester hours)
- ADMA 323 - Computer Assisted Product Design and Rapid Prototyping (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- ADMA 345 - Designing and Rapid Prototyping with Solid Modeling (3 semester hours)
- ADMA 370 - CAD/CAM and Industrial Robotics I (3 semester hours)
- ADMA 298 - Project I (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- ADMA 310 - Basics of Manufacturing Simulation (3 semester hours)
- ADMA 338 - Non-Metallic Materials and Processing (3 semester hours)
- ADMA 365 - Internship (3 semester hours)
- ADMA 410 - CAD/CAM and Industrial Robotics II (3 semester hours)
- Elective (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- ADMA 465 - Simulation of Systems and Integrations (3 semester hours)
- ADMA 420 - Advanced Manufacturing I (3 semester hours)
- ADMA 430 - Programmable Logic Controllers and Integrations (3 semester hours)
- ADMA 498 - Project II (3 semester hours)
- GEND Electives (3 semester hours)

Total semester hours: 15

Spring Semester

- ADMA 455 - Manufacturing Automation Systems (CIM/FMS) (3 semester hours)
- ADMA 480 - Advanced Manufacturing II (3 semester hours)
- GEND Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)
- Electives (6 semester hours)

Total semester hours: 16

Summer Semester

Optional

B.S. Biotechnology

Biotechnology is a multi-disciplinary program that incorporates the foundations of biology, microbiology, genetics, molecular biology, and chemistry. Biotechnology focuses on the manipulation of living organisms, their products, and their processes to further knowledge, improve quality of life and engineer new tools and applications. Biotechnology is applied to a broad range of industries including pharmaceutical, chemical, agricultural, food development and manufacturing, to name but a few. Biotechnology has impacted significantly in the fields of medicine, health, environment and new technology and will continue to do so far into the future.

Program Goals

Graduates of the Bachelor of Science in Biotechnology program are able to:

- Demonstrate a broad range of basic laboratory skills and technical competencies applicable to the field of biotechnology and to the workplace;
- Develop a broad understanding of foundational concepts, mechanisms and principles which can be applied across the fields of applied biotechnology, molecular and microbial biotechnology, food biotechnology, and nanotechnology;
- Demonstrate scientific reasoning and critical thinking skills including the ability to evaluate and integrate multiple sources of information, recognize problems, evaluate data, and draw conclusions;
- Model independent and collaborative work environments in the classroom, the laboratory, the field, and the workplace;
- Demonstrate the successful ability to communicate scientific information to a variety of audiences and incorporate multiple modes of technology to achieve that goal; and,
- Connect the classroom to the world of work through multi-modal and interdisciplinary learning experiences.

Biotechnology Requirements

This program requires a total of 48 to 55 semester hours: 1) 23 semester hours from Core courses and 2) 25-32 semester hours completed in one of the following concentrations: Food Safety and Quality Assurance, General Biotechnology, Medical Biotechnology, Nanobiotechnology, Nanobiotechnology and Nanofabrication, and Pharmaceutical Design. The semester hour value of each course appears in parentheses ( ).

Complete all of the following Core courses - 23 semester hours:

- BIOL 102 - General Biology (3 semester hours)
- BIOL 103 - General Biology Laboratory (1 semester hour)
- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- BTEC 170 - Introduction to Biotechnology (3 semester hours)
- CHEM 151 - General Chemistry I Lecture (3 semester hours)
- CHEM 152 - General Chemistry I Laboratory (1 semester hour)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)

Complete one of the following Concentrations:

Six concentrations are offered:

- Food Safety and Quality Assurance (25 semester hours)
- General Biotechnology (27 semester hours)
- Medical Biotechnology (27 semester hours)
- Nanobiotechnology (29 semester hours)
- Nanobiotechnology and Nanofabrication (32 semester hours)
- Pharmaceutical Design (27 semester hours)

Food Safety and Quality Assurance Concentration (25 semester hours)

Complete all of the following courses - 19 semester hours:

- BIOL 331 - Microbiology Lecture (3 semester hours)
- BIOL 332 - Microbiology Lab (1 semester hour)
- BIOL 371 - Molecular Biology Lecture (3 semester hours)
- BIOL 372 - Molecular Biology Laboratory (1 semester hour)
- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC 361 - Food Biotechnology Seminar (1 semester hour)
- BTEC 362 - General Biotechnology Seminar (1 semester hour)
- BTEC 363 - Nanobiotechnology Seminar (1 semester hour)
- BTEC 371 - Food Science and Technology (4 semester hours)

Complete 6 semester hours from the following courses:

- BTEC 200 - Introduction to Quality and Food Safety (3 semester hours)
- BTEC 210 - Food and Nutrition (3 semester hours)
- BTEC 235 - Applied Cell and Agro Culture (4 semester hours)
- BTEC 405 - Applied Food Microbiology (3 semester hours)
- BTEC 420 - Food Safety and Quality Assurance (3 semester hours)
- INSC 410 - Epidemiology (3 semester hours)

General Biotechnology Concentration (27 semester hours)

Complete all of the following courses - 16 semester hours:

- BIOL 331 - Microbiology Lecture (3 semester hours)
- BIOL 332 - Microbiology Lab (1 semester hour)
- BIOL 371 - Molecular Biology Lecture (3 semester hours)
- BIOL 372 - Molecular Biology Laboratory (1 semester hour)
- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC 351 - Biotechnology Applications (4 semester hours)

Complete 11 semester hours from the following courses:

- BIOL 296 - Human Anatomy and Physiology I Lecture (3 semester hours)
- BIOL 297 - Human Anatomy and Physiology I Laboratory (1 semester hour)
- BIOL 298 - Human Anatomy and Physiology II Lecture (3 semester hours)
- BIOL 299 - Human Anatomy and Physiology II Laboratory (1 semester hour)
- BIOL 320 - Genetics (3 semester hours)

- BIOL 376 - Immunology (3 semester hours)
- BTEC 100 - Nanobiotechnology Explorations (2 semester hours)
- BTEC 110 - Medical Terminology (1 semester hour)
- BTEC 210 - Food and Nutrition (3 semester hours)
- BTEC 215 - Introduction to Bioinformatics (4 semester hours)
- BTEC 220 - Applied Nanobiotechnology (4 semester hours)
- BTEC 222 - Emerging Laboratory Techniques (4 semester hours)
- BTEC 235 - Applied Cell and Agro Culture (4 semester hours)
- BTEC 250 - Medical Biotechnologies of 2020 (3 semester hours)
- BTEC 311 - Pharmacology I (3 semester hours)
- BTEC 320 - Drug Design and Development (3 semester hours)
- BTEC 340 - Forensic Biotechnology (3 semester hours)
- BTEC 355 - Neurology and Biotechnology (3 semester hours)
- BTEC 361 - Food Biotechnology Seminar (1 semester hour)
- BTEC 362 - General Biotechnology Seminar (1 semester hour)
- BTEC 363 - Nanobiotechnology Seminar (1 semester hour)
- BTEC 370 - Genetically Modified Foods (3 semester hours)
- BTEC 371 - Food Science and Technology (4 semester hours)
- BTEC 401 - Biosensor Technology (4 semester hours)
- BTEC 420 - Food Safety and Quality Assurance (3 semester hours)
- BTEC 435 - Computer-Aided Drug Design (4 semester hours)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)
- PHYS 121 - General Physics I Lecture (3 semester hours)
- PHYS 122 - General Physics I Lab (1 semester hour)

Medical Biotechnology Concentration (27 semester hours)

Complete all of the following courses - 14 semester hours:

- BTEC 250 - Medical Biotechnologies of 2020 (3 semester hours)
- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC 355 - Neurology and Biotechnology (3 semester hours)
- BTEC 401 - Biosensor Technology (4 semester hours)

Complete 13 semester hours from the following courses:

- BTEC 100 - Nanobiotechnology Explorations (2 semester hours)
- BTEC 110 - Medical Terminology (1 semester hour)
- BTEC 235 - Applied Cell and Agro Culture (4 semester hours)
- BTEC 240 - Techniques for Biomolecular Research (3 semester hours)
- BTEC 311 - Pharmacology I (3 semester hours)
- BTEC 320 - Drug Design and Development (3 semester hours)
- BTEC 351 - Biotechnology Applications (4 semester hours)
- BTEC 362 - General Biotechnology Seminar (1 semester hour)
- BTEC 363 - Nanobiotechnology Seminar (1 semester hour)
- BTEC 380 - Special Topics in Biotechnology (1 to 4 semester hours)

Nanobiotechnology Concentration (29 semester hours)

Complete all of the following courses - 25 semester hours:

- BTEC 100 - Nanobiotechnology Explorations (2 semester hours)
- BTEC 216 - Principles of Physics for Nanobiotechnology (4 semester hours)
- BTEC 220 - Applied Nanobiotechnology (4 semester hours)
- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC 361 - Food Biotechnology Seminar (1 semester hour)
- BTEC 362 - General Biotechnology Seminar (1 semester hour)
- BTEC 363 - Nanobiotechnology Seminar (1 semester hour)
- BTEC 401 - Biosensor Technology (4 semester hours)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)

Complete one of the following courses - 4 semester hours:

- BIOL 371 - Molecular Biology Lecture (3 semester hours)
- BIOL 372 - Molecular Biology Laboratory (1 semester hour)
- BTEC 250 - Medical Biotechnologies of 2020 (3 semester hours)

Nanobiotechnology and Nanofabrication Concentration (32 semester hours)

Complete all of the following courses - 14 semester hours:

- BTEC 100 - Nanobiotechnology Explorations (2 semester hours)
- BTEC 216 - Principles of Physics for Nanobiotechnology (4 semester hours)
- BTEC 350 - Biotechnology Techniques (4 semester hours)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)

Complete all of the following courses at the University Park Campus of The Pennsylvania State University - 18 semester hours:

- NANO 211 - Materials, Safety and Equipment Overview for Nanotechnology (3 semester hours)
- NANO 212 - Basic Nanotechnology Processes (3 semester hours)
- NANO 213 - Materials in Nanotechnology (3 semester hours)
- NANO 214 - Patterning for Nanofabrication (3 semester hours)
- NANO 215 - Materials Modification in Nanotechnology Applications (3 semester hours)
- NANO 216 - Characterization, Testing of Nanofabricated Structures and Materials (3 semester hours)

Note:

The student completing the Biotechnology - Nanobiotechnology and Nanofabrication Concentration may substitute successful completion of NANO 216 for Project I.

Pharmaceutical Design Concentration (27 semester hours)

Complete all of the following courses - 22 semester hours:

- BTEC 215 - Introduction to Bioinformatics (4 semester hours)
- BTEC 311 - Pharmacology I (3 semester hours)
- BTEC 320 - Drug Design and Development (3 semester hours)
- BTEC 351 - Biotechnology Applications (4 semester hours)
- BTEC 435 - Computer-Aided Drug Design (4 semester hours)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)

Complete 5 semester hours from the following courses:

- BIOL 296 - Human Anatomy and Physiology I Lecture (3 semester hours)
- BIOL 297 - Human Anatomy and Physiology I Laboratory (1 semester hour)
- BIOL 298 - Human Anatomy and Physiology II Lecture (3 semester hours)
- BIOL 299 - Human Anatomy and Physiology II Laboratory (1 semester hour)
- BIOL 320 - Genetics (3 semester hours)
- BIOL 331 - Microbiology Lecture (3 semester hours)
- BIOL 332 - Microbiology Lab (1 semester hour)
- BIOL 371 - Molecular Biology Lecture (3 semester hours)
- BIOL 372 - Molecular Biology Laboratory (1 semester hour)
- BIOL 376 - Immunology (3 semester hours)
- BTEC 100 - Nanobiotechnology Explorations (2 semester hours)
- BTEC 220 - Applied Nanobiotechnology (4 semester hours)
- BTEC 222 - Emerging Laboratory Techniques (4 semester hours)
- BTEC 250 - Medical Biotechnologies of 2020 (3 semester hours)
- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC 355 - Neurology and Biotechnology (3 semester hours)
- BTEC 361 - Food Biotechnology Seminar (1 semester hour)
- BTEC 362 - General Biotechnology Seminar (1 semester hour)
- BTEC 363 - Nanobiotechnology Seminar (1 semester hour)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Food Safety and Quality Assurance Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- BTEC 170 - Introduction to Biotechnology (3 semester hours)
- Electives (6 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- COMM 110 - Speech (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- Food Safety and Quality Assurance concentration electives (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- BIOL 371 - Molecular Biology Lecture (3 semester hours)
- BIOL 372 - Molecular Biology Laboratory (1 semester hour)
- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC 298 - Project I (3 semester hours)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- BIOL 331 - Microbiology Lecture (3 semester hours)
- BIOL 332 - Microbiology Lab (1 semester hour)
- BTEC 365 - Internship (3 semester hours)
- BTEC 371 - Food Science and Technology (4 semester hours)
- Electives (4 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- BTEC 498 - Project II (3 semester hours)
- Electives (7 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 16

Spring Semester

- BTEC 361 - Food Biotechnology Seminar (1 semester hour)
- BTEC 362 - General Biotechnology Seminar (1 semester hour)
- BTEC 363 - Nanobiotechnology Seminar (1 semester hour)
- GEND Elective (6 semester hours)
- EXPL 400 - Capstone (1 semester hour)
- Food Safety and Quality Assurance concentration electives (3 semester hours)

Total semester hours: 13

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the General Biotechnology Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- BTEC 170 - Introduction to Biotechnology (3 semester hours)
- Electives (6 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- COMM 110 - Speech (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- BTEC Concentration Electives (3 semester hours)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- BIOL 371 - Molecular Biology Lecture (3 semester hours)
- BIOL 372 - Molecular Biology Laboratory (1 semester hour)
- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC 298 - Project I (3 semester hours)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)

Total semester hours: 16

Spring Semester

- BIOL 331 - Microbiology Lecture (3 semester hours)
- BIOL 332 - Microbiology Lab (1 semester hour)
- BTEC 365 - Internship (3 semester hours)
- BTEC 351 - Biotechnology Applications (4 semester hours)
- Electives (4 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- BTEC Concentration Electives (4 semester hours)
- BTEC 498 - Project II (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 13

Spring Semester

- BTEC Concentration Electives (4 semester hours)
- GEND Electives (6 semester hours)
- Electives (5 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

General Biotechnology Concentration (postbaccalaureate health-related degree)

A student who has an interest in a postbaccalaureate health-related degree (MD, DO, DDS, VMD) should contact their faculty advisor for support relating to the recommended sequence. Other support for the student includes our Health Careers Society.

Recommended Sequence for the Full-time Student Completing the Medical Biotechnology Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- BTEC 170 - Introduction to Biotechnology (3 semester hours)
- Electives (6 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- COMM 110 - Speech (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- BTEC 250 - Medical Biotechnologies of 2020 (3 semester hours)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- BTEC Concentration Electives (3 semester hours)
- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC 298 - Project I (3 semester hours)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 15

Spring Semester

- BTEC 355 - Neurology and Biotechnology (3 semester hours)
- BTEC 365 - Internship (3 semester hours)
- BTEC Concentration Electives (6 semester hours)
- Electives (4 semester hours)

Total semester hours: 16

Summer Semester

Optional

Fourth Year

Fall Semester

- BTEC 401 - Biosensor Technology (4 semester hours)
- BTEC 498 - Project II (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 13

Spring Semester

- BTEC Concentration Electives (4 semester hours)
- GEND Electives (6 semester hours)
- Electives (5 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Nanobiotechnology and Nanofabrication Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- BTEC 170 - Introduction to Biotechnology (3 semester hours)
- Electives (6 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- BTEC 100 - Nanobiotechnology Explorations (2 semester hours)
- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- COMM 110 - Speech (3 semester hours)

- MATH 220 - Calculus I (3 semester hours)

Total semester hours: 16

Spring Semester

- BTEC 216 - Principles of Physics for Nanobiotechnology (4 semester hours)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Electives (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC 365 - Internship (3 semester hours)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- Electives (4 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- NANO 211 - Materials, Safety and Equipment Overview for Nanotechnology (3 semester hours)
- NANO 212 - Basic Nanotechnology Processes (3 semester hours)
- NANO 213 - Materials in Nanotechnology (3 semester hours)
- NANO 214 - Patterning for Nanofabrication (3 semester hours)
- NANO 215 - Materials Modification in Nanotechnology Applications (3 semester hours)
- NANO 216 - Characterization, Testing of Nanofabricated Structures and Materials (3 semester hours)

Total semester hours: 18

Summer Semester

Optional

Fourth Year

Fall Semester

- BTEC 498 - Project II (3 semester hours)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 13

Spring Semester

- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- GEND Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 13

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Nanobiotechnology Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- BTEC 170 - Introduction to Biotechnology (3 semester hours)
- Electives (6 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- BTEC 100 - Nanobiotechnology Explorations (2 semester hours)
- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- COMM 110 - Speech (3 semester hours)

- MATH 220 - Calculus I (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 17

Spring Semester

- BTEC 298 - Project I (3 semester hours)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC 365 - Internship (3 semester hours)
- BTEC 401 - Biosensor Technology (4 semester hours)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)

Total semester hours: 15

Spring Semester

- BTEC 216 - Principles of Physics for Nanobiotechnology (4 semester hours)
- BTEC 220 - Applied Nanobiotechnology (4 semester hours)
- GEND Electives (6 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- BTEC 498 - Project II (3 semester hours)

- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)
- Electives (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 16

Spring Semester

- BTEC 361 - Food Biotechnology Seminar (1 semester hour)
- BTEC 362 - General Biotechnology Seminar (1 semester hour)
- BTEC 363 - Nanobiotechnology Seminar (1 semester hour)
- EXPL 400 - Capstone (1 semester hour)
- Nanobiotechnology Concentration electives (4 semester hours)
- Electives (4 semester hours)

Total semester hours: 12

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Pharmaceutical Design Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- BTEC 170 - Introduction to Biotechnology (3 semester hours)
- Electives (6 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- COMM 110 - Speech (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- BTEC 215 - Introduction to Bioinformatics (4 semester hours)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- Electives (2-3 semester hours)

Total semester hours: 13-14

Summer Semester

Optional

Third Year

Fall Semester

- BTEC 298 - Project I (3 semester hours)
- BTEC 311 - Pharmacology I (3 semester hours)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- Electives (3-4 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 14-15

Spring Semester

- BTEC 320 - Drug Design and Development (3 semester hours)
- BTEC 365 - Internship (3 semester hours)
- GEND Electives (6 semester hours)
- Pharmaceutical Design Concentration electives (3-4 semester hours)

Total semester hours: 15-16

Summer Semester

Optional

Fourth Year

Fall Semester

- BTEC 498 - Project II (3 semester hours)

- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)
- Electives (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 16

Spring Semester

- BTEC 351 - Biotechnology Applications (4 semester hours)
- BTEC 435 - Computer-Aided Drug Design (4 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- Pharmaceutical Design Concentration electives (1-2 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16-17

Summer Semester

Optional

B.S. Business Administration

Unlock your potential to lead, innovate, and transform the business world with our Bachelor of Science in Business Administration. This forward-thinking program is designed to prepare students for success in today's competitive and rapidly evolving global economy. By blending technical expertise, analytical skills, and leadership development, our program empowers students to solve complex business challenges and drive impactful change. With specialized concentrations in Digital Health, Analytics, Entrepreneurship, Digital Marketing, and an Individualized option, students can tailor their education to align with their passions and career aspirations. Through hands-on learning and cutting-edge coursework, you'll develop critical skills such as strategic decision-making, managing diverse teams, fostering innovation, and implementing transformative solutions in organizations. Whether you aim to launch your own venture, lead in a corporate setting, or innovate within emerging industries, our Bachelor of Science in Business Administration provides the tools and knowledge to thrive. Join a program that combines a STEM-focused foundation with a commitment to advancing research and shaping the next generation of business leaders.

Program Goals

Graduates of the Bachelor of Science in Business Administration program are able to:

- Recognize business opportunities as competitive advantages;
- Perform goal-oriented business operations utilizing innovation, human capital, and emerging technology;
- Encourage teamwork to improve organizational performance; and,
- Apply ethical, legal, and social factors in multi-dimensional business settings.

Business Administration Requirements

The program requires a total of 50-54 semester hours: a) 35 semester hours from the required Core courses; and b) 15-19 semester hours completed in one of the following concentrations: Business Analytics, Digital Health, Digital Marketing, Entrepreneurship, and Individualized. The semester hour value of each course appears in parenthesis ( ).

Complete all of the following Core courses - 35 semester hours:

- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)
- MEBA 210 - Web Development for Business (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)
- MEBA 225 - Accounting (3 semester hours)
- MEBA 230 - Marketing (3 semester hours)
- MEBA 232 - Business Research Design and Methods (2 semester hours)
- MEBA 250 - Corporate Innovation and Entrepreneurship (3 semester hours)
- MEBA 312 - Leadership and Organizational Behavior (3 semester hours)
- MEBA 432 - Management and Innovation Strategies (3 semester hours)
- MEBA 435 - Business Law and Ethics (3 semester hours)
- MEBA 450 - Finance (3 semester hours)
- MEBA 470 - Business Systems Analysis, Modeling and Design (3 semester hours)

Complete one of the following Concentrations:

Five concentrations are offered:

- Business Analytics (15 semester hours)
- Digital Health (18 semester hours)
- Digital Marketing (15 semester hours)
- Entrepreneurship (15 semester hours)
- Individualized (19 semester hours)

Business Analytics Concentration (15 semester hours)

Complete the following courses -15 semester hours:

- MEBA 310 - Integration of Business Technology and Commerce (3 semester hours)
- MEBA 372 - Analytics Tools and Techniques (3 semester hours)
- MEBA 375 - Statistics for Managers (3 semester hours)
- MEBA 472 - Business Intelligence and Decision Support Systems (3 semester hours)
- MEBA 482 - Quantitative Methods in Managerial Decision-Making (3 semester hours)

Digital Health Concentration (18 semester hours)

Complete the following courses - 18 semester hours:

- MEBA 360 - Healthcare Systems (3 semester hours)
- MEBA 381 - Special Topics in Digital Health (3 semester hours) (*Complete 6 semester hours of this course*)
- MEBA 472 - Business Intelligence and Decision Support Systems (3 semester hours)
- ISEM 542 - Health Informatics and Information Systems (3 semester hours)
- ISEM 543 - Digital Health (3 semester hours)

Digital Marketing Concentration (15 semester hours)

Complete the following courses - 15 semester hours:

- MEBA 330 - Sales and Sales Management (3 semester hours)
- MEBA 352 - Consumer Behavior (3 semester hours)
- MEBA 354 - Integrated Marketing Communications (3 semester hours)
- MEBA 488 - Marketing Research (3 semester hours)
- MEBA 485 - Marketing Analytics (3 semester hours)

Entrepreneurship Concentration (15 semester hours)

Complete the following courses - 15 semester hours:

- MEBA 322 - Decision Theory (3 semester hours)
- MEBA 340 - Introduction to Innovation and Design Thinking (3 semester hours)
- MEBA 410 - Business Entrepreneurship in Practice (3 semester hours)
- MEBA 411 - Entrepreneurial Investment (3 semester hours)
- MEBA 425 - Product Management (3 semester hours)

Individualized Concentration (19 semester hours)

Complete 12 semester hours from the following courses:

- MEBA Electives (12 semester hours) (*not in Core requirements*)

Complete 7 semester hours from the following courses:

- GEND 400 - The Entrepreneurial Mind (3 semester hours)
- GEND 425 - Globalization (3 semester hours)
- Any CISC, IMED, or ISIT course (1-7 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Business Analytics Concentration

The sequence that appears below is based upon the availability of specific courses in each semester and the successful completion of course prerequisites. Semester hours are shown in parentheses ( ).

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Electives (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

- MEBA 230 - Marketing (3 semester hours)
- MEBA 232 - Business Research Design and Methods (2 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- MEBA 210 - Web Development for Business (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)
- MEBA 298 - Project I (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- Electives (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- GEND Electives (3 semester hours)
- MEBA 225 - Accounting (3 semester hours)
- MEBA 312 - Leadership and Organizational Behavior (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- GEND Group - Leadership and Business (3 semester hours)
- MEBA 250 - Corporate Innovation and Entrepreneurship (3 semester hours)
- MEBA 310 - Integration of Business Technology and Commerce (3 semester hours)
- MEBA 365 - Internship (3 semester hours)
- MEBA 375 - Statistics for Managers (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- MEBA 372 - Analytics Tools and Techniques (3 semester hours)
- MEBA 432 - Management and Innovation Strategies (3 semester hours)
- MEBA 435 - Business Law and Ethics (3 semester hours)
- MEBA 472 - Business Intelligence and Decision Support Systems (3 semester hours)
- MEBA 498 - Project II (3 semester hours)

Total semester hours: 15

Spring Semester

- GEND Group - Historical and Political Investigation (3 semester hours)
- Electives (3 semester hours)
- MEBA 450 - Finance (3 semester hours)
- MEBA 470 - Business Systems Analysis, Modeling and Design (3 semester hours)
- MEBA 482 - Quantitative Methods in Managerial Decision-Making (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Digital Health Concentration

The sequence that appears below is based upon the availability of specific courses in each semester and the successful completion of course prerequisites. Semester hours are shown in parentheses ( ).

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Electives (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

- MEBA 230 - Marketing (3 semester hours)
- MEBA 232 - Business Research Design and Methods (2 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- MEBA 210 - Web Development for Business (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)
- MEBA 298 - Project I (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- GEND Electives (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- MEBA 225 - Accounting (3 semester hours)
- MEBA 312 - Leadership and Organizational Behavior (3 semester hours)
- MEBA 360 - Healthcare Systems (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- MEBA 250 - Corporate Innovation and Entrepreneurship (3 semester hours)
- MEBA 365 - Internship (3 semester hours)
- MEBA 472 - Business Intelligence and Decision Support Systems (3 semester hours)
- MEBA 381 - Special Topics in Digital Health (3 semester hours) *(Complete 6 semester hours of this course)*

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- Electives (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- MEBA 432 - Management and Innovation Strategies (3 semester hours)
- MEBA 435 - Business Law and Ethics (3 semester hours)
- MEBA 498 - Project II (3 semester hours)

Total semester hours: 15

Spring Semester

- GEND Group - Historical and Political Investigation (3 semester hours)
- ISEM 542 - Health Informatics and Information Systems (3 semester hours)
- ISEM 543 - Digital Health (3 semester hours)
- MEBA 450 - Finance (3 semester hours)
- MEBA 470 - Business Systems Analysis, Modeling and Design (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Digital Marketing Concentration

The sequence that appears below is based upon the availability of specific courses in each semester and the successful completion of course prerequisites. Semester hours are shown in parentheses ( ).

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Electives (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

- MEBA 230 - Marketing (3 semester hours)
- MEBA 232 - Business Research Design and Methods (2 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- MEBA 210 - Web Development for Business (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)
- MEBA 298 - Project I (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- Electives (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- GEND Electives (3 semester hours)
- MEBA 225 - Accounting (3 semester hours)
- MEBA 312 - Leadership and Organizational Behavior (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- GEND Group - Leadership and Business (3 semester hours)
- MEBA 250 - Corporate Innovation and Entrepreneurship (3 semester hours)
- MEBA 330 - Sales and Sales Management (3 semester hours)
- MEBA 352 - Consumer Behavior (3 semester hours)
- MEBA 365 - Internship (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- Electives (3 semester hours)
- MEBA 354 - Integrated Marketing Communications (3 semester hours)
- MEBA 432 - Management and Innovation Strategies (3 semester hours)
- MEBA 435 - Business Law and Ethics (3 semester hours)
- MEBA 498 - Project II (3 semester hours)

Total semester hours: 15

Spring Semester

- GEND Group - Historical and Political Investigation (3 semester hours)
- MEBA 450 - Finance (3 semester hours)
- MEBA 470 - Business Systems Analysis, Modeling and Design (3 semester hours)
- MEBA 485 - Marketing Analytics (3 semester hours)
- MEBA 488 - Marketing Research (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Entrepreneurship Concentration

The sequence that appears below is based upon the availability of specific courses in each semester and the successful completion of course prerequisites. Semester hours are shown in parentheses ( ).

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Electives (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

- MEBA 230 - Marketing (3 semester hours)
- MEBA 232 - Business Research Design and Methods (2 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- MEBA 210 - Web Development for Business (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)
- MEBA 298 - Project I (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- Electives (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- GEND Electives (3 semester hours)
- MEBA 225 - Accounting (3 semester hours)
- MEBA 312 - Leadership and Organizational Behavior (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- MEBA 250 - Corporate Innovation and Entrepreneurship (3 semester hours)
- MEBA 322 - Decision Theory (3 semester hours)
- MEBA 365 - Internship (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- GEND Group - Leadership and Business (3 semester hours)
- MEBA 340 - Introduction to Innovation and Design Thinking (3 semester hours)
- MEBA 432 - Management and Innovation Strategies (3 semester hours)
- MEBA 435 - Business Law and Ethics (3 semester hours)
- MEBA 498 - Project II (3 semester hours)

Total semester hours: 15

Spring Semester

- MEBA 410 - Business Entrepreneurship in Practice (3 semester hours)
- MEBA 411 - Entrepreneurial Investment (3 semester hours)
- MEBA 425 - Product Management (3 semester hours)
- MEBA 450 - Finance (3 semester hours)
- MEBA 470 - Business Systems Analysis, Modeling and Design (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Individualized Concentration

The sequence that appears below is based upon the availability of specific courses in each semester and the successful completion of course prerequisites. Semester hours are shown in parentheses ( ).

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Electives (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

- MEBA 230 - Marketing (3 semester hours)
- MEBA 232 - Business Research Design and Methods (2 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- MEBA 210 - Web Development for Business (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)
- MEBA 298 - Project I (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- Electives (2 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- GEND Elective (3 semester hours)
- MEBA 312 - Leadership and Organizational Behavior (3 semester hours)
- MEBA 225 - Accounting (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 15

Spring Semester

- GEND Group - Leadership and Business (3 semester hours)
- MEBA Electives (6 semester hours)
- MEBA 250 - Corporate Innovation and Entrepreneurship (3 semester hours)
- MEBA 365 - Internship (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- MEBA Electives (7 semester hours)
- MEBA 432 - Management and Innovation Strategies (3 semester hours)
- MEBA 435 - Business Law and Ethics (3 semester hours)
- MEBA 498 - Project II (3 semester hours)

Total semester hours: 16

Spring Semester

- GEND Group - Historical and Political Investigation (3 semester hours)
- MEBA Electives (6 semester hours)
- MEBA 450 - Finance (3 semester hours)
- MEBA 470 - Business Systems Analysis, Modeling and Design (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

B.S. Computer and Information Sciences

Choosing to major in computer and information sciences helps the student gain core knowledge of information sciences in order to integrate business and real-world perspectives, interpersonal and team skills, and the competencies that lead to a career in computer and information sciences. The ability to devise a solution and execute it is at the core of this program. A graduate of this program will be able to design such solutions which involves the integration of few key design notions of data representation, algorithms, programming, data security, hardware, and software engineering within one unified framework. The ultimate goal is to enable the student to understand a problem and build a general-purpose computer system from the ground up through a program of study that provides a sound computer information system engineering design experience.

Program Goals

Graduates of the Bachelor of Science in Computer and Information Sciences program have to:

- Apply theoretical constructs of mathematical analysis, and sound reasoning to develop and deploy practical solutions for real world problems;
- Evaluate computing system requirements sufficient for developing efficient computational solutions for real world problems;
- Assimilate new methodologies and advances in computer technology in an ever-evolving discipline;
- Master the elements of effective written and oral communication of results to technical and non-technical audience;
- Work independently and in collaboration with colleagues;
- Live up to the ethical standards of the profession and professional knowledge and skills to contribute to society; and,
- Develop an understanding of the code of ethics of the software industry (social contract); and, therefore a sense of what it means to be a good citizen.

Computer and Information Sciences Requirements

This program requires a total of 50 semester hours: 1) 35 semester hours from the core courses listed below and 2) 15 semester hours completed in the Individualized Concentration. The semester hour value of each course appears in parentheses( ).

Complete all of the following Core courses - 35 semester hours:

- CISC 120 - Programming I (4 semester hours)
- CISC 160 - Data Structures (3 semester hours)
- CISC 211 - Computer Organization and Architecture (4 semester hours)
- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- CISC 233 - Essential Algorithms (3 semester hours)
- CISC 301 - Operating Systems (3 semester hours)
- CISC 325 - Programming Languages Concepts and Paradigms (3 semester hours)
- CISC 399 - Formal Languages and Automata Theory (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- MATH 250 - Introduction to Linear Algebra (3 semester hours)
- MATH 310 - Discrete Mathematics II (3 semester hours)

Complete the following Concentration:

Individualized Concentration (15 semester hours)

A Computer and Information Sciences student must take 15 semester hours of Computer and Information Sciences electives. The offerings of the Computer and Information Sciences program provide the student with opportunities to deepen their skills and knowledge of cognate areas in Cybersecurity, Artificial Intelligence, and Software Engineering. The student will work with their academic advisor(s) to craft an appropriate program of study. The intent is to provide the student with personally relevant training in subject and skill areas that align to the student's career goals, interests, and personal strengths.

Complete all of the following courses - 15 semester hours:

- 300-400 level CISC courses (*not required in Core*) (9 semester hours)
- 400 level CISC courses (*not required in Core*) (6 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Individualized Concentration *(14-week sequence)*

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- CISC 120 - Programming I (4 semester hours)
- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- CISC 160 - Data Structures (3 semester hours)
- CISC 211 - Computer Organization and Architecture (4 semester hours)

- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Spring Semester

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- CISC 233 - Essential Algorithms (3 semester hours)
- MATH 250 - Introduction to Linear Algebra (3 semester hours)
- MATH 310 - Discrete Mathematics II (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 13

Summer Semester

Optional

Third Year

Fall Semester

- CISC 298 - Project I (3 semester hours)
- CISC 301 - Operating Systems (3 semester hours)
- CISC 300-400 Level Elective (3 semester hours)
- Electives (6 semester hours)

Total semester hours: 15

Spring Semester

- CISC 325 - Programming Languages Concepts and Paradigms (3 semester hours)
- CISC 365 - Internship (3 semester hours)
- CISC 399 - Formal Languages and Automata Theory (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Fourth Year

Fall Semester

- CISC 300-400 Level Elective (3 semester hours)

- CISC 400 Level Elective (3 semester hours)
- CISC 498 - Project II (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 15

Spring Semester

- Electives (3 semester hours)
- GEND electives (6 semester hours)
- CISC 300-400 Level Elective (3 semester hours)
- CISC 400 Level Elective (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Individualized Concentration *(7-week sequence)*

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

Session 1

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Session 2

- CISC 120 - Programming I (4 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)

Total semester hours: 14

Spring Semester

Session 1

- COMM 110 - Speech (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Session 2

- GEND 103 - The Creative Mind II (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)

Total semester hours: 13

Summer Semester

Session 1

- GEND Group - Environmental and Life Sciences (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Session 2

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)

Total semester hours: 12

Second Year

Fall Semester

Session 1

- MATH 210 - Discrete Mathematics I (3 semester hours)
- Electives (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Session 2

- CISC 160 - Data Structures (3 semester hours)
- CISC 211 - Computer Organization and Architecture (4 semester hours)

Total semester hours: 14

Spring Semester

Session 1

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- CISC 233 - Essential Algorithms (3 semester hours)

Session 2

- GEND Group - Leadership and Business (3 semester hours)
- MATH 310 - Discrete Mathematics II (3 semester hours)

Total semester hours: 12

Summer Semester

Session 1

- GEND Electives (3 semester hours)
- MATH 250 - Introduction to Linear Algebra (3 semester hours)

Session 2

- CISC 300-400 Level Electives (3 semester hours)
- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
  (Select a course not previously completed)

Total semester hours: 15

Third Year

Fall Semester

Session 1

- CISC 301 - Operating Systems (3 semester hours)
- CISC 325 - Programming Languages Concepts and Paradigms (3 semester hours)

Session 2

- CISC 298 - Project I (3 semester hours)
- CISC 399 - Formal Languages and Automata Theory (3 semester hours)
- Electives (3 semester hours)

Total semester hours: 15

Spring Semester

Session 1

- CISC 300-400 Level Electives (3 semester hours)

- CISC 365 - Internship (3 semester hours)
  or
- CISC 495 - Applied Practice (3 semester hours)

Session 2

- CISC 498 - Project II (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
  (Select a course not previously completed)

Total semester hours: 12

Summer Semester

Session 1

- CISC 300-400 Level Electives (3 semester hours)
- CISC 400-Level Electives (3 semester hours)

Session 2

- CISC 400-Level Electives (3 semester hours)
- GEND Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 13

B.S. Cybersecurity Operations and Management

The Bachelor of Science in Cybersecurity Operations and Management program prepares students to become cybersecurity leaders in defending organizations against increasingly more sophisticated cyber threats. Students learn to secure IT environments and infrastructure, design, secure programs, lead forensic investigations across an organization, and manage cyber risks. The program has been developed with national leaders and incorporates the most current thinking and curriculum in cybersecurity. This innovative program positions cybersecurity graduates to immediately step into cybersecurity roles within the private and public sector, and includes courses to help students prepare for industry-leading cybersecurity certifications, such as the Certified Information Systems Security Professional (CISSP). The program is multi-disciplinary, and integrates computer science and engineering, math, legal, and cyber management courses. It is further designed to align with the National Initiative for Cybersecurity Education (NICE) framework which is a partnership between government, private sector and academia and focused on education, training and workforce development; and led by the National Institute of Standards and Technology (NIST). Courses are also aligned with the National Security Agency's (NSA) and the Department of Homeland Security's Center of Academic Excellence (CAE) criteria.

The program allows students to pursue the concentration best suited to their aptitude - this includes an option for a cyber management and leadership or a cyber operations management concentration. It also includes hands-on experiences in which students participate in applied and research-based projects, internship and/or an applied practice to gain real-world experience.

Program Goals

Graduates of the Bachelor of Science in Cybersecurity Operations and Management are able to:

- Understand modern digital infrastructures and information technology systems;
- Apply risk analysis techniques, skills, and tools necessary for best practice cybersecurity operations;
- Apply critical reasoning techniques to analyze a problem or threat response, and identify and define the business-oriented cybersecurity computing requirements;
- Design, implement, and evaluate a secure computer-based system, process, component, or program to meet cybersecurity needs;
- Conduct cybersecurity forensic investigations;
- Develop synergy with information technology teams to accomplish business or organizational goals; and,
- Communicate effectively with a wide range of information technology users and business leadership.

Cybersecurity Operations and Management Requirements

Complete the following Core courses - 34 semester hours:

The following courses comprise the required core courses of the Cybersecurity Operations and Management program. The credit value of each course appears in parentheses ( ).

- CISC 120 - Programming I (4 semester hours)
- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- CYOM 105 - Introduction to Cybersecurity (3 semester hours)
- CYOM 130 - Cybersecurity Ethics and Policy (3 semester hours)
- CYOM 215 - Critical Thinking, Reasoning and Analysis in Cybersecurity (3 semester hours)
- CYOM 230 - Cyber Defense (3 semester hours)
- CYOM 322 - Fundamental Security Design Principles (3 semester hours)
- CYOM 340 - Cybersecurity Systems Administration (3 semester hours)
- CYOM 410 - Cloud Cybersecurity and Governance (3 semester hours)

- CYOM 430 - Principles of Secure Database Design (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)

Complete one of the following Concentrations:

Two concentrations are currently offered:

- Cyber Management and Leadership (15 credits)
- Cyber Operations Management (15 credits)

The student will typically complete the concentration courses after the majority of the core courses or in the third year.

Cyber Management and Leadership Concentration (15 Credits)

The following five courses comprise the required concentration courses of the Cyber Management and Leadership concentration in Cybersecurity Operations and Management program. The semester hour value of each course appears in parentheses ( ).

- CYOM 345 - Cybersecurity Planning, Management and Policy Development (3 semester hours)
- CYOM 445 - Cyber Risk Analysis and Management (3 semester hours)
- CYOM 458 - Cybersecurity Program and Project Management (3 semester hours)
- MEBA 312 - Leadership and Organizational Behavior (3 semester hours)
- CYOM 460 - Cyber Investigations and Legal Awareness (3 semester hours)

Cyber Operations Management Concentration (15 Credits)

The following five courses comprise the required concentration courses of the Cyber Operations Management concentration in Cybersecurity Operations and Management program. The semester hour value of each course appears in parentheses ( ).

- CYOM 350 - Managing Cybersecurity Operations (3 semester hours)
- CYOM 448 - Emerging Technologies (3 semester hours)
- CYOM 450 - Risk Identification by Penetration Testing (3 semester hours)
- CYOM 480 - System Security Engineering (3 semester hours)

- CYOM 455 - Advanced Cloud Cybersecurity and Governance (3 semester hours)
  or
- CYOM 535 - Principles of Cloud Security (3 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

- MATH 210 - Discrete Mathematics I (3 semester hours)
  or
- MATH 220 - Calculus I (3 semester hours)
  or
- MEBA 375 - Statistics for Managers (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Cyber Management and Leadership Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

Session 1

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Session 2

- CYOM 105 - Introduction to Cybersecurity (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)

Total semester hours: 13

Spring Semester

Session 1

- COMM 110 - Speech (3 semester hours)
- CYOM 130 - Cybersecurity Ethics and Policy (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Session 2

- GEND 103 - The Creative Mind II (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)

Total semester hours: 13

Summer Semester

Session 1

- GEND Group - Environmental and Life Sciences (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Session 2

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)

Total semester hours: 12

Second Year

Fall Semester

Session 1

- CYOM 215 - Critical Thinking, Reasoning and Analysis in Cybersecurity (3 semester hours)

- MATH 210 - Discrete Mathematics I (3 semester hours)
  or
- MATH 220 - Calculus I (3 semester hours)
  or
- MEBA 375 - Statistics for Managers (3 semester hours)

- EXPL 300 - Keystone (1 semester hour)

Session 2

- CISC 120 - Programming I (4 semester hours)
- CYOM 230 - Cyber Defense (3 semester hours)

Total semester hours: 14

Spring Semester

Session 1

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- Electives (4 semester hours)

Session 2

- GEND Group - Leadership and Business (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)

Total semester hours: 13

Summer Semester

Session 1

- CYOM 322 - Fundamental Security Design Principles (3 semester hours)
- GEND Electives (3 semester hours)
- Electives (3 semester hours)

Session 2

- CYOM 340 - Cybersecurity Systems Administration (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
  (Select a course not previously completed)

Total semester hours: 15

Third Year

Fall Semester

Session 1

- CYOM 410 - Cloud Cybersecurity and Governance (3 semester hours)
- CYOM 430 - Principles of Secure Database Design (3 semester hours)
- Electives (3 semester hours)

Session 2

- CYOM 298 - Project I (3 semester hours)
- MEBA 312 - Leadership and Organizational Behavior (3 semester hours)

Total semester hours: 15

Spring Semester

Session 1

- CYOM 345 - Cybersecurity Planning, Management and Policy Development (3 semester hours)
- CYOM 445 - Cyber Risk Analysis and Management (3 semester hours)

Session 2

- CYOM 498 - Project II (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
  (Select a course not previously completed)

Total semester hours: 12

Summer Semester

Session 1

- CYOM 458 - Cybersecurity Program and Project Management (3 semester hours)

- CYOM 365 - Internship (3 semester hours)
  or
- CYOM 499 - Applied Practice (3 semester hours)

Session 2

- CYOM 460 - Cyber Investigations and Legal Awareness (3 semester hours)
- GEND Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 13

Recommended Sequence for the Full-time Student Completing the Cyber Operations Management Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

Session 1

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Session 2

- CYOM 105 - Introduction to Cybersecurity (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)

Total semester hours: 13

Spring Semester

Session 1

- COMM 110 - Speech (3 semester hours)
- CYOM 130 - Cybersecurity Ethics and Policy (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Session 2

- GEND 103 - The Creative Mind II (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)

Total semester hours: 13

Summer Semester

Session 1

- GEND Group - Environmental and Life Sciences (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Session 2

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)

Total semester hours: 12

Second Year

Fall Semester

Session 1

- CYOM 215 - Critical Thinking, Reasoning and Analysis in Cybersecurity (3 semester hours)

- MATH 210 - Discrete Mathematics I (3 semester hours)
  or
- MATH 220 - Calculus I (3 semester hours)
  or
- MEBA 375 - Statistics for Managers (3 semester hours)

- EXPL 300 - Keystone (1 semester hour)

Session 2

- CISC 120 - Programming I (4 semester hours)
- CYOM 230 - Cyber Defense (3 semester hours)

Total semester hours: 14

Spring Semester

Session 1

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- Electives (4 semester hours)

Session 2

- GEND Group - Leadership and Business (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)

Total semester hours: 13

Summer Semester

Session 1

- CYOM 322 - Fundamental Security Design Principles (3 semester hours)
- GEND Electives (3 semester hours)
- Electives (3 semester hours)

Session 2

- CYOM 340 - Cybersecurity Systems Administration (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
  (Select a course not previously completed)

Total semester hours: 15

Third Year

Fall Semester

Session 1

- CYOM 410 - Cloud Cybersecurity and Governance (3 semester hours)
- CYOM 430 - Principles of Secure Database Design (3 semester hours)
- Electives (3 semester hours)

Session 2

- CYOM 298 - Project I (3 semester hours)
- CYOM 350 - Managing Cybersecurity Operations (3 semester hours)

Total semester hours: 15

Spring Semester

Session 1

- CYOM 448 - Emerging Technologies (3 semester hours)
- CYOM 450 - Risk Identification by Penetration Testing (3 semester hours)

Session 2

- CYOM 498 - Project II (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
  (Select a course not previously completed)

Total semester hours: 12

Summer Semester

Session 1

- CYOM 455 - Advanced Cloud Cybersecurity and Governance (3 semester hours)

- CYOM 365 - Internship (3 semester hours)
  or
- CYOM 499 - Applied Practice (3 semester hours)

Session 2

- CYOM 480 - System Security Engineering (3 semester hours)
- GEND Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 13

B.S. Engineering and Mathematical Sciences

The BS in Engineering and Mathematical Sciences Degree consists of a strong core of courses in applied advanced mathematics, statistics, and computational science. The structure of the program allows the student to choose between two broad areas of study that are, at their root, highly mathematical: (1) data sciences, and (2) engineering sciences. The purpose of the program is to provide foundational and hands-on experience in applied problems associated with the two disciplines.

Program Goals

A graduate of the Bachelor of Science in Engineering and Mathematical Sciences is prepared to:

- Develop an expertise in problem-formation, problem solving, and modeling techniques and strategies central to a wide variety of applications;
- Establish the ability to communicate analytic arguments clearly and concisely, in oral and written forms;
- Exhibit expertise in numerical problem-solving techniques using high-level programming languages and commercial computational software packages; and,
- Demonstrate foundational knowledge and skills within an interdisciplinary-work environment.

Engineering and Mathematical Sciences Requirements

This program requires a total of 48 semester hours: 1) 24 semester hours from core course listed below and 2) 24 semester hours completed in the Data Sciences or Engineering Sciences Concentrations.
The semester hour value of each course appears in parentheses( ).

Complete all of the following Core courses - 24 semester hours:

- ENGR 220 - Chemical Principles for Engineering Lecture (3 semester hours)
- ENGR 221 - Chemical Principles of Engineering Laboratory (1 semester hour)
- CISC 120 - Programming I (4 semester hours)
- MATH 250 - Introduction to Linear Algebra (3 semester hours)
- MATH 260 - Calculus II (3 semester hours)
- MATH 261 - Calculus III (3 semester hours)
- MATH 320 - Ordinary Differential Equations (3 semester hours)
- PHYS 331 - University Physics I Lecture (3 semester hours)
- PHYS 332 - University Physics I Laboratory (1 semester hour)

Complete one of the following Concentrations:

Two concentrations are offered: Data Sciences (24 semester hours) Engineering Sciences (24 semester hours)

Data Sciences Concentration (24 semester hours)

Complete all of the following - 15 semester hours:

- ANLY 405 - Predictive Modeling (3 semester hours)
- ANLY 415 - Advanced Analytics and Reporting (3 semester hours)

- CISC 140 - Programming II (3 semester hours)
- CISC 233 - Essential Algorithms (3 semester hours)
- MEBA 372 - Analytics Tools and Techniques (3 semester hours)

Complete 9 semester hours from the following courses:

- BIOL 102 - General Biology (3 semester hours)
- BIOL 103 - General Biology Laboratory (1 semester hour)
- BTEC 215 - Introduction to Bioinformatics (4 semester hours)
- INSC 410 - Epidemiology (3 semester hours)
- MATH 300 - Experiment Design and Analysis (3 semester hours)
- MATH 370 - Numerical Methods (3 semester hours)
- MATH 380 - Mathematical Modeling (3 semester hours)
- MATH 420 - Mathematical Methods and Analysis (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)
- MEBA 225 - Accounting (3 semester hours)
- MEBA 450 - Finance (3 semester hours)

Engineering Sciences Concentration (24 semester hours)

Complete all of the following courses - 13 semester hours:

- ADMA 240 - Computer-Aided Design and Drafting (3 semester hours)
- ENGR 330 - Computational Tools for Engineering (2 semester hours)
- ENGR 345 - Introduction to Engineering Design Lecture (3 semester hours)
- ENGR 346 - Engineering Design Laboratory (1 semester hour)
- PHYS 351 - University Physics II Lecture (3 semester hours)
- PHYS 352 - University Physics II Laboratory (1 semester hour)

Complete 11 semester hours from the following courses:

- ADMA 230 - Applied Analog and Digital Electronics (3 semester hours)
- BIOL 102 - General Biology (3 semester hours)
- BIOL 103 - General Biology Laboratory (1 semester hour)
- ENVS 101 - Introduction to Environmental Science (4 semester hours)
- ENVS 201 - Introduction to Geology (3 semester hours)
- ENVS 220 - Principles of Hydrology (4 semester hours)
- MATH 300 - Experiment Design and Analysis (3 semester hours)
- MATH 370 - Numerical Methods (3 semester hours)
- MATH 420 - Mathematical Methods and Analysis (3 semester hours)
- PHYS 301 - Physical Thermodynamics (3 semester hours)
- PHYS 315 - Quantum Mechanics and Spectroscopy (3 semester hours)
- PHYS 320 - Physical Chemistry Laboratory (1 semester hour)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Data Sciences Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of prerequisites.

First Year

Fall

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring

- CISC 120 - Programming I (4 semester hours)
- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Summer

Optional

Second Year

Fall

- CISC 140 - Programming II (3 semester hours)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)

- GEND Electives (3 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 260 - Calculus II (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Spring

- ENGR 220 - Chemical Principles for Engineering Lecture (3 semester hours)
- ENGR 221 - Chemical Principles of Engineering Laboratory (1 semester hour)
- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- MATH 250 - Introduction to Linear Algebra (3 semester hours)
- MATH 261 - Calculus III (3 semester hours)

Total semester hours: 16

Summer

Optional

Third Year

Fall

- Concentration Electives (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- EAMS 298 - Project I (3 semester hours)
- MEBA 372 - Analytics Tools and Techniques (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)
- PHYS 331 - University Physics I Lecture (3 semester hours)
- PHYS 332 - University Physics I Laboratory (1 semester hour)

Total semester hours: 17

Spring

- CISC 233 - Essential Algorithms (3 semester hours)
- Concentration Electives (6 semester hours)
- MATH 320 - Ordinary Differential Equations (3 semester hours)
- EAMS 365 - Internship (3 semester hours)

Total semester hours: 15

Summer

Optional

Fourth Year

Fall

- ANLY 405 - Predictive Modeling (3 semester hours)
- Electives (6 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- EAMS 498 - Project II (3 semester hours)

Total semester hours: 15

Spring

- ANLY 415 - Advanced Analytics and Reporting (3 semester hours)
- Electives (2 semester hours)
- GEND Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 12

Summer

Optional

Recommended Sequence for the Full-time Student Completing the Engineering Sciences Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of prerequisites.

First Year

Fall

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring

- CISC 120 - Programming I (4 semester hours)
- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Summer

Optional

Second Year

Fall

- ADMA 240 - Computer-Aided Design and Drafting (3 semester hours)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)

- GEND Electives (3 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 260 - Calculus II (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Spring

- ENGR 220 - Chemical Principles for Engineering Lecture (3 semester hours)
- ENGR 221 - Chemical Principles of Engineering Laboratory (1 semester hour)
- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- MATH 250 - Introduction to Linear Algebra (3 semester hours)
- MATH 261 - Calculus III (3 semester hours)

Total semester hours: 16

Summer

Optional

Third Year

Fall

- ENGR 330 - Computational Tools for Engineering (2 semester hours)
- Electives (4 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- EAMS 298 - Project I (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)
- PHYS 331 - University Physics I Lecture (3 semester hours)
- PHYS 332 - University Physics I Laboratory (1 semester hour)

Total semester hours: 17

Spring

- ENGR 345 - Introduction to Engineering Design Lecture (3 semester hours)
- ENGR 346 - Engineering Design Laboratory (1 semester hour)
- MATH 320 - Ordinary Differential Equations (3 semester hours)
- EAMS 365 - Internship (3 semester hours)
- PHYS 351 - University Physics II Lecture (3 semester hours)
- PHYS 352 - University Physics II Laboratory (1 semester hour)

Total semester hours: 14

Summer

Optional

Fourth Year

Fall

- Concentration Electives (8 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- EAMS 498 - Project II (3 semester hours)

Total semester hours: 14

Spring

- Concentration Electives (3 semester hours)
- Electives (4 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 14

Summer

Optional

B.S. Environmental Science and Sustainability

This Bachelor of Science program produces a well-prepared student to deliver novel and sustainable solutions to the increasingly challenging environmental and natural resource problems of the future. The program has an interdisciplinary set of courses that will give the student career-ready experience in field work, analysis, communication, and management. The student in the Environmental Science and Sustainability program is exposed to and utilizes such tools as field methods (mapping, sampling, logging), analysis (biological, chemical, lab methods, and more), service-based learning techniques (through collaborative class projects and cooperation with local businesses/institutions), and professional communication approaches (via presentations, professional meetings, grant writing, and publication).

Program Goals

Graduates of the Bachelor of Science in Environmental Science and Sustainability program are able to:

- Create solutions that support global awareness and ethical policy decision;
- Communicate research-based information to both non-scientists and professional audiences;
- Manage data from different sources;
- Engage students in community-based learning; and,
- Evaluate scientific literature in terms of methods, data analysis, and conclusions.

Environmental Science and Sustainability Requirements (50 semester hours)

This program requires a total of 50 semester hours: 1) 23 semester hours from core course listed below and 2) 27 semester hours completed in the Drone Applications and Geospatial Analysis, Sustainability, or Controlled Environment Agriculture concentrations. The semester hour value of each course appears in parentheses ( ).

Complete all of the following Core courses - 23 semester hours:

- BIOL 102 - General Biology (3 semester hours)
- BIOL 103 - General Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours)
- CHEM 152 - General Chemistry I Laboratory (1 semester hour)
- ENVS 100 - Environmental Studies Seminar (1 semester hour)
- ENVS 101 - Introduction to Environmental Science (4 semester hours)
- ENVS 201 - Introduction to Geology (3 semester hours)
- ENVS 302 - Environmental Regulation and Management (3 semester hours)
- GSTC 140 - Introduction to GIS (4 semester hours)

Complete one of the following Concentrations:

Three concentrations are offered:

- Controlled Environment Agriculture
- Drone Applications and Geospatial Analysis
- Sustainability

Controlled Environment Agriculture Concentration (27 semester hours)

Complete all of the following - 24 semester hours:

- BTEC 420 - Food Safety and Quality Assurance (3 semester hours)
- ENVS 110 - Introduction to Controlled Environment Agriculture (1 semester hour)
- ENVS 120 - Horticultural Science and Practices (3 semester hours)
- ENVS 220 - Principles of Hydrology (4 semester hours)
- ENVS 230 - Soils in the Critical Zone (4 semester hours)
- ENVS 240 - Recirculating Aquaculture Systems Management (3 semester hours)
- ENVS 335 - Sustainability Policy and Practices (3 semester hours)
- ENVS 340 - Aquaponic System Design and Management (3 semester hours)

Complete 3 semester hours from the following courses:

**Any concentration course requirement within the Environmental Science and Sustainability program that is not included within the student's declared concentration can meet this program elective requirement.*

- BIOL 303 - Principles of Ecology Lecture (3 semester hours)
- BIOL 304 - Principles of Ecology Laboratory (1 semester hour)
- ENVS 211 - Introduction to Renewable Energy Systems (3 semester hours)
- ENVS 312 - Energy Transitions (3 semester hours)
- ENVS 318 - Environmental Education and Interpretation (3 semester hours)
- ENVS 320 - Climate Change Communication (3 semester hours)
- ENVS 425 - Greenhouse Gas Accounting and Climate Action (3 semester hours)
- GSTC 107 - Remote Pilot Certification and Applications (3 semester hours)
- GSTC 220 - Applied Geospatial Technology (4 semester hours)
- GSTC 320 - Geospatial Management and Policy (3 semester hours)
- GSTC 340 - Advanced Spatial Analysis (4 semester hours)
- GSTC 345 - Remote Sensing (4 semester hours)
- GSTC 360 - Sub-Artic Geospatial Field Studies (4 semester hours)
- GSTC 420 - Professional GIS Operations (3 semester hours)

Drone Applications and Geospatial Analysis Concentration (27 semester hours)

Note: Students in this concentration should be equipped with the appropriate computer requirements and technology. Specific computer requirements can be found on the Environmental Science and Sustainability, Drone Applications and Geospatial Analysis concentration page on the HU Website.

Complete all of the following - 21 semester hours:

- GSTC 107 - Remote Pilot Certification and Applications (3 semester hours)
- GSTC 220 - Applied Geospatial Technology (4 semester hours)
- GSTC 320 - Geospatial Management and Policy (3 semester hours)
- GSTC 340 - Advanced Spatial Analysis (4 semester hours)
- GSTC 345 - Remote Sensing (4 semester hours)
- GSTC 420 - Professional GIS Operations (3 semester hours)

Complete 6 semester hours from the following courses:

**Any concentration course requirement within the Environmental Science and Sustainability program that is not included within the student's declared concentration can meet this program elective requirement.*

- BIOL 303 - Principles of Ecology Lecture (3 semester hours)
- BIOL 304 - Principles of Ecology Laboratory (1 semester hour)
- BTEC 420 - Food Safety and Quality Assurance (3 semester hours)
- ENVS 110 - Introduction to Controlled Environment Agriculture (1 semester hour)
- ENVS 120 - Horticultural Science and Practices (3 semester hours)
- ENVS 211 - Introduction to Renewable Energy Systems (3 semester hours)
- ENVS 220 - Principles of Hydrology (4 semester hours)
- ENVS 230 - Soils in the Critical Zone (4 semester hours)
- ENVS 240 - Recirculating Aquaculture Systems Management (3 semester hours)
- ENVS 312 - Energy Transitions (3 semester hours)
- ENVS 318 - Environmental Education and Interpretation (3 semester hours)
- ENVS 320 - Climate Change Communication (3 semester hours)
- ENVS 335 - Sustainability Policy and Practices (3 semester hours)
- ENVS 340 - Aquaponic System Design and Management (3 semester hours)
- ENVS 425 - Greenhouse Gas Accounting and Climate Action (3 semester hours)
- GSTC 360 - Sub-Artic Geospatial Field Studies (4 semester hours)

Sustainability Concentration (27 semester hours)

Complete all of the following - 27 semester hours:

- BIOL 303 - Principles of Ecology Lecture (3 semester hours)
- BIOL 304 - Principles of Ecology Laboratory (1 semester hour)
- ENVS 211 - Introduction to Renewable Energy Systems (3 semester hours)
- ENVS 220 - Principles of Hydrology (4 semester hours)
- ENVS 230 - Soils in the Critical Zone (4 semester hours)
- ENVS 312 - Energy Transitions (3 semester hours)
- ENVS 320 - Climate Change Communication (3 semester hours)
- ENVS 335 - Sustainability Policy and Practices (3 semester hours)
- ENVS 425 - Greenhouse Gas Accounting and Climate Action (3 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Controlled Environment Agriculture Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- ENVS 100 - Environmental Studies Seminar (1 semester hour)
- EXPL 100 - Cornerstone (1 semester hour)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)

Total semester hours: 15

Spring Semester

- COMM 110 - Speech (3 semester hours)
- ENVS 101 - Introduction to Environmental Science (4 semester hours)
- ENVS 110 - Introduction to Controlled Environment Agriculture (1 semester hour)
- GEND 103 - The Creative Mind II (3 semester hours)
- GSTC 140 - Introduction to GIS (4 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- ENVS 120 - Horticultural Science and Practices (3 semester hours)

- ENVS 201 - Introduction to Geology (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)

Total semester hours: 16

Spring Semester

- Electives (6 semester hours)
- ENVS 220 - Principles of Hydrology (4 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 14

Summer Semester

Optional

Third Year

Fall Semester

- ENVS 230 - Soils in the Critical Zone (4 semester hours)
- ENVS 240 - Recirculating Aquaculture Systems Management (3 semester hours)
- ENVS 298 - Project I (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)
- GEND Group - Leadership and Business (3 semester hours)

Total semester hours: 14

Spring Semester

- ENVS 302 - Environmental Regulation and Management (3 semester hours)
- ENVS 335 - Sustainability Policy and Practices (3 semester hours)
- ENVS 340 - Aquaponic System Design and Management (3 semester hours)
- ENVS 498 - Project II (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- BTEC 420 - Food Safety and Quality Assurance (3 semester hours)

- ENVS 365 - Internship (3 semester hours)
- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)

Total semester hours: 15

Spring Semester

- Concentration Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)
- Electives (6 semester hours)
- GEND Electives (6 semester hours)

Total semester hours: 16

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Drone Applications and Geospatial Analysis Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- ENVS 100 - Environmental Studies Seminar (1 semester hour)
- EXPL 100 - Cornerstone (1 semester hour)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)

Total semester hours: 15

Spring Semester

- COMM 110 - Speech (3 semester hours)
- ENVS 101 - Introduction to Environmental Science (4 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- GSTC 140 - Introduction to GIS (4 semester hours)

Total semester hours: 14

Summer Semester

Optional

Second Year

Fall Semester

- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- ENVS 201 - Introduction to Geology (3 semester hours)
- GSTC 220 - Applied Geospatial Technology (4 semester hours)

- MATH 150 - Applied Mathematical Reasoning (3 semester hours)

Total semester hours: 17

Spring Semester

- Electives (6 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)
- GSTC 107 - Remote Pilot Certification and Applications (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 13

Summer Semester

Optional

Third Year

Fall Semester

- ENVS 298 - Project I (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)
- GEND Group - Leadership and Business (3 semester hours)
- GSTC 320 - Geospatial Management and Policy (3 semester hours)
- GSTC 345 - Remote Sensing (4 semester hours)

Total semester hours: 14

Spring Semester

- ENVS 302 - Environmental Regulation and Management (3 semester hours)
- ENVS 498 - Project II (3 semester hours)
- Electives (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- GSTC 340 - Advanced Spatial Analysis (4 semester hours)

Total semester hours: 16

Summer Semester

Optional

Fourth Year

Fall Semester

- ENVS 365 - Internship (3 semester hours)
- Electives (3 semester hours)

- GEND Group - Historical and Political Investigation (6 semester hours)
- GSTC 420 - Professional GIS Operations (3 semester hours)

Total semester hours: 15

Spring Semester

- Concentration Electives (6 semester hours)
- EXPL 400 - Capstone (1 semester hour)
- Electives (3 semester hours)
- GEND Electives (6 semester hours)

Total semester hours: 16

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Sustainability Concentration

The sequence that appears below is based upon the availability of specific courses in each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- ENVS 100 - Environmental Studies Seminar (1 semester hour)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 15

Spring Semester

- COMM 110 - Speech (3 semester hours)
- ENVS 101 - Introduction to Environmental Science (4 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- GSTC 140 - Introduction to GIS (4 semester hours)

Total semester hours: 14

Summer Semester

Optional

Second Year

Fall Semester

- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- ENVS 201 - Introduction to Geology (3 semester hours)
- ENVS 211 - Introduction to Renewable Energy Systems (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)

Total semester hours: 16

Spring Semester

- Electives (6 semester hours)
- ENVS 220 - Principles of Hydrology (4 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 14

Summer Semester

Optional

Third Year

Fall Semester

- BIOL 303 - Principles of Ecology Lecture (3 semester hours)
- BIOL 304 - Principles of Ecology Laboratory (1 semester hour)
- ENVS 230 - Soils in the Critical Zone (4 semester hours)
- ENVS 298 - Project I (3 semester hours)
- ENVS 335 - Sustainability Policy and Practices (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 15

Spring Semester

- ENVS 302 - Environmental Regulation and Management (3 semester hours)
- ENVS 320 - Climate Change Communication (3 semester hours)
- ENVS 498 - Project II (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- ENVS 312 - Energy Transitions (3 semester hours)
- ENVS 365 - Internship (3 semester hours)
- ENVS 425 - Greenhouse Gas Accounting and Climate Action (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 15

Spring Semester

- Electives (9 semester hours)
- GEND Electives (6 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

B.S. Esports Management, Production and Performance

Esports revenue for 2019 reached $1.1 billion across a global market of 443 million consumers. This 49-credit core program prepares passionate students for a successful career in this evolving industry. Students will learn how to manage, produce and contribute to the esports market by building unique skills and insights applicable to new and established organizations. This program is not a training ground for players, instead it combines three of Harrisburg University's strengths, business administration, media production and analytics to build an industry pipeline for the next generation of esports decision-makers in management, production, entrepreneurship and innovation.

Program Goals

A graduate of the Bachelor of Science in the Esports Management, Production and Performance program is prepared to:

- Assess the operation and performance of the esports ecosystem as a commercial entertainment activity;
- Develop real-world and theoretical strategies to address current challenges in the esports industry;
- Successfully design event, activity, and product formats that are inclusive and appealing to a broad range of participants;
- Manage the logistical aspects of projects, products, and events to ensure smooth execution and success; and,
- Understand and navigate the diverse cultural dynamics within the esports ecosystem, ensuring respectful and inclusive interactions across global and local communities.

Esports Management, Production and Performance Requirements (49 semester hours)

This program requires a total of 49 semester hours. The semester hour value of each course appears in parentheses ( ).

Complete all of the following Core courses - 37 semester hours:

- ESPT 110 - Competitive Gaming Seminar (1 semester hour)
- ESPT 120 - Introduction to Esports (4 semester hours)
- ESPT 210 - Contemporary Issues in Esports (4 semester hours)
- ESPT 220 - Social Media Management (4 semester hours)
- ESPT 240 - Health and Wellness in Esports (3 semester hours)
- ESPT 310 - Live Event Management (4 semester hours)
- ESPT 330 - Live Event Production (3 semester hours)
- ESPT 340 - Revenue Generation In Esports (3 semester hours)
- ESPT 350 - Psychology of Performance (4 semester hours)
- ESPT 420 - Leadership (4 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Complete 12 semester hours from the following courses:

- ESPT 225 - Coaching Principles (3 semester hours)
- ESPT 235 - Digital Media in Esport (3 semester hours)
- ESPT 245 - Esports Broadcasting (3 semester hours)
- ESPT 325 - Esport Coaching and Performance Strategies (3 semester hours)

- ESPT 335 - Human Performance in Esport (3 semester hours)
- ESPT 345 - Sponsorship (3 semester hours)
- ESPT 415 - Fan Engagement Strategies (4 semester hours)
- ESPT 425 - Sport and Performance Administration (4 semester hours)
- GAME 100 - History of Video Games: Technical, Economic & Socio-cultural Contexts (2 semester hours)
- GAME 145 - Introduction to Game Design (2 semester hours)
- GAME 250 - Prototyping 1: Ideation & Analog Prototyping Methods (3 semester hours)
- IMED 170 - Visual Design Fundamentals (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)
- MEBA 230 - Marketing (3 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Esports Management, Production and Performance Program *(14-week)*

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- ESPT 110 - Competitive Gaming Seminar (1 semester hour)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring

- COMM 110 - Speech (3 semester hours)
- ESPT 120 - Introduction to Esports (4 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 16

Summer

Optional

Second Year

Fall

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- ESPT 210 - Contemporary Issues in Esports (4 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)
- GEND Electives (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)

Total semester hours: 14

Spring

- ESPT 220 - Social Media Management (4 semester hours)
- ESPT 240 - Health and Wellness in Esports (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Summer

Optional

Third Year

Fall

- ESPT 298 - Project I (3 semester hours)
- ESPT 310 - Live Event Management (4 semester hours)
- ESPT 350 - Psychology of Performance (4 semester hours)
- Esports Program Elective (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 15

Spring

- ESPT 330 - Live Event Production (3 semester hours)
- ESPT 365 - Internship (3 semester hours)
- Esports Program Electives (6 semester hours)
- GEND Electives (3 semester hours)

Total semester hours: 15

Summer

Optional

Fourth Year

Fall

- ESPT 498 - Project II (3 semester hours)
- Esports Program Electives (3 semester hours)
- Electives (4 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 16

Spring

- ESPT 340 - Revenue Generation In Esports (3 semester hours)
- ESPT 420 - Leadership (4 semester hours)
- Electives (6 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 14

Summer

Optional

Recommended Sequence for the Full-time Student Completing the Esports Management, Production and Performance Program *(7-week)*

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

Session 1

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Session 2

- ESPT 110 - Competitive Gaming Seminar (1 semester hour)
- GEND 102 - The Creative Mind I (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)

Total semester hours: 14

Spring Semester

Session 1

- COMM 110 - Speech (3 semester hours)
- ESPT 120 - Introduction to Esports (4 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Session 2

- GEND 103 - The Creative Mind II (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 14

Summer Semester

Session 1

- GEND Group - Scientific Inquiry (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Session 2

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)

Total semester hours: 12

Second Year

Fall Semester

Session 1

- ESPT 210 - Contemporary Issues in Esports (4 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Session 2

- ESPT 310 - Live Event Management (4 semester hours)
- GEND Group - Leadership and Business (3 semester hours)

Total semester hours: 15

Spring Semester

Session 1

- ESPT 220 - Social Media Management (4 semester hours)
- Esports Program Electives (3 semester hours)

Session 2

- ESPT 240 - Health and Wellness in Esports (3 semester hours)
- Esports Program Electives (3 semester hours)

Total semester hours: 13

Summer Semester

Session 1

- Esports Program Electives (3 semester hours)
- GEND Electives (3 semester hours)

Session 2

- Esports Program Electives (3 semester hours)

- GEND Group - Historical and Political Investigation (3 semester hours)
  (Select a course not previously completed)

Total semester hours: 12

Third Year

Fall Semester

Session 1

- ESPT 350 - Psychology of Performance (4 semester hours)
- Electives (3 semester hours)

Session 2

- ESPT 298 - Project I (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
  (Select a course not previously completed)

Total semester hours: 13

Spring Semester

Session 1

- ESPT 330 - Live Event Production (3 semester hours)
- ESPT 340 - Revenue Generation In Esports (3 semester hours)

Session 2

- ESPT 420 - Leadership (4 semester hours)
- ESPT 498 - Project II (3 semester hours)

Total semester hours: 13

Summer Semester

Session 1

- Electives (4 semester hours)

- ESPT 365 - Internship (3 semester hours)
  or
- ESPT 499 - Applied Practice (3 semester hours)

Session 2

- Electives (3 semester hours)

- GEND Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 14

B.S. Exercise Science

The Bachelor of Science in Exercise Science PTA Pathway Program offers innovative educational opportunities that respond to societal needs. The program offers Physical Therapist Assistants the opportunity for degree and career advancement. The program fosters diverse graduates who are competent, autonomous and contemporary exercise physiologists who focus on the betterment of the health, fitness, and quality of life of diverse populations across their lifespan. Graduates of the program integrate evidence-informed strategies into client management for the well-being of a diverse population across their lifespans.

Additional Admission Requirements for the Bachelor of Science in Exercise Science Pathway Program

- GPA of 2.8 cumulative undergraduate recommended
- Current PTA license/ certificate
- Successful completion of the review of application components, including video essay, reference letter, and resume

Program Goals

Graduates of the Bachelor of Science in Exercise Science will:

- Design comprehensive health and fitness programs for a variety of populations across their lifespan;
- Integrate mitigating risk and maximizing effectiveness of facility management and wellness-plan implementation; and,
- Prepare for the American College of Sports Medicines Exercise Physiologist certification exam.

Exercise Science Requirements

Students are required to complete 120 credits for the Bachelor of Science Degree. Students receive 53 credits as a licensed/certified Physical Therapist Assistant. Students are required to complete 67 credits for degree completion of Bachelor of Science Degree.

Complete the following Core courses - 58 semester hours:

- BIOL 102 - General Biology (3 semester hours)
- BIOL 103 - General Biology Laboratory (1 semester hour)
- CHEM 150 - General Chemistry I (4 semester hours)
- CHEM 160 - General Chemistry II (4 semester hours)
- EXSC 310 - Fundamentals of Exercise Science (3 semester hours)
- EXSC 315 - Health and Fitness Assessment (4 semester hours)
- EXSC 320 - Facility and Program Management (2 semester hours)
- EXSC 330 - Psychosocial Aspects of Health Behaviors Across the Lifespan I (3 semester hours)
- EXSC 340 - Exercise Prescription and Implementation I (3 semester hours)
- EXSC 360 - Exercise Physiology (3 semester hours)
- EXSC 375 - Exercise Nutrition (2 semester hours)
- EXSC 399 - Professional Practice in Exercise Science (2 semester hours)
- EXSC 410 - Certifications in Exercise Science (2 semester hours)
- EXSC 440 - Exercise Prescription and Implementation II (4 semester hours)
- EXSC 460 - Psychosocial Aspects of Health Behaviors across the Lifespan II (2 semester hours)
- EXSC 475 - Biomechanics (4 semester hours)

- EXSC 490 - Comprehensive Review (2 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- PHYS 120 - General Physics I (4 semester hours)

Experiential Learning courses - 9 semester hours:

- EXPL 200 - Steppingstone (1 semester hour)
- EXPL 300 - Keystone (1 semester hour)
- EXPL 400 - Capstone (1 semester hour)
- EXSC 298 - Project I (3 semester hours)
- EXSC 498 - Project II (3 semester hours)

Exercise Science PTA Pathway Program Sequence, Fall Subterm B Start

Recommended Sequence for the Exercise Science PTA Pathway Program

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

Subterm B

- EXSC 310 - Fundamentals of Exercise Science (3 semester hours)

Total semester hours: 3

Spring Semester

- MATH 120 - College Algebra (3 semester hours)

Subterm A

- EXSC 399 - Professional Practice in Exercise Science (2 semester hours)

Subterm B

- EXSC 360 - Exercise Physiology (3 semester hours)

Total semester hours: 8

Summer Semester

- BIOL 102 - General Biology (3 semester hours)
- BIOL 103 - General Biology Laboratory (1 semester hour)

Subterm A

- EXSC 375 - Exercise Nutrition (2 semester hours)

Subterm B

- EXSC 315 - Health and Fitness Assessment (4 semester hours)

Total semester hours: 10

Second Year

Fall Semester

- CHEM 150 - General Chemistry I (4 semester hours)

Subterm A

- MATH 280 - Introductory Statistics (3 semester hours)

Subterm B

- EXSC 340 - Exercise Prescription and Implementation I (3 semester hours)

Total semester hours: 10

Spring Semester

- CHEM 160 - General Chemistry II (4 semester hours)

Subterm A

- EXPL 200 - Steppingstone (1 semester hour)

Subterm B

- EXSC 440 - Exercise Prescription and Implementation II (4 semester hours)

Total semester hours: 9

Summer Semester

Subterm A

- EXSC 298 - Project I (3 semester hours)
- EXSC 330 - Psychosocial Aspects of Health Behaviors Across the Lifespan I (3 semester hours)

Subterm B

- EXPL 300 - Keystone (1 semester hour)
- EXSC 460 - Psychosocial Aspects of Health Behaviors across the Lifespan II (2 semester hours)

Total semester hours: 9

Third Year

Fall Semester

- PHYS 120 - General Physics I (4 semester hours)

Subterm A

- EXSC 320 - Facility and Program Management (2 semester hours)

Subterm B

- EXSC 498 - Project II (3 semester hours)

Total semester hours: 9

Spring Semester

Subterm A

- EXSC 410 - Certifications in Exercise Science (2 semester hours)
- EXSC 475 - Biomechanics (4 semester hours)

Subterm B

- EXPL 400 - Capstone (1 semester hour)
- EXSC 490 - Comprehensive Review (2 semester hours)

Total semester hours: 9

Exercise Science PTA Pathway Program Sequence, Spring Subterm A Start

Recommended Sequence for the Exercise Science PTA Pathway Program

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Spring Semester

- MATH 120 - College Algebra (3 semester hours)

Subterm A

- EXSC 310 - Fundamentals of Exercise Science (3 semester hours)

Subterm B

- EXSC 360 - Exercise Physiology (3 semester hours)

Total semester hours: 9

Summer Semester

- BIOL 102 - General Biology (3 semester hours)
- BIOL 103 - General Biology Laboratory (1 semester hour)

Subterm A

- EXSC 375 - Exercise Nutrition (2 semester hours)

Subterm B

- EXSC 315 - Health and Fitness Assessment (4 semester hours)

Total semester hours: 10

Second Year

Fall Semester

- CHEM 150 - General Chemistry I (4 semester hours)

Subterm A

- MATH 280 - Introductory Statistics (3 semester hours)

Subterm B

- EXSC 340 - Exercise Prescription and Implementation I (3 semester hours)

Total semester hours: 10

Spring Semester

- CHEM 160 - General Chemistry II (4 semester hours)

Subterm A

- EXPL 200 - Steppingstone (1 semester hour)
- EXSC 399 - Professional Practice in Exercise Science (2 semester hours)

Subterm B

- EXSC 440 - Exercise Prescription and Implementation II (4 semester hours)

Total semester hours: 11

Summer Semester

Subterm A

- EXSC 298 - Project I (3 semester hours)
- EXSC 330 - Psychosocial Aspects of Health Behaviors Across the Lifespan I (3 semester hours)

Subterm B

- EXPL 300 - Keystone (1 semester hour)
- EXSC 460 - Psychosocial Aspects of Health Behaviors across the Lifespan II (2 semester hours)

Total semester hours: 9

Third Year

Fall Semester

- PHYS 120 - General Physics I (4 semester hours)

Subterm A

- EXSC 320 - Facility and Program Management (2 semester hours)

Subterm B

- EXSC 498 - Project II (3 semester hours)

Total semester hours: 9

Spring Semester

Subterm A

- EXSC 410 - Certifications in Exercise Science (2 semester hours)
- EXSC 475 - Biomechanics (4 semester hours)

Subterm B

- EXPL 400 - Capstone (1 semester hour)
- EXSC 490 - Comprehensive Review (2 semester hours)

Total semester hours: 9

B.S. Forensics

The Forensics Program offers an interdisciplinary hands-on forensic science curriculum that focuses on mock casework and crime scenes to promote critical thinking skills and prepares the student for a professional and ethical career in public and private forensic laboratories, research facilities and medicolegal death investigations. The forensics undergraduate program offers a comprehensive curriculum in an environment that supports diversity and promotes ethical decision-making. This program provides the student with a rigorous science-centered curriculum reflective of real-world expectations in the field of forensic science. Being taught by practitioners, the perspectives offered to the student mimics authentic situations to best prepare for supporting the forensic community. This program includes recommendations made by the Forensic Science Education Programs Accreditation Commission (FEPAC), which sets high academic standards. The student will take a required set of classes including sciences with laboratory activities, statistics, and calculus. The core forensic courses would include physical evidence analysis, crime scene investigation, legal considerations, and ethics/responsibilities. The student will then be able to further tailor their degree with forensic electives.

Program Goals

Graduates of the Bachelor of Science in the Forensics program are able to:

- Obtain a thorough grounding in the natural sciences;
- Build upon a background of natural sciences through a series of advanced studies;
- Develop an appreciation of issues specific to forensic science through course work and laboratory based instruction; and,
- Gain practical experience through a series of core competencies specific to the field of forensic science.

Forensics Requirements (47 - 59 semester hours)

This program requires a total of 47 - 59 semester hours. The semester hour value of each course appears in parentheses( ).

Complete all of the following Core courses - 11 semester hours:

- BIOL 102 - General Biology (3 semester hours)
- BIOL 103 - General Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours)
- CHEM 152 - General Chemistry I Laboratory (1 semester hour)
- FORS 225 - Legal Procedure (2 semester hours)
- FORS 230 - Quality Assurance and Case Management (1 semester hour)

Complete one of the following Concentrations:

Three concentrations are offered:

- Crime Scene Investigation
- Forensic Biology
- Forensic Chemistry

Crime Scene Investigation (36 semester hours)

The following courses comprise the crime scene investigation concentration of the Forensics Program. The semester hour value of each course appears in parenthesis ( ).

Complete all of the following courses - 12 semester hours:

- FORS 250 - Forensic Photography (3 semester hours)
- FORS 270 - Crime Scene Investigation (3 semester hours)
- FORS 355 - Crime Scene Management (3 semester hours)
- FORS 385 - Advanced Crime Scene Interpretation (3 semester hours)

Crime Scene Elective Group 1 (Complete 6 semester hours):

- FORS 315 - Forensic Entomology (4 semester hours)
- FORS 320 - Forensic Pattern Analysis (3 semester hours)
- FORS 361 - Criminal Profiling (3 semester hours)
- FORS 362 - Medico-Legal Death Investigation (3 semester hours)
- FORS 368 - Forensic Anthropology (3 semester hours)

Crime Scene Elective Group 2 (Complete 6 semester hours):

- FORS 325 - Forensic Toxicology (3 semester hours)
- FORS 330 - Forensic Instrumentation (3 semester hours)
- FORS 340 - Forensic Biology (3 semester hours)
- FORS 345 - Drug Chemistry (3 semester hours)
- FORS 350 - Trace Evidence Analysis (3 semester hours)
- Any course(s) remaining from the above section

Crime Scene Elective Group 3 (Complete 12 semester hours):

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- BIOL 296 - Human Anatomy and Physiology I Lecture (3 semester hours)
- BIOL 297 - Human Anatomy and Physiology I Laboratory (1 semester hour)
- BIOL 298 - Human Anatomy and Physiology II Lecture (3 semester hours)
- BIOL 299 - Human Anatomy and Physiology II Laboratory (1 semester hour)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- FORS 118 - Drones for Forensics (1 semester hour)
- FORS 366 - Interrogation Techniques (3 semester hours)
- GEND 120 - Self & Society: Introduction to Sociology (3 semester hours) *(if not taken as a General Education Course)*
- GEND 130 - General Psychology (3 semester hours) *(if not taken as a General Education Course)*
- GSTC 107 - Remote Pilot Certification and Applications (3 semester hours)
- PHYS 121 - General Physics I Lecture (3 semester hours)
  and
- PHYS 122 - General Physics I Lab (1 semester hour)
- PHYS 131 - General Physics II Lecture (3 semester hours)
  and
- PHYS 132 - General Physics II Lab (1 semester hour)
- Any course(s) remaining from the above sections

Forensic Biology Concentration (48 semester hours)

The following courses comprise the forensic biology concentration of the Forensics program. The semester hour value of each course appears in parentheses ( ).

Complete all of the following courses - 44 semester hours:

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- BIOL 320 - Genetics (3 semester hours)
- BIOL 371 - Molecular Biology Lecture (3 semester hours)
- BIOL 372 - Molecular Biology Laboratory (1 semester hour)

- BTEC 340 - Forensic Biotechnology (3 semester hours)
  or
- FORS 380 - Special Topics in Forensics (1 to 4 semester hours)

- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- CHEM 221 - Organic Chemistry II Lecture (3 semester hours)
- CHEM 222 - Organic Chemistry II Lab (1 semester hour)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)
- FORS 330 - Forensic Instrumentation (3 semester hours)
- FORS 340 - Forensic Biology (3 semester hours)
- PHYS 121 - General Physics I Lecture (3 semester hours)
- PHYS 122 - General Physics I Lab (1 semester hour)
- PHYS 131 - General Physics II Lecture (3 semester hours)
- PHYS 132 - General Physics II Lab (1 semester hour)

Forensic Biology Elective Group (Complete 4 semester hours):

- BIOL 225 - Entomology (4 semester hours)
- BIOL 296 - Human Anatomy and Physiology I Lecture (3 semester hours)
- BIOL 297 - Human Anatomy and Physiology I Laboratory (1 semester hour)
- BIOL 331 - Microbiology Lecture (3 semester hours)
- BIOL 332 - Microbiology Lab (1 semester hour)
- BIOL 376 - Immunology (3 semester hours)
- FORS 315 - Forensic Entomology (4 semester hours)

Forensic Chemistry Concentration (48 semester hours)

The following courses comprise the forensic chemistry concentration of the Forensics program. The semester hour value of each course appears in parentheses ( ).

Complete all of the following courses - 31 semester hours:

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- CHEM 221 - Organic Chemistry II Lecture (3 semester hours)
- CHEM 222 - Organic Chemistry II Lab (1 semester hour)
- CHEM 316 - Analytical Chemistry Lecture (3 semester hours)
- CHEM 317 - Analytical Chemistry Laboratory (1 semester hour)
- FORS 330 - Forensic Instrumentation (3 semester hours)
- PHYS 121 - General Physics I Lecture (3 semester hours)
- PHYS 122 - General Physics I Lab (1 semester hour)
- PHYS 131 - General Physics II Lecture (3 semester hours)
- PHYS 132 - General Physics II Lab (1 semester hour)

Forensic Chemistry Elective Group 1 (Complete 11 semester hours):

- CHEM 200 - Environmental Chemistry I (3 semester hours)
- CHEM 320 - Bio-Organic Chemistry (3 semester hours)
- CHEM 326 - Instrumental Chemical Analysis Lecture (3 semester hours)
- CHEM 327 - Instrumental Chemical Analysis Laboratory (1 semester hour)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)
- CHEM 351 - Biochemistry II Lecture (3 semester hours)
- CHEM 352 - Biochemistry II Laboratory (1 semester hour)
- PHYS 301 - Physical Thermodynamics (3 semester hours)
- PHYS 315 - Quantum Mechanics and Spectroscopy (3 semester hours)
- PHYS 320 - Physical Chemistry Laboratory (1 semester hour)

Forensic Chemistry Elective Group 2 (Complete 6 semester hours):

- FORS 325 - Forensic Toxicology (3 semester hours)
- FORS 345 - Drug Chemistry (3 semester hours)
- FORS 350 - Trace Evidence Analysis (3 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Crime Scene Investigation Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- COMM 110 - Speech (3 semester hours)
- Electives (3 semester hours)
- FORS 125 - Forensic Science (3 semester hours)
  (to count toward the General Education-Scientific Inquiry group)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- CHEM 151 - General Chemistry I Lecture (3 semester hours)
- CHEM 152 - General Chemistry I Laboratory (1 semester hour)
- Electives (3 semester hours)
- FORS 225 - Legal Procedure (2 semester hours)
- FORS 270 - Crime Scene Investigation (3 semester hours)

- MATH 220 - Calculus I (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Spring Semester

- Crime Scene Elective Group 3 (3 semester hours)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- FORS 230 - Quality Assurance and Case Management (1 semester hour)
- FORS 250 - Forensic Photography (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Elective (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- Crime Scene Elective Group 1 (6 semester hours)
- FORS 385 - Advanced Crime Scene Interpretation (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Elective (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- Crime Scene Elective Group 2 (3 semester hours)
- FORS 298 - Project I (3 semester hours)
- FORS 355 - Crime Scene Management (3 semester hours)
- FORS 365 - FORS Internship (3 semesters hours)
- GEND Group - Leadership and Business (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- Crime Scene Elective Group 2 (3 semester hours)
- Crime Scene Elective Group 3 (3 semester hours)
- Electives (3 semester hours)
- FORS 498 - Project II (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)

Total semester hours: 15

Spring Semester

- Crime Scene Elective Group 3 (6 semester hours)
- Electives (6 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 13

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Forensic Biology Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- COMM 110 - Speech (3 semester hours)
- Electives (3 semester hours)
- FORS 125 - Forensic Science (3 semester hours)
  (t*o count toward the General Education-Scientific Inquiry group*)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours)
- CHEM 152 - General Chemistry I Laboratory (1 semester hour)
- FORS 225 - Legal Procedure (2 semester hours)

- MATH 220 - Calculus I (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 14

Spring Semester

- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- FORS 230 - Quality Assurance and Case Management (1 semester hour)
- GEND Group - Historical and Political Investigation (3 semester hours)
  GEND Elective (3 semester hours)

Total semester hours: 14

Summer Semester

Optional

Third Year

Fall Semester

- BIOL 371 - Molecular Biology Lecture (3 semester hours)
- BIOL 372 - Molecular Biology Laboratory (1 semester hour)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- FORS 340 - Forensic Biology (3 semester hours)
- PHYS 121 - General Physics I Lecture (3 semester hours)
- PHYS 122 - General Physics I Lab (1 semester hour)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- CHEM 221 - Organic Chemistry II Lecture (3 semester hours)
- CHEM 222 - Organic Chemistry II Lab (1 semester hour)
- FORS 330 - Forensic Instrumentation (3 semester hours)
- FORS 298 - Project I (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- PHYS 131 - General Physics II Lecture (3 semester hours)
- PHYS 132 - General Physics II Lab (1 semester hour)

Total semester hours: 17

Summer Semester

Optional

Fourth Year

Fall Semester

- FORS 365 - FORS Internship (3 semesters hours)
- FORS 498 - Project II (3 semester hours)
- Forensic Biology Elective Group (4 semester hours)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)

Total semester hours: 14

Spring Semester

- BIOL 320 - Genetics (3 semester hours)

- BTEC 340 - Forensic Biotechnology (3 semester hours)
  or
- FORS 380 - Special Topics in Forensics (1 to 4 semester hours)

- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- GEND Elective (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Forensic Chemistry Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- COMM 110 - Speech (3 semester hours)
- Electives (3 semester hours)
- FORS 125 - Forensic Science (3 semester hours)
  (to count toward the General Education-Scientific Inquiry group)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours)
- CHEM 152 - General Chemistry I Laboratory (1 semester hour)
- FORS 225 - Legal Procedure (2 semester hours)

- MATH 220 - Calculus I (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 14

Spring Semester

- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- FORS 230 - Quality Assurance and Case Management (1 semester hour)
- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Elective (3 semester hours)

Total semester hours: 14

Summer Semester

Optional

Third Year

Fall Semester

- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- CHEM 316 - Analytical Chemistry Lecture (3 semester hours)
- CHEM 317 - Analytical Chemistry Laboratory (1 semester hour)
- Forensic Chemistry Elective Group 1 (3 semester hours)
- PHYS 121 - General Physics I Lecture (3 semester hours)
- PHYS 122 - General Physics I Lab (1 semester hour)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- CHEM 221 - Organic Chemistry II Lecture (3 semester hours)
- CHEM 222 - Organic Chemistry II Lab (1 semester hour)
- FORS 298 - Project I (3 semester hours)
- FORS 330 - Forensic Instrumentation (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- PHYS 131 - General Physics II Lecture (3 semester hours)
- PHYS 132 - General Physics II Lab (1 semester hour)

Total semester hours: 17

Summer Semester

Optional

Fourth Year

Fall Semester

- FORS 365 - FORS Internship (3 semesters hours)
- FORS 498 - Project II (3 semester hours)
- Forensic Chemistry Elective Group 1 (4 semester hours)
- Forensic Chemistry Elective Group 2 (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)

Total semester hours: 16

Spring Semester

- Forensic Chemistry Elective Group 1 (4 semester hours)
- Forensic Chemistry Elective Group 2 (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- GEND Elective (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 14

Summer Semester

Optional

B.S. Game Design

Game Design students will gain an understanding of what it takes to be a professional game designer, including the capacity for students to articulate the industry's needs and constraints. Graduates of the program will be able to work in a diverse set of environments as professional game designers, capable of specifying and creating engaging and immersive gameplay experiences using industry-standard tools, processes and methods. Students will gain the hands-on skill to study, plan, design, and create digital games without needing to acquire full coding or game development skills.

Program Goals

A graduate of the Bachelor of Science in Game Design program is prepared to:

- Conduct research and evaluate resources, compile data, and apply evidence to support design processes;
- Create clear and concise written, oral, and visual communication across contexts that follow industry standards;
- Incorporate collaborative teamwork roles and group structures in game design teams;
- Apply production and technical skills related to the development of different game design roles; and
- Engage in creative and professional development practices related to the evolving creative industries.

Game Design Requirements

This program requires a total of 50 semester hours. The semester hour value of each course appears in parentheses ( ).

Complete all of the following Core courses - 50 semester hours:

- GAME 100 - History of Video Games: Technical, Economic & Socio-cultural Contexts (2 semester hours)
- GAME 145 - Introduction to Game Design (2 semester hours)
- GAME 215 - Game Studies (3 semester hours)
- GAME 245 - Game Design 2: Principles & Practice of Game Design (3 semester hours)
- GAME 250 - Prototyping 1: Ideation & Analog Prototyping Methods (3 semester hours)
- GAME 270 - Game Art, Assets & Animation 1 (3 semester hours)
- GAME 288 - Level Design (3 semester hours)
- GAME 345 - Game Design 3 (3 semester hours)
- GAME 350 - Prototyping 2: Digital Prototyping for Video Games (3 semester hours)
- GAME 370 - Game Art, Assets & Animation 2 (3 semester hours)
- GAME 382 - World and Narrative Game Design (3 semester hours)
- GAME 475 - Professional Development Seminar (1 semester hour)
- GAME 485 - Game Studio 1: Ideation to Beta (3 semester hours)
- GAME 495 - Game Studio 2: Prototype to Release (4 semester hours)
- GAME 496 - Game Distribution: Platforms, Policies and Procedures (1 semester hour)
- IMED 120 - Introduction to Media Computation (4 semester hours)
- IMED 170 - Visual Design Fundamentals (3 semester hours)
- IMED 335 - Introduction to Game Engines (3 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)

- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Game Design Program

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GAME 100 - History of Video Games: Technical, Economic & Socio-cultural Contexts (2 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 15

Spring Semester

- COMM 110 - Speech (3 semester hours)
- GAME 145 - Introduction to Game Design (2 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)
- IMED 120 - Introduction to Media Computation (4 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)
- GAME 215 - Game Studies (3 semester hours)
- GAME 245 - Game Design 2: Principles & Practice of Game Design (3 semester hours)
- IMED 170 - Visual Design Fundamentals (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)

Total semester hours: 16

Spring Semester

- Elective (3 semester hours)
- GAME 250 - Prototyping 1: Ideation & Analog Prototyping Methods (3 semester hours)
- GAME 270 - Game Art, Assets & Animation 1 (3 semester hours)
- GAME 288 - Level Design (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- EXPL 300 - Keystone (1 semester hour)
- GAME 298 - Project I (3 semester hours)
- GAME 350 - Prototyping 2: Digital Prototyping for Video Games (3 semester hours)
- GAME 370 - Game Art, Assets & Animation 2 (3 semester hours)
- GEND Elective (3 semester hours)
- IMED 335 - Introduction to Game Engines (3 semester hours)

Total semester hours: 16

Spring Semester

- Elective (3 semester hours)
- GAME 345 - Game Design 3 (3 semester hours)
- GAME 382 - World and Narrative Game Design (3 semester hours)
- GAME 498 - Project II (3 semester hours)
- GEND Elective (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- Elective (3 semester hours)
- GAME 365 - Internship (3 semester hours)
- GAME 475 - Professional Development Seminar (1 semester hour)

- GAME 485 - Game Studio 1: Ideation to Beta (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)

Total semester hours: 16

Spring Semester

- EXPL 400 - Capstone (1 semester hour)
- GAME 495 - Game Studio 2: Prototype to Release (4 semester hours)
- GAME 496 - Game Distribution: Platforms, Policies and Procedures (1 semester hour)
- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)

Total semester hours: 12

Summer Semester

Optional

B.S. Geospatial Technology

The Geospatial Technology program prepares the student with a cross-disciplinary education that promotes the development of computer science and geospatial technology competencies through conceptual, experiential and technology-based learning. The student utilizes leading-edge software and hardware tools to address current and industry-driven geospatial needs. The program addresses not only the hardware and software tools, but also application development and database skills. The student develops the blended set of geospatial technology, application development and spatial database capabilities that are in highest demand. Industry partnerships for corporate faculty, substantive internships, and project-based use of resources are a core component of this program and a leading factor in preparing graduates for seamless integration into the workforce.

Program Goals

Graduates of the Bachelor of Science in Geospatial Technology program are able to:

- Determine and apply appropriate geographic positioning and data development technologies to college and accurately aggregate georeferenced observations, events and features;
- Select and apply the analytical functions of geospatial software tools to support the geographic inquiry process and improve decision support;
- Design and develop geospatial software applications and databases for processing, analyzing automating tasks or adding value to geospatial data; and,
- Demonstrate professionalism within the geospatial technology industry through application of legal and ethical decision making, proactive engagement within the professional community and appropriate professional conduct.

Geospatial Technology Requirements

Complete all of the following courses - 46 semester hours:

- CISC 120 - Programming I (4 semester hours)
- CISC 140 - Programming II (3 semester hours)
- GSTC 130 - Applied Geography (3 semester hours)
- GSTC 140 - Introduction to GIS (4 semester hours)
- GSTC 210 - Cartography (3 semester hours)
- GSTC 220 - Applied Geospatial Technology (4 semester hours)
- GSTC 320 - Geospatial Management and Policy (3 semester hours)
- GSTC 330 - Spatial Database Management (4 semester hours)
- GSTC 340 - Advanced Spatial Analysis (4 semester hours)
- GSTC 450 - Desktop GIS Development (4 semester hours)
- GSTC 345 - Remote Sensing (4 semester hours)
- IMED 265 - Front-End Web Development (3 semester hours)
- MEBA 210 - Web Development for Business (3 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Geospatial Technology Program

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- CISC 120 - Programming I (4 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- GSTC 140 - Introduction to GIS (4 semester hours)

Total semester hours: 14

Summer Semester

Optional

Second Year

Fall Semester

- CISC 140 - Programming II (3 semester hours)
- COMM 110 - Speech (3 semester hours)
- GSTC 130 - Applied Geography (3 semester hours)
- GSTC 210 - Cartography (3 semester hours)

- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Spring Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Electives (3 semester hours)
- GSTC 220 - Applied Geospatial Technology (4 semester hours)
- GSTC 320 - Geospatial Management and Policy (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- GEND Electives (3 semester hours)
- GSTC 298 - Project I (3 semester hours)
- GSTC 330 - Spatial Database Management (4 semester hours)
- GSTC 340 - Advanced Spatial Analysis (4 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 15

Spring Semester

- GEND Group - Historical and Political Investigation (6 semester hours)
- GSTC 365 - Internship (3 semester hours)
- GSTC 450 - Desktop GIS Development (4 semester hours)
- MEBA 210 - Web Development for Business (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Fourth Year

Fall Semester

- Electives (4 semester hours)

- GEND Group - Leadership and Business (6 semester hours)
- GSTC 345 - Remote Sensing (4 semester hours)
- GSTC 498 - Project II (3 semester hours)

Total semester hours: 17

Spring Semester

- Electives (9 semester hours)
- IMED 265 - Front-End Web Development (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 13

Summer Semester

Optional

B.S. Information Systems and Information Technology

The Bachelor of Science program in Information Systems and Information Technology (ISIT) offers an interdisciplinary curriculum focusing on Information Systems, Information Technology, and Computer Sciences. This program combines traditional computer science topics with cutting-edge ISIT practices and applications, preparing students with hands-on practical knowledge of the most important building blocks of today's information systems and their underlying technologies. In addition to theoretical understanding, the ISIT program covers the practical knowledge of technologies and their fundamentals, including computer hardware, networking components, mobile devices, and cloud/virtual environments. With the current trends of big data, mobile computing, virtualization, and cloud services, this program covers the most up-to-date practices in ISIT and prepares the graduate to tackle the real-world challenges of the industry.

Program Goals

Graduates of the Bachelor of Science in the Information Systems and Information Technology program are able to:

- Apply general computing and information systems;
- Analyze complex organizational issues and user needs using specified technical computing requirements and specs; and,
- Manage information systems, including the supporting technologies of setup, configuration, and troubleshooting phases.

Information Systems and Information Technology Requirements (50 semester hours)

This program requires a total of 50 semester hours: 1) 35 semester hours from the core courses listed below and 2) 15 semester hours completed in one of the following concentrations: IT Infrastructure and Networking and Operating Systems, Cloud Computing, and Virtualization. The semester hour value of each course appears in parentheses( ).

Complete all of the following Core courses - 35 semester hours:

- CISC 120 - Programming I (4 semester hours)
- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- ISIT 140 - Introduction to Information Systems (3 semester hours)
- ISIT 170 - Introduction to Data and Information Management (4 semester hours)
- ISIT 240 - Introduction to Networking (3 semester hours)
- ISIT 250 - Introduction to Operating Systems (3 semester hours)
- ISIT 260 - Introduction to Cloud Services (3 semester hours)
- ISIT Electives (6 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)

Complete one of the following Concentrations:

Two concentrations are offered:

- IT Infrastructure and Networking (15 semester hours)
- Operating Systems, Cloud Computing, and Virtualization (15 semester hours)

IT Infrastructure and Networking Concentration (15 semester hours)

The following courses comprise the IT Infrastructure and Networking concentration of the Information Systems and Information Technology program. The semester hour value of each course appears in parentheses ( ).

- ISIT 315 - Data Center Hard and Software Administration (3 semester hours)
- ISIT 330 - Advanced Networking I (3 semester hours)
- ISIT 360 - Advanced Networking II (3 semester hours)
- ISIT 440 - Advanced Networking III (3 semester hours)
- ISIT 475 - Virtualization (3 semester hours)

Operating Systems, Cloud Computing, and Virtualization (15 semester hours)

The following courses comprise the Operating Systems, Cloud Computing, and Virtualization concentration of the Information Systems and Information Technology program. The semester hour value of each course appears in parentheses ( ).

- ISIT 315 - Data Center Hard and Software Administration (3 semester hours)
- ISIT 355 - Advanced Operating Systems I (3 semester hours)
- ISIT 358 - Advanced Operating Systems II (3 semester hours)
- ISIT 465 - Advanced Cloud Computing (3 semester hours)
- ISIT 475 - Virtualization (3 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student completing the IT Infrastructure and Networking Concentration *(14-week)*

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)
- GEND 102 - The Creative Mind I (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)
- ISIT 140 - Introduction to Information Systems (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)

Total semester hours: 16

Spring Semester

- COMM 110 - Speech (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- ISIT 170 - Introduction to Data and Information Management (4 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Second Year

Fall Semester

- CISC 120 - Programming I (4 semester hours)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)
- ISIT 240 - Introduction to Networking (3 semester hours)
- ISIT 250 - Introduction to Operating Systems (3 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)

Total semester hours: 17

Spring Semester

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- ISIT 260 - Introduction to Cloud Services (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- EXPL 300 - Keystone (1 semester hour)
- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- ISIT 298 - Project I (3 semester hours)
- ISIT 315 - Data Center Hard and Software Administration (3 semester hours)

Total semester hours: 13

Spring Semester

- Electives (3 semester hours)
- GEND Electives (3 semester hours)
- ISIT 330 - Advanced Networking I (3 semester hours)
- ISIT 365 - Internship (3 semester hours)
- ISIT 475 - Virtualization (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- ISIT 360 - Advanced Networking II (3 semester hours)
- ISIT 498 - Project II (3 semester hours)
- ISIT Electives (3 semester hours)

Total semester hours: 15

Spring Semester

- Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)
- GEND Electives (3 semester hours)
- ISIT 440 - Advanced Networking III (3 semester hours)
- ISIT Electives (3 semester hours)

Total semester hours: 13

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the IIT Infrastructure and Networking Concentration *(7-week)*

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

Session 1

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- EXPL 100 - Cornerstone (1 semester hour)
- GEND 102 - The Creative Mind I (3 semester hours)

Session 2

- ISIT 140 - Introduction to Information Systems (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)

Total semester hours: 13

Spring Semester

Session 1

- COMM 110 - Speech (3 semester hours)
- ISIT 170 - Introduction to Data and Information Management (4 semester hours)

Session 2

- GEND 103 - The Creative Mind II (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)

Total semester hours: 13

Summer Semester

Session 1

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)

Session 2

- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 12

Second Year

Fall Semester

Session 1

- CISC 120 - Programming I (4 semester hours)
- ISIT 240 - Introduction to Networking (3 semester hours)

Session 2

- EXPL 200 - Steppingstone (1 semester hour)
- ISIT 250 - Introduction to Operating Systems (3 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)

Total semester hours: 14

Spring Semester

Session 1

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- ISIT 260 - Introduction to Cloud Services (3 semester hours)

Session 2

- GEND Group - Leadership and Business (3 semester hours)
- GEND Electives (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)

Total semester hours: 15

Summer Semester

Session 1

- Electives (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)

Session 2

- GEND Group - Historical and Political Investigation (3 semester hours)
- ISIT 298 - Project I (3 semester hours)

Total semester hours: 12

Third Year

Fall Semester

Session 1

- ISIT 315 - Data Center Hard and Software Administration (3 semester hours)
- ISIT Electives (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Session 2

- ISIT 330 - Advanced Networking I (3 semester hours)
- ISIT 365 - Internship (3 semester hours)

Total semester hours: 13

Spring Semester

Session 1

- ISIT 360 - Advanced Networking II (3 semester hours)
- ISIT 498 - Project II (3 semester hours)

Session 2

- ISIT 440 - Advanced Networking III (3 semester hours)
- ISIT 475 - Virtualization (3 semester hours)

Total semester hours: 12

Summer Semester

Session 1

- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Electives (3 semester hours)
- ISIT Electives (3 semester hours)

Session 2

- Electives (6 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Recommended Sequence for the Full-time Student Completing the Operating Systems, Cloud Computing, and Virtualization Concentration *(14-week)*

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- EXPL 100 - Cornerstone (1 semester hour)
- GEND 102 - The Creative Mind I (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)
- ISIT 140 - Introduction to Information Systems (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)

Total semester hours: 16

Spring Semester

- COMM 110 - Speech (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
- ISIT 170 - Introduction to Data and Information Management (4 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Second Year

Fall Semester

- CISC 120 - Programming I (4 semester hours)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)
- ISIT 240 - Introduction to Networking (3 semester hours)
- ISIT 250 - Introduction to Operating Systems (3 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)

Total semester hours: 17

Spring Semester

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- ISIT 260 - Introduction to Cloud Services (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- EXPL 300 - Keystone (1 semester hour)
- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)
- ISIT 298 - Project I (3 semester hours)
- ISIT 315 - Data Center Hard and Software Administration (3 semester hours)

Total semester hours: 13

Spring Semester

- Elective (3 semester hours)
- GEND Elective (3 semester hours)
- ISIT 355 - Advanced Operating Systems I (3 semester hours)
- ISIT 358 - Advanced Operating Systems II (3 semester hours)
- ISIT 365 - Internship (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (3 semester hours)
- ISIT 465 - Advanced Cloud Computing (3 semester hours)
- ISIT 498 - Project II (3 semester hours)

- ISIT Electives (3 semester hours)

Total semester hours: 15

Spring Semester

- Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)
- GEND Electives (3 semester hours)
- ISIT 475 - Virtualization (3 semester hours)
- ISIT Electives (3 semester hours)

Total semester hours: 13

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Operating Systems, Cloud Computing, and Virtualization Concentration *(7-week)*

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

Session 1

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- EXPL 100 - Cornerstone (1 semester hour)
- GEND 102 - The Creative Mind I (3 semester hours)

Session 2

- ISIT 140 - Introduction to Information Systems (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)

Total semester hours: 13

Spring Semester

Session 1

- COMM 110 - Speech (3 semester hours)
- ISIT 170 - Introduction to Data and Information Management (4 semester hours)

Session 2

- GEND 103 - The Creative Mind II (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)

Total semester hours: 13

Summer Semester

Session 1

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)

Session 2

- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 12

Second Year

Fall Semester

Session 1

- CISC 120 - Programming I (4 semester hours)
- ISIT 240 - Introduction to Networking (3 semester hours)

Session 2

- EXPL 200 - Steppingstone (1 semester hour)
- ISIT 250 - Introduction to Operating Systems (3 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)

Total semester hours: 14

Spring Semester

Session 1

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- ISIT 260 - Introduction to Cloud Services (3 semester hours)

Session 2

- GEND Group - Leadership and Business (3 semester hours)
- GEND Electives (3 semester hours)
- MEBA 220 - Principles of Business Management (3 semester hours)

Total semester hours: 15

Summer Semester

Session 1

- Electives (3 semester hours)
- GEND Group - Leadership and Business (3 semester hours)

Session 2

- GEND Group - Historical and Political Investigation (3 semester hours)
- ISIT 298 - Project I (3 semester hours)

Total semester hours: 12

Third Year

Fall Semester

Session 1

- EXPL 300 - Keystone (1 semester hour)
- ISIT 315 - Data Center Hard and Software Administration (3 semester hours)
- ISIT Electives (3 semester hours)

Session 2

- ISIT 365 - Internship (3 semester hours)
- ISIT 465 - Advanced Cloud Computing (3 semester hours)

Total semester hours: 13

Spring Semester

Session 1

- ISIT 355 - Advanced Operating Systems I (3 semester hours)
- ISIT 498 - Project II (3 semester hours)

Session 2

- ISIT 358 - Advanced Operating Systems II (3 semester hours)
- ISIT 475 - Virtualization (3 semester hours)

Total semester hours: 12

Summer Semester

Session 1

- GEND Group - Historical and Political Investigation (3 semester hours)
- GEND Electives (3 semester hours)
- ISIT Electives (3 semester hours)

Session 2

- Electives (6 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

B.S. Interactive Media

Interactive Media programs are where creativity meets technology. This program is structured into four key categories: technical development, design and visual arts, interactive experiences, and user engagement. Each category and program concentration are designed to equip students with the skills and knowledge needed to excel in this rapidly evolving field.

Program Goals

A graduate of the Bachelor of Science in Interactive Media program is prepared to:

- Research situations, compile data, and deploy evidence to support design processes;
- Integrate into varied teams in a professional capacity to produce high quality results;
- Use information to accomplish a purpose and communicate effectively and professionally to peers, clients and audiences;
- Evaluate needs, practice innovative thinking and create solutions that address explicit concerns towards specific opportunities; and,
- Ideate, design and produce engaging products, services and experiences in a professional manner.

Interactive Media Requirements

This program requires a total of 50 semester hours: 1) 26 semester hours from the core courses listed below and 2) 24 semester hours completed in one of the following concentrations: Advanced Media Production, Digital Marketing and Engagement, or User Experience Design. The semester hour value of each course appears in parentheses( ).

Complete all of the following Core courses - 26 semester hours:

- IMED 110 - Introduction to Digital Design (2 semester hours)
- IMED 120 - Introduction to Media Computation (4 semester hours)
- IMED 140 - Introduction to Interactive Media (2 semester hours)
- IMED 170 - Visual Design Fundamentals (3 semester hours)
- IMED 240 - Interactive Media I (4 semester hours)
- IMED 340 - Interactive Media II (4 semester hours)
- IMED 370 - Producing Creative Projects (3 semester hours)
- IMED 440 - Interactive Studio (4 semester hours)

Complete one of the following Concentrations:

Three concentrations are offered:

- Advanced Media Production (24 semester hours)
- Digital Marketing and Engagement (24 semester hours)
- User Experience Design (24 semester hours)

Advanced Media Production Concentration (24 semester hours)

Complete all of the following courses - 22 semester hours:

- IMED 150 - Digital Photography I (3 semester hours)
- IMED 235 - Cinema Studies (2 semester hours)
- IMED 250 - Video Production I (2 semester hours)
- IMED 255 - Audio Production (3 semester hours)
- IMED 265 - Front-End Web Development (3 semester hours)
- IMED 300 - 3D Modeling I (3 semester hours)

- IMED 460 - Designing for Extended Reality (3 semester hours)
  or
- IMED 465 - Generative AI Tools and Practices (3 semester hours)

- MEBA 210 - Web Development for Business (3 semester hours)

Complete one of the following courses - 2 semester hours:

- ISIT 300 - Web Technologies (3 semester hours)
- GEND 310 - Creative Writing (3 semester hours)
- IMED 251 - Video Production II (2 semester hours)
- IMED 310 - 3D Modeling II (3 semester hours)
- IMED 330 - Interactive Information Design (3 semester hours)
- MEBA 230 - Marketing (3 semester hours)

Digital Marketing and Engagement Concentration (24 semester hours)

Complete all of the following courses - 24 semester hours:

- IMED 210 - Effective Copywriting (3 semester hours)
- IMED 217 - Digital Media I (3 semester hours)
- IMED 230 - Foundations and Strategies of Marketing (3 semester hours)
- IMED 275 - Marketing Analytics and Performance Optimization (3 semester hours)
- IMED 333 - Social Media Marketing (3 semester hours)
- IMED 455 - Professional Practice in Digital Marketing (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)
- MEBA 230 - Marketing (3 semester hours)

User Experience Design Concentration (24 semester hours)

Complete all of the following courses - 24 semester hours:

- IMED 220 - Sociotechnical Theories (3 semester hours)
- IMED 225 - Design Tools and Processes (3 semester hours)
- IMED 270 - Research Methods for Interactive Design (3 semester hours)
- IMED 280 - Usability and Interface Design (3 semester hours)
- IMED 325 - Interactive Design Perspectives (3 semester hours)
- IMED 355 - Users and Populations (3 semester hours)
- IMED 358 - Patterns and Contexts (3 semester hours)
- IMED 450 - Design Studio (3 semester hours)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Advanced Media Production Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- IMED 140 - Introduction to Interactive Media (2 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 15

Spring Semester

- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- IMED 110 - Introduction to Digital Design (2 semester hours)
- IMED 120 - Introduction to Media Computation (4 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- Electives (3 semester hours)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)

- IMED 170 - Visual Design Fundamentals (3 semester hours)
- IMED 235 - Cinema Studies (2 semester hours)
- IMED 240 - Interactive Media I (4 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Spring Semester

- IMED 250 - Video Production I (2 semester hours)
- IMED 255 - Audio Production (3 semester hours)
- IMED 265 - Front-End Web Development (3 semester hours)
- IMED 298 - Project I (3 semester hours)
- MEBA 210 - Web Development for Business (3 semester hours)

Total semester hours: 14

Summer Semester

Optional

Third Year

Fall Semester

- IMED 300 - 3D Modeling I (3 semester hours)
- IMED 340 - Interactive Media II (4 semester hours)
- IMED 150 - Digital Photography I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 14

Spring Semester

- GEND Electives (3 semester hours)
- Electives (3 semester hours)
- IMED 365 - Internship (3 semester hours)
- IMED 370 - Producing Creative Projects (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- GEND Electives (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)
- IMED 460 - Designing for Extended Reality (3 semester hours) or Electives (3 semester hours)
- IMED 498 - Project II (3 semester hours)

Total semester hours: 15

Spring Semester

- Electives (3 semester hours) or IMED 465
  (*IMED 465 should be taken if IMED 460 was not previously completed*)
- GEND Group - Historical and Political Investigation (6 semester hours)
- IMED 440 - Interactive Studio (4 semester hours)
- Concentration Electives (2 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the Digital Marketing and Engagement Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- EXPL 100 - Cornerstone (1 semester hour)
- GEND Group - Scientific Inquiry (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- IMED 140 - Introduction to Interactive Media (2 semester hours)
- MATH 120 - College Algebra (3 semester hours)

Total semester hours: 15

Spring Semester

- COMM 110 - Speech (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- IMED 110 - Introduction to Digital Design (2 semester hours)
- IMED 120 - Introduction to Media Computation (4 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)
- IMED 170 - Visual Design Fundamentals (3 semester hours)
- IMED 230 - Foundations and Strategies of Marketing (3 semester hours)
- IMED 240 - Interactive Media I (4 semester hours)

Total semester hours: 14

Spring Semester

- Elective (3 semester hours)
- IMED 210 - Effective Copywriting (3 semester hours)
- IMED 275 - Marketing Analytics and Performance Optimization (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- MEBA 110 - Introduction to Business and Entrepreneurship (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- IMED 298 - Project I (3 semester hours)
- IMED 217 - Digital Media I (3 semester hours)
- IMED 340 - Interactive Media II (4 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- MEBA 230 - Marketing (3 semester hours)

Total semester hours: 16

Spring Semester

- Elective (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)
- GEND Elective (3 semester hours)
- IMED 333 - Social Media Marketing (3 semester hours)
- IMED 365 - Internship (3 semester hours)
- IMED 370 - Producing Creative Projects (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Fourth Year

Fall Semester

- GEND Elective (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)
- IMED 455 - Professional Practice in Digital Marketing (3 semester hours)
- IMED 498 - Project II (3 semester hours)

Total semester hours: 15

Spring Semester

- Elective (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)
- GEND Group - Historical and Political Investigation (6 semester hours)
- IMED 440 - Interactive Studio (4 semester hours)

Total semester hours: 14

Summer Semester

Optional

Recommended Sequence for the Full-time Student Completing the User Experience Design Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- IMED 140 - Introduction to Interactive Media (2 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 15

Spring Semester

- COMM 110 - Speech (3 semester hours)

- GEND Group - Environmental and Life Sciences (3 semester hours)
  or
- GEND Group - Scientific Inquiry (3 semester hours)
  (Select the group not previously completed)

- GEND 103 - The Creative Mind II (3 semester hours)
- IMED 110 - Introduction to Digital Design (2 semester hours)
- IMED 120 - Introduction to Media Computation (4 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- IMED 170 - Visual Design Fundamentals (3 semester hours)
- IMED 240 - Interactive Media I (4 semester hours)

- IMED 270 - Research Methods for Interactive Design (3 semester hours)
- IMED 280 - Usability and Interface Design (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 14

Spring Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- Electives (3 semester hours)
- IMED 220 - Sociotechnical Theories (3 semester hours)
- IMED 225 - Design Tools and Processes (3 semester hours)
- IMED 298 - Project I (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Third Year

Fall Semester

- Electives (3 semester hours)
- IMED 325 - Interactive Design Perspectives (3 semester hours)
- IMED 340 - Interactive Media II (4 semester hours)
- IMED 355 - Users and Populations (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 17

Spring Semester

- GEND Electives (3 semester hours)
- IMED 358 - Patterns and Contexts (3 semester hours)
- IMED 365 - Internship (3 semester hours)
- IMED 370 - Producing Creative Projects (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- GEND Electives (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)
- IMED 450 - Design Studio (3 semester hours)
- IMED 498 - Project II (3 semester hours)

Total semester hours: 15

Spring Semester

- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- IMED 440 - Interactive Studio (4 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 14

Summer Semester

Optional

B.S. Integrative Sciences

This program produces a well-prepared student who is able to contribute to the local, regional, and global community on current scientific topics. An environment favorable to interdisciplinary learning in science is provided, and through classroom and experiential learning opportunities, the student is allowed to develop his or her own interests in the areas where the different disciplines overlap. In conjunction with the general education coursework, the student develops the skills to competently communicate with scientists and non-scientists, the motivation to be engaged citizens, the capacity to be sensitive to the needs of local and global communities, and the knowledge in the physical sciences to enter the workforce or graduate school.

Program Goals

Graduates of the Bachelor of Science in Integrative Sciences program are able to:

- Demonstrate basic knowledge and technical skills to work effectively in a cross-disciplinary scientific field by demonstrating the knowledge and skills from more than one scientific discipline;
- Demonstrate the ability to communicate scientific information, including information that results from laboratory experimentation or field work, in oral and written formats to both scientists and non-scientists;
- Demonstrate the ability to make effective use of the library and other information resources in an academic area, including finding, conveying and critically evaluating scientific information obtained through scholarly journal articles;
- Demonstrate the ability to make effective use of computers in addition to using technology as a tool in writing, collaborating with a team, illustrating, and data analysis to communicate scientific information; and,
- Demonstrate sufficient mathematical and quantitative reasoning skills to perform competently in a professional position in the chosen field or in continuing professional training.

Integrative Sciences Requirements

This program requires a total of 49-50 semester hours: 1) 15 semester hours from the core courses listed below and 2) 34-35 semester hours completed in one of the following concentrations: Biology, Biological Chemistry, and Chemistry. The semester hour value of each course appears in parentheses( ).

Complete all of the following INSC Core courses - 15 semester hours:

- BIOL 102 - General Biology (3 semester hours)
- BIOL 103 - General Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours)
- CHEM 152 - General Chemistry I Laboratory (1 semester hour)
- PHYS 121 - General Physics I Lecture (3 semester hours) and PHYS 122 - General Physics I Lab (1 semester hour)
  or
- PHYS 331 - University Physics I Lecture (3 semester hours) and PHYS 332 - University Physics I Laboratory (1 semester hour)

Complete one of the following INSC Core Group courses - 3 semester hours:

- BIOL 320 - Genetics (3 semester hours)
  (for the student in the Biological Chemistry or Chemistry Concentrations only)
- BIOL 371 - Molecular Biology Lecture (3 semester hours) and BIOL 372 - Molecular Biology Laboratory (1 semester hour)
- CHEM 326 - Instrumental Chemical Analysis Lecture (3 semester hours) and CHEM 327 - Instrumental Chemical Analysis Laboratory (1 semester hour)

Complete one of the following Concentrations:

Three concentrations are offered:

- Biological Chemistry (34 semester hours)
- Biology (35 semester hours)
- Chemistry (34 semester hours)

Biological Chemistry Concentration (34 semester hours)

The following courses comprise the biological chemistry concentration of the Integrative Sciences program. The semester hour value of each course appears in parentheses ( ).

Complete all of the following courses - 28 semester hours:

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- CHEM 221 - Organic Chemistry II Lecture (3 semester hours)
- CHEM 222 - Organic Chemistry II Lab (1 semester hour)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)
- CHEM 351 - Biochemistry II Lecture (3 semester hours)
- CHEM 352 - Biochemistry II Laboratory (1 semester hour)
- PHYS 131 - General Physics II Lecture (3 semester hours)
- PHYS 132 - General Physics II Lab (1 semester hour)

Complete 6 semester hours from the following courses:

- BIOL 320 - Genetics (3 semester hours) *(if not taken in core)*
- BIOL 331 - Microbiology Lecture (3 semester hours)
- BIOL 332 - Microbiology Lab (1 semester hour)
- BIOL 376 - Immunology (3 semester hours)
- CHEM 320 - Bio-Organic Chemistry (3 semester hours)
- CHEM 380 - Special Topics in Chemistry (1 to 4 semester hours)
- CHEM 420 - Bioinorganic Chemistry (3 semester hours)
- CISC 120 - Programming I (4 semester hours)
- PHYS 301 - Physical Thermodynamics (3 semester hours)
- PHYS 315 - Quantum Mechanics and Spectroscopy (3 semester hours)

- PHYS 320 - Physical Chemistry Laboratory (1 semester hour)

Biology Concentration (35 semester hours)

The following courses comprise the biology concentration of the Integrative Sciences program. The semester hour value of each course appears in parentheses ( ).

Complete all of the following courses - 23 semester hours:

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- BIOL 303 - Principles of Ecology Lecture (3 semester hours)
- BIOL 304 - Principles of Ecology Laboratory (1 semester hour)
- BIOL 320 - Genetics (3 semester hours)
- BIOL 331 - Microbiology Lecture (3 semester hours)
- BIOL 332 - Microbiology Lab (1 semester hour)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)

Complete 12 semester hours from the following courses:

- BIOL 225 - Entomology (4 semester hours)
- BIOL 296 - Human Anatomy and Physiology I Lecture (3 semester hours)
- BIOL 297 - Human Anatomy and Physiology I Laboratory (1 semester hour)
- BIOL 298 - Human Anatomy and Physiology II Lecture (3 semester hours)
- BIOL 299 - Human Anatomy and Physiology II Laboratory (1 semester hour)
- BIOL 305 - Evolution (3 semester hours)
- BIOL 371 - Molecular Biology Lecture (3 semester hours) and BIOL 372 - Molecular Biology Laboratory (1 semester hour) *(if not taken in core)*
- BIOL 376 - Immunology (3 semester hours)
- BIOL 380 - Special Topics in Biology (1 to 4 semester hours)
- BTEC 240 - Techniques for Biomolecular Research (3 semester hours)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)
- INSC 310 - Conservation Biology (3 semester hours)
- INSC 320 - The Study of Disease (3 semester hours)
- INSC 335 - Field Studies: Estuarial Ecosystems - Chesapeake Bay (3 semester hours)
- INSC 350 - Animal Behavior (4 semester hours)

Chemistry Concentration (34 semester hours)

The following courses comprise the chemistry concentration of the Integrative Sciences program. The semester hour value of each course appears in parentheses ( ).

Complete all of the following courses - 19 semester hours:

- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- CHEM 221 - Organic Chemistry II Lecture (3 semester hours)
- CHEM 222 - Organic Chemistry II Lab (1 semester hour)
- MATH 260 - Calculus II (3 semester hours)
- PHYS 131 - General Physics II Lecture (3 semester hours)
- PHYS 132 - General Physics II Lab (1 semester hour)

Complete 15 semester hours from the following courses:

- CHEM 200 - Environmental Chemistry I (3 semester hours)
- CHEM 316 - Analytical Chemistry Lecture (3 semester hours)
- CHEM 317 - Analytical Chemistry Laboratory (1 semester hour)
- CHEM 320 - Bio-Organic Chemistry (3 semester hours)
- CHEM 326 - Instrumental Chemical Analysis Lecture (3 semester hours) and CHEM 327 - Instrumental Chemical Analysis Laboratory (1 semester hour) *(if not taken in core)*
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)
- CHEM 380 - Special Topics in Chemistry (1 to 4 semester hours)
- CHEM 420 - Bioinorganic Chemistry (3 semester hours)
- CISC 120 - Programming I (4 semester hours)
- MATH 261 - Calculus III (3 semester hours)
- MATH 380 - Mathematical Modeling (3 semester hours)
- PHYS 301 - Physical Thermodynamics (3 semester hours)
- PHYS 315 - Quantum Mechanics and Spectroscopy (3 semester hours)
- PHYS 320 - Physical Chemistry Laboratory (1 semester hour)

Foundation Mathematics Courses

Complete the following courses - 9 semester hours:

- MATH 120 - College Algebra (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Recommended Sequence for the Full-time Student Completing the Biological Chemistry Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- COMM 110 - Speech (3 semester hours)
- Electives (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Second Year

Fall Semester

- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- Electives (3 semester hours)

- MATH 220 - Calculus I (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 14

Spring Semester

- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- GEND Electives (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- GEND Electives (3 semester hours)
- INSC 298 - Project I (3 semester hours)

- PHYS 121 - General Physics I Lecture (3 semester hours) and PHYS 122 - General Physics I Lab (1 semester hour)
  or
- PHYS 331 - University Physics I Lecture (3 semester hours) and PHYS 332 - University Physics I Laboratory (1 semester hour)

Total semester hours: 14

Spring Semester

- CHEM 221 - Organic Chemistry II Lecture (3 semester hours)
- CHEM 222 - Organic Chemistry II Lab (1 semester hour)
- INSC 365 - Internship (3 semester hours)
- INSC Core Group Course (3 semester hours)
  (BIOL 320, BIOL 371-BIOL 372, or CHEM 326-CHEM 327)
- PHYS 131 - General Physics II Lecture (3 semester hours)
- PHYS 132 - General Physics II Lab (1 semester hour)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

Fall Semester

- Biological Chemistry Concentration electives (3 semester hours)
- CHEM 331 - Biochemistry I Lecture (3 semester hours)
- CHEM 332 - Biochemistry I Laboratory (1 semester hours)
- GEND Group - Leadership and Business (6 semester hours)
- INSC 498 - Project II (3 semester hours)

Total semester hours: 16

Spring Semester

- Biological Chemistry Concentration electives (3 semester hours)
- CHEM 351 - Biochemistry II Lecture (3 semester hours)
- CHEM 352 - Biochemistry II Laboratory (1 semester hour)
- Electives (7 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 15

Summer Semester

Optional

Biological Chemistry Concentration (postbaccalaureate health-related degree)

A student who has an interest in a postbaccalaureate health-related degree (MD, DO, DDS, VMD) should contact their faculty advisor for support relating to the recommended sequence. Other support for the student includes our Health Careers Society.

Recommended Sequence for the Full-time Student Completing the Biology Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- COMM 110 - Speech (3 semester hours)
- Electives (6 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- MATH 220 - Calculus I (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)
- Electives (3 semester hours)

Total semester hours: 15

Spring Semester

- BIOL 320 - Genetics (3 semester hours)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- Electives (3 semester hours)

Total semester hours: 13

Summer Semester

Optional

Third Year

Fall Semester

- BIOL 303 - Principles of Ecology Lecture (3 semester hours)
- BIOL 304 - Principles of Ecology Laboratory (1 semester hour)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- INSC 298 - Project I (3 semester hours)

- PHYS 121 - General Physics I Lecture (3 semester hours) and PHYS 122 - General Physics I Lab (1 semester hour)
  or
- PHYS 331 - University Physics I Lecture (3 semester hours) and PHYS 332 - University Physics I Laboratory (1 semester hour)

- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- BIOL 331 - Microbiology Lecture (3 semester hours)
- BIOL 332 - Microbiology Lab (1 semester hour)
- INSC 365 - Internship (3 semester hours)
- Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)

Total semester hours: 16

Summer Semester

Optional

Fourth Year

Fall Semester

- INSC Core Group Course (3 semester hours)
  (BIOL 371-BIOL 372 or CHEM 326-CHEM 327)
- INSC 498 - Project II (3 semester hours)
- BIOL Concentration electives (4 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 16

Spring Semester

- EXPL 400 - Capstone (1 semester hour)
- BIOL electives (8 semester hours)
- GEND Electives (6 semester hours)

Total semester hours: 15

Summer Semester

Optional

Biology Concentration (postbaccalaureate health-related degree)

A student who has an interest in a postbaccalaureate health-related degree (MD, DO, DDS, VMD) should contact their faculty advisor for support relating to the recommended sequence. Other support for the student includes our Health Careers Society.

Recommended Sequence for the Full-time Student Completing the Chemistry Concentration

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 102 - General Biology (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- COMM 110 - Speech (3 semester hours)
- Electives (6 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

- PHYS 121 - General Physics I Lecture (3 semester hours) and PHYS 122 - General Physics I Lab (1 semester hour)
  or

- PHYS 331 - University Physics I Lecture (3 semester hours) and PHYS 332 - University Physics I Laboratory (1 semester hour)

- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- GEND Electives (6 semester hours)
- MATH 260 - Calculus II (3 semester hours)
- PHYS 131 - General Physics II Lecture (3 semester hours)
- PHYS 132 - General Physics II Lab (1 semester hour)

Total semester hours: 17

Summer Semester

Optional

Third Year

Fall Semester

- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- CHEM Concentration Electives (4 semester hours)
- Electives (3 semester hours)
- INSC 298 - Project I (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 15

Spring Semester

- CHEM 221 - Organic Chemistry II Lecture (3 semester hours)
- CHEM 222 - Organic Chemistry II Lab (1 semester hour)
- INSC Core Group Course (3 semester hours)
  (BIOL 320, BIOL 371-BIOL 372, or CHEM 326-CHEM 327)
- INSC 365 - Internship (3 semester hours)
- Electives (7 semester hours)

Total semester hours: 17

Summer Semester

Optional

Fourth Year

Fall Semester

- Chemistry Concentration electives (4 semester hours)
- GEND Group - Leadership and Business (6 semester hours)
- INSC 498 - Project II (3 semester hours)

Total semester hours: 13

Spring Semester

- Chemistry Concentration electives (7 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 14

Summer Semester

Optional

Chemistry Concentration (postbaccalaureate health-related degree)

A student who has an interest in a postbaccalaureate health-related degree (MD, DO, DDS, VMD) should contact their faculty advisor for support relating to the recommended sequence. Other support for the student includes our Health Careers Society.

Certificate in Entertainment Technology

The Entertainment Technology certificate helps students gain a competitive advantage in the working world and provide equitable access to any student who would like to pursue a career in the entertainment industry.

Program Goals

- Demonstrate a broad knowledge of the contemporary-entertainment industry's best practices;
- Demonstrate functional aptitude using industry-standard technology;
- Apply industry-standard technology to cross-disciplinary projects; and
- Analyze interpreted industry-related data for decision-making purposes.

Entertainment Technology Certificate Requirements

Complete the following courses - 15 semester hours:

- ENTE 101 - Audio Engineering: Pro Tools 1 (3 semester hours)
- ENTE 102 - Video Editing: Media Composer 1 (3 semester hours)
- ENTE 201 - Audio Engineering: Pro Tools 2 (3 semester hours)
- ENTE 202 - Video Editing: Media Composer 2 (3 semester hours)
- ENTE 230 - Pro Tools for Game Audio (3 semester hours)

Recommended Sequence for the Entertainment Technology Certificate

The sequence that appears below is based upon the availability of specific courses in each semester and the successful completion of course prerequisites.

First Year

Fall Semester

Session 1

- ENTE 101 - Audio Engineering: Pro Tools 1 (3 semester hours)
- ENTE 102 - Video Editing: Media Composer 1 (3 semester hours)

Session 2

- ENTE 201 - Audio Engineering: Pro Tools 2 (3 semester hours)
- ENTE 202 - Video Editing: Media Composer 2 (3 semester hours)
- ENTE 230 - Pro Tools for Game Audio (3 semester hours)

Total semester hours: 15

Five-Year Bachelor of Science/Master of Science Programs

The five-year Bachelor of Science/Master of Science programs are designed to result in a bachelor's degree and a master's degree as indicated in the programs listed below.

The student who demonstrates exceptional academic performance in the undergraduate Bachelor of Science program may be eligible to participate in one of the following accelerated dual-degree programs. These programs facilitate the student completing both degree programs in five years rather than the usual six.

Standards for Admission to the Program

The following standards for admission to the program must be met by the end of the first semester of the third year of study:

- completion of at least 75 semester hours toward the Bachelor of Science degree with a minimum cumulative grade point average of 3.25;
- a minimum grade point average of 3.50 in all major core and concentration courses attempted; and
- completion of all major core requirements for the bachelor of science degree.

The student should complete and submit the Five-Year Program Application for Admission when 75 semester hours have been earned. A student should contact Records and Registration at https://reghelp.harrisburgu.edu for the application form. Required supporting documents include: current academic transcript and a recommendation from the student's academic advisor.

In order to remain in the program, the student must maintain: 1) a minimum 3.25 cumulative grade point average and 2) a minimum 3.50 grade point average in all major core and concentration courses.

The Bachelor of Science degree is conferred when the student has completed the undergraduate requirements (expected to be the end of the fourth year). During this four-year period, the student is subject to the undergraduate policies, tuition rates, financial aid regulations, academic policies and eligible for the student services described within the undergraduate education pages of this Catalog.

The Master of Science degree is conferred when the student has completed the graduate requirements (expected to be the end of the fifth year). During this period, the student is subject to the graduate policies, tuition rates, financial aid regulations, academic policies, and eligible for the student services described within the graduate education pages of this Catalog.

Program Requirements

The undergraduate hours consist of:

- 18 semester hours of Foundation Mathematics and English courses;
- 30 semester hours of General Education;
- 13 semester hours of Experiential Learning; and,
- 40 - 50 semester hours of Program Core and/or Concentration.

The graduate hours consist of:

- 15 - 18 semester hours of Program Core;
- 6 semester hours of Experiential Learning; and,
- 12 - 15 semester hours of Concentration.

Specified course requirements for referenced semester hours available in the Undergraduate and Graduate Catalogs.

Five-year Bachelor of Science/Master of Science Programs

- Biotechnology with a Medical Biotechnology Concentration, B.S. / Biotechnology with a Medical Biotechnology Concentration, M.S.
- Computer and Information Sciences with an Individualized Concentration, B.S. / Analytics with an Individualized Concentration, M.S.
- Computer and Information Sciences with an Individualized Concentration, B.S. / Computer Information Sciences with a Concentration in Scientific Computing, M.S.
- Computer and Information Sciences with an Individualized Concentration, B.S. / Computer Information Sciences with a Concentration in Cybersecurity, M.S.
- Computer and Information Sciences with an Individualized Concentration, B.S. / Information Systems Engineering and Management with an Individualized Concentration, M.S.
- Computer and Information Sciences with an Individualized Concentration, B.S. / Human-Centered Interaction Design, M.S.
- Interactive Media with a Concentration in Advanced Media Production, B.S. / Learning Technologies and Media Systems with an Individualized Concentration, M.S.

Five-year Bachelor of Science/Master of Science Recommended Sequences

Biotechnology, Medical Biotechnology Concentration/Biotechnology, Medical Biotechnology Concentration Five-Year Program Sequence

Recommended Sequence for the Full-time Student

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- BIOL 102 - General Biology (3 semester hours) and BIOL 103 - General Biology Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Environmental and Life Sciences group)

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 14

Spring Semester

- BTEC 170 - Introduction to Biotechnology (3 semester hours)
- Electives (6 semester hours)

- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- BIOL 281 - Cell Biology Lecture (3 semester hours)
- BIOL 282 - Cell Biology Laboratory (1 semester hour)
- CHEM 151 - General Chemistry I Lecture (3 semester hours) and CHEM 152 - General Chemistry I Laboratory (1 semester hour)
  (Dual Use for Program Core and General Education-Scientific Inquiry group)

- COMM 110 - Speech (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 15

Spring Semester

- BTEC 250 - Medical Biotechnologies of 2020 (3 semester hours)
- CHEM 161 - General Chemistry II (3 semester hours)
- CHEM 162 - General Chemistry II Laboratory (1 semester hour)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- BTEC 298 - Project I (3 semester hours)
- BTEC 350 - Biotechnology Techniques (4 semester hours)
- BTEC Concentration Electives (3 semester hours)
- CHEM 211 - Organic Chemistry I Lecture (3 semester hours)
- CHEM 212 - Organic Chemistry I Lab (1 semester hour)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 15

Spring Semester

- BTEC 355 - Neurology and Biotechnology (3 semester hours)
- BTEC 365 - Internship (3 semester hours)
- BTEC Concentration Electives (7 semester hours)
- BTEC Concentration Electives (3 semester hours) *BTEC 240 recommended*

Total semester hours: 16

Summer Semester

Optional

Fourth Year

*Graduate courses (see Graduate Catalog for course descriptions)

Fall Semester

- BTEC 401 - Biosensor Technology (4 semester hours)
- BTEC 498 - Project II (3 semester hours)
- BTEC 502 - Biomaterials (3 semester hours)*
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 16

Spring Semester

- BTEC 540-Biostatistics (3 semester hours)*
- BTEC 550-Instrumentation in Biotechnology Industry (3 semester hours)*
- MS BTEC Concentration Elective (3 semester hours)* *BTEC 620-Emerging Trends in Diagnostics recommended*
- GEND Electives (6 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Fifth Year

Fall Semester

- BTEC 508-Omics for Life Sciences (3 semester hours)
- BTEC 560-Design of Experiment (3 semester hours)

- MS BTEC Concentration Elective (3 semester hours)
- GRAD 695-Research Methodology and Writing (3 semester hours)

Total semester hours: 12

Spring Semester

- BTEC 522-Graduate Biotechnology Seminar (3 semester hours)
- MS BTEC Concentration Elective (3 semester hours) *BTEC 615-Biomedical Devices and Prototyping recommended*
- MS BTEC Concentration Elective (3 semester hours) *BTEC 640-Trends in Regenerative Medicine recommended*

- GRAD 699-Graduate Thesis (3 semester hours)

or

- BTEC 699-Applied Project in Biotechnology (3 semester hours)

Total semester hours: 12

Summer Semester

Optional

Computer and Information Sciences, Individualized Concentration/Analytics, Individualized Concentration Five-Year Program Sequence

Recommended Sequence for the Full-Time Student

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- EXPL 100 - Cornerstone (1 semester hour)
- GEND Group - Environmental and Life Sciences (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)

Total semester hours: 13

Spring Semester

- CISC 120 - Programming I (4 semester hours)
- COMM 110 - Speech (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- CISC 160 - Data Structures (3 semester hours)
- CISC 211 - Computer Organization and Architecture (4 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Spring Semester

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- CISC 233 - Essential Algorithms (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)
- GEND Group - Leadership and Business (3 semester hours)
- MATH 250 - Introduction to Linear Algebra (3 semester hours)
- MATH 310 - Discrete Mathematics II (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- CISC 298 - Project I (3 semester hours)
- CISC 301 - Operating Systems (3 semester hours)
- CISC 340 - Introduction to Artificial Intelligence (4 semester hours) *(to meet CISC 300/400-level elective requirement)*
- GEND Group - Leadership and Business (3 semester hours)
- GEND Elective (3 semester hours)

Total semester hours: 16

Spring Semester

- CISC 325 - Programming Languages Concepts and Paradigms (3 semester hours)
- CISC 365 - Internship (3 semester hours)
- CISC 399 - Formal Languages and Automata Theory (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)
- GEND Group - Historical and Political Investigation (6 semester hours)

Total semester hours: 16

Summer Semester

Optional

Fourth Year

*Graduate courses (see Graduate Catalog for course descriptions)

Fall Semester

- CISC 300/400-level Elective (2 semester hours)
- CISC 435 - Machine Learning Fundamentals (3 semester hours) *(to meet CISC 400-level elective requirement)*
- CISC 498 - Project II (3 semester hours)
- ANLY 500 - Analytics I: Principles and Applications (3 semester hours)*
- ANLY 506 - Exploratory Data Analysis (3 semester hours)*

Total semester hours: 14

Spring Semester

- CISC 300/400-level Elective (3 semester hours)
- CISC 400-level Elective (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)
- GEND Elective (3 semester hours)
- ANLY 510 - Analytics II: Principles and Applications (3 semester hours)*
- ANLY 512 - Data Visualization (3 semester hours)*

Total semester hours: 16

Summer Semester

Optional

Fifth Year

Fall Semester

- ANLY 620 - Ethics for Data Analytics (3 semester hours)
- Graduate Concentration Elective (3 semester hours) *(Recommended: ANLY 530 - Principles and Applications of Machine Learning)*
- Graduate Concentration Elective (3 semester hours) *(Recommended: ANLY 545 - Categorical Data Analysis)*
- GRAD 695 - Research Methodology and Writing (3 semester hours)

Total semester hours: 12

Spring Semester

- Graduate Concentration Elective (3 semester hours) *(Recommended: ANLY 520 - Natural Language Processing: Text Summarization and Classification)*
- Graduate Concentration Elective (3 semester hours) *(Recommended: ANLY 560 - Advanced Programming for Data Analytics)*
- Graduate Concentration Elective (3 semester hours) *(Recommended: ANLY 565 - Time Series and Forecasting)*

- ANLY 699 - Applied Project in Analytics (3 semester hours)

or

- GRAD 699 - Graduate Thesis (3 semester hours)

Total semester hours: 12

Computer and Information Sciences, Individualized Concentration/Computer Information Sciences, Scientific Computing Concentration Five-Year Program Sequence

Recommended Sequence for the Full-time Student

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- CISC 120 - Programming I (4 semester hours)

- COMM 110 - Speech (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- CISC 160 - Data Structures (3 semester hours)
- CISC 211 - Computer Organization and Architecture (4 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Spring Semester

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- CISC 233 - Essential Algorithms (3 semester hours)
- GEND electives (3 semester hours)
- MATH 250 - Introduction to Linear Algebra (3 semester hours)
- MATH 310 - Discrete Mathematics II (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- CISC 298 - Project I (3 semester hours)
- CISC 301 - Operating Systems (3 semester hours)
- CISC 300-400 Level Elective (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 15

Spring Semester

- CISC 325 - Programming Languages Concepts and Paradigms (3 semester hours)
- CISC 365 - Internship (3 semester hours)
- CISC 300-400 Level Elective (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Fourth Year

*Graduate courses (see Graduate Catalog for course descriptions)

Fall Semester

- CISC 300-400 Level Elective (3 semester hours)
- CISC 400 Level Elective (3 semester hours)
- CISC 498 - Project II (3 semester hours)
- CISC 530 - Computing Systems Architecture (3 semester hours) *
- CISC 610 - Data Structures and Algorithms (3 semester hours) *

Total semester hours: 15

Spring Semester

- CISC 399 - Formal Languages and Automata Theory (3 semester hours)
- CISC 400 Level Elective (3 semester hours)
- CISC 600 - Scientific Computing I (3 semester hours) *
- CISC 603 - Theory of Computation (3 semester hours) *
- GEND electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Fifth Year

Fall Semester

- CISC 525 - Big Data Architecture (3 semester hours)
- CISC 601 - Scientific Computing II (3 semester hours)

- GRAD 695 - Research Methodology & Writing (3 semester hours)

- Elective (3 semester hours)
  or
- CISC 691 - Current Topic in SCMP (3 semester hours)

Total semester hours: 12

Spring Semester

- CISC 520 - Data Engineering & Mining (3 semester hours)
- CISC 614 - Computer Simulation (3 semester hours)

- CISC 699 - Applied Project in CISC (3 semester hours)
  or
- GRAD 699 - Graduate Thesis (3 semester hours)

- Elective (3 semester hours)
  or
- CISC 681 - Special Topic in SCMP (3 semester hours)

Total semester hours: 12

Summer Semester

Optional

Computer and Information Sciences, Individualized Concentration/Computer Information Sciences, Cybersecurity Concentration Five-Year Program Sequence

Recommended Sequence for the Full-time Student

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- CISC 120 - Programming I (4 semester hours)
- COMM 110 - Speech (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- CISC 160 - Data Structures (3 semester hours)
- CISC 211 - Computer Organization and Architecture (4 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Spring Semester

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- CISC 233 - Essential Algorithms (3 semester hours)
- GEND Electives (3 semester hours)
- MATH 250 - Introduction to Linear Algebra (3 semester hours)
- MATH 310 - Discrete Mathematics II (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- CISC 298 - Project I (3 semester hours)
- CISC 301 - Operating Systems (3 semester hours)

- CISC 300-400 Level Elective (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 15

Spring Semester

- CISC 325 - Programming Languages Concepts and Paradigms (3 semester hours)
- CISC 365 - Internship (3 semester hours)
- CISC 300-400 Level Elective (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Fourth Year

*Graduate courses (see Graduate Catalog for course descriptions)

Fall Semester

- CISC 300-400 Level Elective (3 semester hours)
- CISC 400 Level Elective (3 semester hours)
- CISC 498 - Project II (3 semester hours)
- CISC 530 - Computing Systems Architecture (3 semester hours) *
- CISC 610 - Data Structures and Algorithms (3 semester hours) *

Total semester hours: 15

Spring Semester

- CISC 399 - Formal Languages and Automata Theory (3 semester hours)
- CISC 400 Level Elective (3 semester hours)
- CISC 603 - Theory of Computation (3 semester hours) *
- CISC 661 - Principles of Cybersecurity & Cyberwarfare (3 semester hours) *
- GEND Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Fifth Year

Fall Semester

- CISC 525 - Big Data Architecture (3 semester hours)
- CISC 662 - Ethical Hacking Development Lab (3 semester hours)
- GRAD 695 - Research Methodology & Writing Elective (3 semester hours)

- Elective (3 semester hours)
  or
- CISC 693 - Current Topic in CYBSE (3 semester hours)

Total semester hours: 12

Spring Semester

- CISC 520 - Data Engineering & Mining (3 semester hours)
- CISC 663 - Cyber Risk Assessment & Management (3 semester hours)

- CISC 699 - Applied Project in CISC (3 semester hours)
  or
- GRAD 699 - Graduate Thesis (3 semester hours)

- Elective (3 semester hours)
  or
- CISC 683 - Special Topic in CYBSE (3 semester hours)

Total semester hours: 12

Summer Semester

Optional

Computer and Information Sciences, Individualized Concentration/Information Systems Engineering and Management, Individualized Concentration Five-Year Program Sequence

Recommended Sequence for the Full-time Student

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)

- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- CISC 120 - Programming I (4 semester hours)
- COMM 110 - Speech (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- CISC 160 - Data Structures (3 semester hours)
- CISC 211 - Computer Organization and Architecture (4 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Spring Semester

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- CISC 233 - Essential Algorithms (3 semester hours)
- GEND electives (3 semester hours)
- MATH 250 - Introduction to Linear Algebra (3 semester hours)
- MATH 310 - Discrete Mathematics II (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- CISC 298 - Project I (3 semester hours)
- CISC 301 - Operating Systems (3 semester hours)
- CISC 300-400 Level Elective (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 15

Spring Semester

- CISC 325 - Programming Languages Concepts and Paradigms (3 semester hours)
- CISC 365 - Internship (3 semester hours)
- CISC 300-400 Level Elective (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Fourth Year

*Graduate courses (see Graduate Catalog for course descriptions)

Fall Semester

- CISC 300-400 Level Elective (3 semester hours)
- CISC 400 Level Elective (3 semester hours)
- CISC 498 - Project II (3 semester hours)
- ISEM 500 - Strategic Planning for Digital Transformation (3 semester hours) *
- MGMT 510 - Business Strategy and Management Principles (3 semester hours) *

Total semester hours: 15

Spring Semester

- CISC 399 - Formal Languages and Automata Theory (3 semester hours)
- CISC 400 Level Elective (3 semester hours)
- GEND electives (3 semester hours)
- ISEM 530 - Systems Engineering Principles (3 semester hours) *
- ISEM 540 - Architectures and Integration of Modern Enterprises (3 semester hours) *
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Fifth Year

Fall Semester

- GRAD 695 - Research Methodology & Writing (3 semester hours)
- ISEM Individualized Concentration Electives (3 semester hours)

Select two from of the following courses - 6 semester hours:

- ISEM 502 - User-Centered Design (3 semester hours)
  or
- ISEM 503 - Artificial Intelligence Principles and Applications (3 semester hours)
  or
- ISEM 534 - Database Design and Management (3 semester hours)
  or
- ISEM 536 - IT Infrastructure and Cloud Computing (3 semester hours)
  or
- ISEM 547 - IT Management (3 semester hours)
  or
- ISEM 551 - Web-based Software Engineering (3 semester hours)
  or
- ISEM 565 - Business Intelligence and Decision Support Systems (3 semester hours)
  or
- ISEM 570 - Principles of ITIL for IT Quality (3 semester hours)
  or
- ISEM 574 - Block Chains and Bit Coins (3 semester hours)
  or
- MGMT 511 - Digital and Global Enterprises (3 semester hours)

Total semester hours: 12

Spring Semester

- GRAD 699 - Graduate Thesis (3 semester hours)
  or
- ISEM 699 - Applied Project in ISEM (3 semester hours)

- ISEM Individualized Concentration Electives (9 semester hours)

Total semester hours: 12

Summer Semester

Optional

Computer and Information Sciences, Individualized Concentration/Human-Centered Interaction Design, Individualized Concentration Five-Year Program Sequence

Recommended Sequence for the Full-time Student

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)

- GEND Group - Scientific Inquiry (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 13

Spring Semester

- CISC 120 - Programming I (4 semester hours)
- COMM 110 - Speech (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- MATH 220 - Calculus I (3 semester hours)

Total semester hours: 16

Summer Semester

Optional

Second Year

Fall Semester

- CISC 160 - Data Structures (3 semester hours)
- CISC 211 - Computer Organization and Architecture (4 semester hours)
- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- MATH 210 - Discrete Mathematics I (3 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)

Total semester hours: 16

Spring Semester

- CISC 225 - Information Systems Analysis and Design (3 semester hours)
- CISC 233 - Essential Algorithms (3 semester hours)
- GEND Electives (3 semester hours) *GEND 120 recommended*

- MATH 250 - Introduction to Linear Algebra (3 semester hours)
- MATH 310 - Discrete Mathematics II (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Third Year

Fall Semester

- CISC 298 - Project I (3 semester hours)
- CISC 301 - Operating Systems (3 semester hours)
- CISC 300-400 Level Electives (3 semester hours)
- GEND Group - Leadership and Business (6 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 16

Spring Semester

- CISC 365 - Internship (3 semester hours)
- CISC 325 - Programming Languages Concepts and Paradigms (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- GEND Electives (3 semester hours) *GEND 130 recommended*

Total semester hours: 15

Summer Semester

Optional

Fourth Year

*Graduate courses (see Graduate Catalog for course descriptions)

Fall Semester

- CISC 300-400 Level Electives (3 semester hours)
- CISC 400-Level Electives (3 semester hours)
- CISC 498 - Project II (3 semester hours)
- HCID 500 - Design Perspectives (3 semester hours)*
- HCID 504 - Methods for Design Research (3 semester hours)*

Total semester hours: 15

Spring Semester

- CISC 399 - Formal Languages and Automata Theory (3 semester hours)
- CISC 300-400 Level Electives (3 semester hours)
- CISC 400-Level Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)
- HCID 510 - Theories of Human Interactions (3 semester hours)*
- HCID 520 - Users and Populations (3 semester hours)*

Total semester hours: 16

Summer Semester

Optional

Fifth Year

Fall Semester

- HCID 540 - Design Tools and Processes (3 semester hours)
- HCID 570 - Design Patterns and Contexts (3 semester hours)
- HCID 680 - Special Topics in Human-Centered Interaction Design (3 semester hours)

- HCID 695 - Design Studio Research (3 semester hours)

or

- GRAD 695 - Research Methodology and Writing (3 semester hours)

Total semester hours: 12

Spring Semester

- MS Concentration Electives (9 semester hours)

- HCID 699 - Applied Project in Human-Centered Interaction Design (3 semester hours)

or

- GRAD 699 - Graduate Thesis (3 semester hours)

Total semester hours: 12

Summer Semester

Optional

Interactive Media/Learning Technologies and Media Systems Five-Year Program Sequence

Recommended Sequence for the Full-time Student

The sequence that appears below was developed based upon the availability of specific courses each semester and the successful completion of course prerequisites.

First Year

Fall Semester

- ENGL 105 - College Composition (3 semester hours)
  or
- ENGL 106 - Academic Writing and Critical Thinking (3 semester hours)
- MATH 120 - College Algebra (3 semester hours)
- GEND Group - Scientific Inquiry (3 semester hours)
- GEND 102 - The Creative Mind I (3 semester hours)
- IMED 140 - Introduction to Interactive Media (2 semester hours)
- EXPL 100 - Cornerstone (1 semester hour)

Total semester hours: 15

Spring Semester

- COMM 110 - Speech (3 semester hours)
- GEND Group - Environmental and Life Sciences (3 semester hours)
- GEND 103 - The Creative Mind II (3 semester hours)
- IMED 110 - Introduction to Digital Design (2 semester hours)
- IMED 120 - Introduction to Media Computation (4 semester hours)

Total semester hours: 15

Summer Semester

Optional

Second Year

Fall Semester

- ENGL 200 - Advanced Composition and Technical Writing (3 semester hours)
- IMED 170 - Visual Design Fundamentals (3 semester hours)
- IMED 235 - Cinema Studies (2 semester hours)
- IMED 240 - Interactive Media I (4 semester hours)
- MATH 280 - Introductory Statistics (3 semester hours)
- EXPL 200 - Steppingstone (1 semester hour)

Total semester hours: 16

Spring Semester

- IMED 250 - Video Production I (2 semester hours)
- IMED 255 - Audio Production (3 semester hours)

- IMED 265 - Front-End Web Development (3 semester hours)
- IMED 298 - Project I (3 semester hours)
- MEBA 210 - Web Development for Business (3 semester hours)

Total semester hours: 14

Summer Semester

Optional

Third Year

Fall Semester

- IMED 300 - 3D Modeling I (3 semester hours)
- IMED 340 - Interactive Media II (4 semester hours)
- IMED 150 - Digital Photography I (3 semester hours)
- IMED 365 - Internship (3 semester hours)
- MATH 150 - Applied Mathematical Reasoning (3 semester hours)
- EXPL 300 - Keystone (1 semester hour)

Total semester hours: 17

Spring Semester

- GEND Electives (3 semester hours)
- GEND Group - Historical and Political Investigation (6 semester hours)
- IMED 370 - Producing Creative Projects (3 semester hours)
- IMED 498 - Project II (3 semester hours)

Total semester hours: 15

Summer Semester

Optional

Fourth Year

* Graduate courses (see Graduate Catalog for course descriptions)

Fall Semester

- GEND Group - Leadership and Business (6 semester hours)

Total semester hours: 15

Spring Semester

- IMED 440 - Interactive Studio (4 semester hours)

- IMED Electives (2 semester hours)
- LTMS 514 - Media Selection, Design and Production (3 semester hours) *
- LTMS 525 - Learning Theories and Instructional Strategies (3 semester hours) *
- GEND Electives (3 semester hours)
- EXPL 400 - Capstone (1 semester hour)

Total semester hours: 16

Summer Semester

Optional

Fifth Year

Fall Semester

- LTMS 518 - eLearning Development (3 semester hours)
- GRAD 695 - Research Methodology and Writing (3 semester hours)
- LTMS Individualized Concentration Electives (6 semester hours)

Total semester hours: 12

Spring Semester

- GRAD 699 - Graduate Thesis (3 semester hours)
  or
- LTMS 698 - Learning Technologies Internship (3 semester hours)
  or
- LTMS 699 - Applied Project in Learning Technologies (3 semester hours)

- LTMS Individualized Concentration Electives (9 semester hours)

Total semester hours: 12

Summer Semester

Optional

Course Descriptions

ADMA 115 - Introduction to Computers & Research in Manufacturing

(3 semester hours)
Prerequisites: None
Description: This course provides fundamental computer literacy skills for manufacturing students in a MS Windows environment. Productivity software applications such as Word, Excel, OneNote, Teams, and PowerPoint are utilized with an emphasis on manipulating data for personal and professional communication. These applications will be directed towards computer mathematics, engineering economy calculations, and preliminary research techniques. Offered Spring semester, annually.

ADMA 135 - Manufacturing Technology and Society

(2 semester hours)
Prerequisites: None
Description: Manufacturing Technology and Society is an overview of the development and design of technical systems in society, their impact throughout history, and procedures for making choices of appropriate technology to apply currently and in the future, based on global awareness and strong moral and ethical standards. Topics of discussion include the agricultural revolution, industrial revolution, information revolution and the forces that brought them into existence and their downfalls. Lab activities and possibly visitations may be utilized to reinforce concepts. Offered Fall semester, annually.

ADMA 160 - Metallic Materials and Manufacturing Processes

(3 semester hours)
Prerequisites: ADMA 115 or ADMA 135
Description: This course uses the various tools and techniques for processing metallic materials as a vehicle for developing a solid foundation for the hands-on manufacturing activities and industrial safety fundamentals used throughout the Advanced Manufacturing curriculum. Concepts introduced include precision measurement and layout, material properties and handling, and the use of various hand tools and machinery used in metal fabrication. Completion of OSHA-approved safety training and consistent demonstration of safe and responsible operation of lab equipment is a required part of this coursework. Offered Spring semester, annually.

ADMA 230 - Applied Analog and Digital Electronics

(3 semester hours)
Prerequisites: ADMA 115, ADMA 135, or permission of instructor
Description: This course is an introduction to analog and digital electronics as it relates to advanced manufacturing through hands-on activities centered around building and logically troubleshooting circuits and devices. The concepts and theories are covered in an industrial and/or an advanced manufacturing setting. Use of instrumentation is stressed with the application of problem-solving techniques. Offered Spring semester, annually.

ADMA 240 - Computer-Aided Design and Drafting

(3 semester hours)
Prerequisites: ADMA 115, ADMA 135, or permission of instructor
Description: The Computer-Aided Design (CAD) course introduces three dimensional solid modeling design skills for manufacturing - skills critical in modern manufacturing environments. Using industry-leading software packages, content stresses foundational skills in 2D modeling, 3D solid object modeling, blueprint reading, and computer-aided drafting. The student will learn to create objects and assemblies in the digital realm; read and accurately create useful technical drawings that enable accurate communication of design concepts and requirements; and learn about various

roles that CAD software and related software packages play in the manufacturing lifecycle. Offered Fall semester, annually.

ADMA 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, the completion of 17 credits of major coursework to include ADMA 115, ADMA 135, ADMA 160, ADMA 230, ADMA 240, and ADMA 323, and a minimum of 40 earned semester hours
Description: This phase of the student's experiential program challenges the student to identify, investigate and analyze a particular topic (or problem area) in advanced manufacturing (ADMA). A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and scientific-based research. At the end of Project I, the student (or student team) must complete and submit a written proposal and complete an oral presentation which describes how the project will be fully executed in the follow-on Project II course (ADMA 498). The project is undertaken with the close mentorship of a faculty member and may involve a community/partner. Offered Fall semester, annually, or as needed.

ADMA 310 - Basics of Manufacturing Simulation

(3 semester hours)
Prerequisites: ADMA 115 or ADMA 135
Description: This course is the application of sophisticated computer simulation software for analysis of manufacturing operations, procedures and processes. The course includes an overview of server-based and cloud-computing applications to permit secure data sharing and collaborations in company partnerships. Team and individual projects with utilizing manufacturing simulation and data management applications will be applied and presented. Offered Spring semester, annually.

ADMA 323 - Computer Assisted Product Design and Rapid Prototyping

(3 semester hours)
Prerequisites: ADMA 240
Description: This course is based on, and not limited to, applied product design and rapid prototyping techniques. An introduction to the application of the cradle-to-grave engineering model will be used to design or redesign industrial solutions. The use of hand tools, 3D printers and equipment will be applied to quickly produce mockups/prototypes of the developed solution and its presentation. Offered Spring semester, annually.

ADMA 338 - Non-Metallic Materials and Processing

(3 semester hours)
Prerequisites: ADMA 115 or ADMA 135
Description: This course is an overview of the types of non-metallic materials, selection, destructive testing, processing and application of non-metallic materials including and not limited to natural, laminated, plastic, compounds and fluids provided through industrial based solutions. Lab activities, demonstrations and visitations may be utilized to reinforce concepts. Offered Spring semester, annually.

ADMA 340 - Digitally Enhanced Manufacturing

(3 semester hours)
Prerequisites: Permission of the Instructor
Description: This Digitally Enhanced Manufacturing course offers a comprehensive overview of the design, development, and application of Extended Reality (XR), Digital Twins, and the Internet of Things (IoT) in advanced

manufacturing. XR seamlessly integrates virtual representations with the tangible realities of factory operations. Digital Twins are virtual copies of physical buildings, machines, and products, while real-time data from physical systems is recorded and streamed by IoT devices. The course emphasizes how these technologies collaboratively address unique manufacturing challenges as they provide explicit directions, harness real-time data, enhance visualizations, and simulate various manufacturing-related scenarios. The course will explore the evolution of these technologies from historical applications, present-day impact, and developing roles in advanced manufacturing. Practical applications are reinforced through lab activities, with potential on-site experiences to witness these innovations firsthand. Offered as needed.

ADMA 342 - Industrial Networking and Cybersecurity

(3 semester hours)
Prerequisites: Permission of the Instructor
Description: This course is an overview of the development of industrial networks and the methods available to secure the networks. The areas of study in industrial networking include an introduction to computer networks, physical layer cabling with twisted pair and fiber optics and wireless networking and their related hardware's. The areas of study in industrial cybersecurity include industrial control systems (ICS), insecure be inheritance, anatomy of ICS attacks, industrial control system risk assessments, the Purdue Model, the Defense-in-depth model, physical ICS security, ICS network security, ICS computer security, ICS application security, ICS device security and ICS cybersecurity program development. Offered as needed.

ADMA 345 - Designing and Rapid Prototyping with Solid Modeling

(3 semester hours)
Prerequisites: ADMA 323
Description: This solid modeling course utilizes parametric technology, rapid prototyping, and technical sketching, along with the application of product design processes and the examination of the components/variables of good design. CAD solid modeling software will be utilized to create part models and assemblies in the course as well. Products are designed and analyzed for manufacturability, performance, and potential for profitability for a company. Oral presentations, patent searches and prototype development will be assigned and completed. Offered Fall semester, annually.

ADMA 350 - Additive Manufacturing

(3 semester hours)
Prerequisites: Permission of the instructor
Description: Additive manufacturing, an extension of 3D printing processes, allows digital concepts and designs to be realized in the physical world through a variety of processes - each with their own design considerations, advantages, and potential disadvantages. The mechanical processes of 3D printer operations will be investigated, as well as the correct operation, troubleshooting, and maintenance of multiple machines used in additive manufacturing. 3D printer formats used during the course can include Fused Filament Fabrication, Multi-Jet Fabrication, Stereolithography, Powder Bed Fusion, and other emerging technologies in the additive manufacturing realm. Design for 3D printing, software packages for 3D print setup and operations, and cost considerations for additive manufacturing at scale will also be studied. Offered as needed.

ADMA 360 - Subtractive Manufacturing

(3 semester hours)
Prerequisites: Permission of the instructor
Description: The Subtractive Manufacturing course is a deep dive into the programming and usage of machining centers and turning centers. The areas of study will include the exploration of CNC machines (functionality and usage of 3-axis & 5-axis miling machines and dual-spindle lathes), CNC programming, various tool types and tool holders, collets, automatic tool changers (ATCs) & turrets, spindles, chucks, fixtures & jigs, chip auger & conveyor systems,

and air blast & coolant systems. An introduction to performing tool offsets and probing, as well as setup of coordinate systems will also be covered. Offered as needed.

ADMA 362 - Nano Fabrication

(3 semester hours)
Prerequisites: Permission of the instructor
Description: This course is an overview of the broad spectrum of processing approaches involved in "top down", "bottom up", and hybrid nanofabrication. The majority of the course details a step-by-step description of the equipment, facilities processes and process flow used in today's device and structure fabrication. The student will be introduced to processing and manufacturing concerns such as safety, process control, contamination, yield, and processing interaction. The student will design process flows for micro- and nano-scale systems. The student will learn the similarities and differences in "top down" and "bottom up" equipment and process flows by undertaking hands-on processing. This hands-on overview exposure covers basic nanofabrication processes including deposition, etching, and pattern transfer. Offered as needed.

ADMA 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guides the learning process. The student integrates the collective observations, analyses, and reflections of the experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship, and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

ADMA 370 - CAD/CAM and Industrial Robotics I

(3 semester hours)
Prerequisites: None
Corequisite: ADMA 345
Description: This course is the conversion of CAD resources into NC machine code for the production of metallic and non-metallic products while integrated with industrial robots. Robotics will be introduced with hands-on programming of industrial robots and include tasks such as pick-and-place, welding, palletizing, assembly, finishing and robot integration into advanced manufacturing facilities. Offered Fall semester, annually.

ADMA 380 - Special Topics in Advanced Manufacturing

(1 to 4 semester hours)
Prerequisites: Minimum of 60 semester hours earned
Description: This course covers emerging topics in Advanced Manufacturing. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

ADMA 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who

wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

ADMA 410 - CAD/CAM and Industrial Robotics II

(3 semester hours)
Prerequisites: ADMA 370
Description: This course furthers the investigation into CNC programming with the usage of several CAD/CAM software platforms. In addition, advanced manufacturing topics such as Geometric Dimensioning and Tolerancing (GD&T), process planning, and Group Technology (GT) are explored. The student takes a deep dive into learning additional programming for multiple industrial robot platforms and explore related robotics & automation topics such as robot speed of movement & precision, selection of end effectors / mechanical grippers, robotics control systems, and industrial logic. Offered Spring semester, annually.

ADMA 420 - Advanced Manufacturing I

(3 semester hours)
Prerequisites: ADMA 410
Description: This course in an introduction to advanced manufacturing techniques including setup, operation, maintenance, troubleshooting and use of current and advanced material processing machines and devices. A systems engineering approach will be used to analyze complex systems for functional requirement decomposition as well as boundary/interface identification and description. This course will also build to a student-driven proposal for a cohort project in the Advanced Manufacturing II class which demonstrates and reinforces the skills and knowledge acquired from multiple courses and projects throughout the ADMA curriculum. Offered Fall semester, annually.

ADMA 430 - Programmable Logic Controllers and Integrations

(3 semester hours)
Prerequisites: ADMA 230
Description: This course is the application of a combination of digital and analog logic technologies that will lay down a framework from which programmable logic controllers are programmed. The concepts of inputs, outputs, relay logic and ladder logic are addressed. Industrial robots and automated devices will be introduced, on-line as well as pendent programming, to include tasks such as pick and place, finish application and device integration. Offered Fall semester, annually.

ADMA 455 - Manufacturing Automation Systems (CIM/FMS)

(3 semester hours)
Prerequisites: None
Corequisite: ADMA 410
Description: This course is the approach of using computers to control the entire production process utilizing closed-loop control processes, based on real-time input from within Computer Integrated Manufacturing (CIM) and Flexible Manufacturing Systems (FMS) scenarios. The student will totally complete the digitization of manufacturing scenarios into advanced manufacturing scenarios in this course by including the application of CAD/CAM techniques. Offered Spring semester, annually.

ADMA 465 - Simulation of Systems and Integrations

(3 semester hours)
Prerequisites: ADMA 310

Description: This course is the application of sophisticated computer simulation software for a complete analysis of manufacturing operations and processes for a cradle to grave evaluation. Ground up individual and team projects are performed while utilizing simulation software along with active data collection and storage in order to refine the manufacturing process that is controlled while providing and implementing efficiencies. Offered Fall semester, annually.

ADMA 480 - Advanced Manufacturing II

(3 semester hours)
Prerequisites: ADMA 420
Description: This course is the application of the completed advanced manufacturing suite of resources, which will be applied to solve several different manufacturing issues/projects provided by manufacturing experts. Building upon experiences and skills acquired in prior coursework and projects, class cohorts will use a course project format to pursue a series of manufacturing challenges which demonstrate and showcase a variety of manufacturing techniques, cohort interests, and learning objectives. Results will then be analyzed and presented in a professional academic format suitable for a capstone undergraduate experience. Offered Spring semester, annually.

ADMA 498 - Project II

(3 semester hours)
Prerequisites: ADMA 298, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor
Description: This course is a follow-up execution of the advanced manufacturing (ADMA) project proposed in the Project I course (ADMA 298). The ideal project has a clear purpose that builds directly upon the learning and research findings that occurred previously within ADMA 298. The final project should demonstrate application of the skills, methods, and knowledge of the ADMA discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. A final written report and an oral presentation are required of all students (or student teams) at the conclusion of Project II. As with Project I, this is undertaken with the close mentorship of a faculty member and may involve a community partner. Offered as needed.

ANLY 405 - Predictive Modeling

(3 semester hours)
Prerequisites: MEBA 372 and MATH 380
Description: The development and implementation of models to predict outcomes based on input data is becoming an essential skill in modern enterprises. The objective of this course is to teach this skill. The course covers the principles of qualitative as well as quantitative models that can be used for predicting outcome based on input data. The predictions may be definitive, based on the assumptions or estimates based on probabilities. The student explores how to prepare input data, build predictive models, and assess the models by examining the output produced. Topics include: exploratory data analysis, linear regression, multiple linear regression, regression diagnostics, logistics regression, analysis of variance (ANOVA), time series and forecasting, statistical methods for process improvement, classifiers, and nonlinear models. General concepts behind how software packages roll up and how they screen data and produce risk scores on topics such as in-patient probability of readmissions. Offered Fall semester, annually.

ANLY 415 - Advanced Analytics and Reporting

(3 semester hours)
Prerequisites: MEBA 372 and ANLY 405
Description: The student is introduced to deterministic and stochastic decision tools used by leading corporations and applied researchers. The student utilizes these tools to solve complex, real-world problems, building on the basic theoretical understanding of optimization, simulation and predictive modeling obtained in prerequisite courses. The student works with commercial decision modeling programs such as Premium Solver professional (linear, integer and non-linear optimization), TreePlan (decision-trees), Crystal Ball (simulation), and OptQuest (optimization under

uncertainty). Throughout the course, the importance of outside-the-model considerations, model limitations, and sources of modeling error are stressed while general frameworks for approaching particular problem types are developed. Offered Spring semester, annually.

BIOL 102 - General Biology

(3 semester hours)
Prerequisites: None
Corequisite: BIOL 103
Description: This course introduces the student to the major themes of biology, including properties of living organisms, comparison of eucaryotes vs. prokaryotes, patterns of inheritance, the central dogma, mitosis and meiosis, the diversity of life in both plants and animals, classification of organisms, evolution, metabolism, photosynthesis, cell structures, basic structure of the body, infectious disease, the Hardy-Weinberg principle, biodiversity, ecosystems, and the biosphere. A broad understanding of biology and living organisms in the biosphere is developed through hands-on, multimodal engaged learning opportunities in both the classroom and the companion laboratory component. Three hours of lecture, three hours of laboratory per week. Offered Fall and Spring semester, annually. Also offered Summer semester, as needed.

BIOL 103 - General Biology Laboratory

(1 semester hour)
Prerequisites: None
Corequisite: BIOL 102
Description: Companion laboratory component that demonstrates the major themes of biology presented in BIOL 102. Three hours of lecture, three hours of laboratory per week. Offered Fall and Spring semester, annually. Also offered Summer semester, as needed.

BIOL 115 - Principles of Anatomy and Physiology I Lecture

(3 semester hours)
Prerequisites: Enrollment in a school of nursing
Corequisite: BIOL 116
Description: This is the first part of a two-part course series discussing foundational concepts of the structural (i.e., anatomy) and functional (i.e., physiology) aspects of the human body. This course facilitates learning of main structures and principal functions of cells, tissues, and organs of selected systems. Clinical applications of structure and function will be considered. Three hours of lecture, two hours of laboratory per week. Limited to the student enrolled in the UPMC Partnership Program. Offered Fall semester, annually and as needed.

BIOL 116 - Principles of Anatomy and Physiology I Lab

(1 semester hour)
Prerequisites: Enrollment in a school of nursing
Corequisite: BIOL 115
Description: Companion laboratory course series discussing foundational concepts of the structural (i.e., anatomy) and functional (i.e., physiology) aspects of the human body. This course facilitates learning the main structures and principal functions of cells, tissues, and organs of selected systems. Clinical applications of structure and function will be considered. Three hours of lecture, two hours of laboratory per week. Limited to the student enrolled in the UPMC Partnership Program. Offered Fall semester, annually and as needed.

BIOL 135 - Clinical Microbiology Lecture

(3 semester hours)
Prerequisites: BIOL 115 and BIOL 116
Corequisite: BIOL 136
Description: This course is designed for the student who needs a broad coverage of microbiology and has little or no background in biology or chemistry. The relationship between host and parasite is emphasized, especially as related to human disease, epidemiology, and infection control. A broad range of infectious diseases are covered, including etiologic agent identification, modes of transmission, and prevention. Limited to the student enrolled in the UPMC Partnership Program. Offered Summer semester, annually and as needed.

BIOL 136 - Clinical Microbiology Lab

(1 semester hour)
Prerequisites: BIOL 115 and BIOL 116
Corequisite: BIOL 135
Description: The laboratory will introduce the student to hands-on basic microbiological practices such as aseptic technique, bacteria culture, bacteria identification tests, microscope use, microbe staining techniques, and maintenance of microbial cultures such as fungi, bacteria, bacteriophage and protozoa as well as synthesizing in-depth lab reports. Limited to the student enrolled in the UPMC Partnership Program. Offered Summer semester, annually and as needed.

BIOL 155 - Principles of Anatomy and Physiology II Lecture

(3 semester hours)
Prerequisites: C or higher in BIOL 115 and C or higher in BIOL 116
Corequisite: BIOL 156
Description: This is the second part of a two-part course series discussing foundational concepts of the structural (i.e., anatomy) and functional (i.e., physiology) aspects of the human body. This course facilitates learning of the main structures and principal functions of cells, tissues, and organs associated to selected systems. Clinical applications of structure and function are considered. Three hours of lecture per week. Limited to the student enrolled in the UPMC Partnership Program. Offered Spring semester, annually and as needed.

BIOL 156 - Principles of Anatomy and Physiology II Lab

(1 semester hour)
Prerequisites: C or higher in BIOL 115 and C or higher in BIOL 116
Corequisite: BIOL 155
Description: Companion laboratory course discussing foundational concepts of the structural (i.e., anatomy) and functional (i.e., physiology) aspects of the human body. This course facilitates learning of the main structures and principal functions of cells, tissues, and organs of selected systems. Clinical applications of structure and function will be considered. Limited to the student enrolled in the UPMC Partnership Program. Offered Spring semester, annually and as needed.

BIOL 225 - Entomology

(4 semester hours)
Prerequisites: BIOL 102-BIOL 103
Description: This course introduces the biology, ecology and evolution of insects in both naturalistic and human contexts. Subject matter and course content includes field observation and collection techniques in addition to case studies of evolutionary, economical and historical importance. Three hours of lecture, three hours of laboratory per week. Offered Summer semester, even-numbered years.

BIOL 281 - Cell Biology Lecture

(3 semester hours)
Prerequisites: C or higher in BIOL 102-BIOL 103
Corequisite: BIOL 282
Description: This course examines the foundations of cell biology including the structure, function, differentiation, and growth of the eukaryotic cell. It is primarily concerned with eukaryotic cells from their evolution, organization, differentiation and biosynthesis. The simplicity and complexity of macromolecules in the cell are covered through multi-modal learning technologies on nutrition, energy production, and synthesis of cellular components. The student develops a thorough understanding of the mechanisms underlying mitosis and meiosis, the cell cycle, and cancer. Three hours of lecture, three hours of laboratory per week. Offered Fall and Spring semester, annually.

BIOL 282 - Cell Biology Laboratory

(1 semester hour)
Prerequisites: C or higher in BIOL 102-BIOL 103
Corequisite: BIOL 281
Description: Companion laboratory course that examines the foundations of cell biology including the structure, function, differentiation, and growth of the eukaryotic cell. It is primarily concerned with eukaryotic cells from their evolution, organization, differentiation and biosynthesis. The simplicity and complexity of macromolecules in the cell are covered through multi-modal learning technologies on nutrition, energy production, and synthesis of cellular components. The student develops a thorough understanding of the mechanisms underlying mitosis and meiosis, the cell cycle, and cancer. Three hours of lecture, three hours of laboratory per week. Offered Fall and Spring semester, annually.

BIOL 296 - Human Anatomy and Physiology I Lecture

(3 semester hours)
Prerequisites: C or higher in BIOL 281-BIOL 282 and C or higher in CHEM 151-CHEM 152
Corequisite: BIOL 297
Description: This course is the first part in a two-part course series discussing the structural (e.g., anatomy) and functional (e.g., physiology) components of the human body. This first part course will facilitate learning of basic medical and anatomical terminology. We will cover structures and functions of cells and organs related to integumentary, musculoskeletal, nervous, and sensory systems. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

BIOL 297 - Human Anatomy and Physiology I Laboratory

(1 semester hour)
Prerequisites: C or higher in BIOL 281-BIOL 282 and C or higher in CHEM 151-CHEM 152
Corequisite: BIOL 296
Description: This course is the first part in a two-part course series discussing the structural (e.g., anatomy) and functional (e.g., physiology) components of the human body. This first part will cover basic medical and anatomical terminology. Subsequently, structures and functions of cells and organs related to integumentary, musculoskeletal, nervous, and sensory systems will be covered. Three hours of lecture, three hours of laboratory per week. Offered Fall Semester, annually.

BIOL 298 - Human Anatomy and Physiology II Lecture

(3 semester hours)
Prerequisites: C or higher in BIOL 296-BIOL 297
Corequisite: BIOL 299
Description: This course is the second part in a two-part course series discussing the structural (e.g., anatomy) and functional (e.g., physiology) components of the human body. This course introduces basic medical and anatomical terminology. The course covers structures and functions of cells and organs related to nervous, cardiovascular,

respiratory, digestive, endocrine, and genitourinary systems. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

BIOL 299 - Human Anatomy and Physiology II Laboratory

(1 semester hour)
Prerequisites: C or higher in BIOL 296-BIOL 297
Corequisite: BIOL 298
Description: This laboratory course compliments the theoretical learning from Human Anatomy and Physiology II. The student will cover structures and functions of cells and organs related to nervous, cardiovascular, respiratory, digestive, endocrine, and genitourinary systems. Human anatomy, including internal and external genitalia, are part of this course. Three hours of lecture, three hours of laboratory per week. Offered Spring Semester, annually.

BIOL 303 - Principles of Ecology Lecture

(3 semester hours)
Prerequisites: BIOL 102-BIOL 103 and CHEM 151-CHEM 152
Corequisite: BIOL 304
Description: This course examines theories (including a variety of mathematical, verbal, and graphical models of important ecological processes) and natural history. The student explores: 1) various questions (in a broad sense) asked by ecologists and 2) the theories and models from which hypotheses are suggested to answer the questions. Specific ecological studies are used to illustrate what has been learned about the natural world. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

BIOL 304 - Principles of Ecology Laboratory

(1 semester hour)
Prerequisites: BIOL 102-BIOL 103 and CHEM 151-CHEM 152
Corequisite: BIOL 303
Description: This course examines implementation of ecological techniques of study, both laboratory and field-based. The student applies the scientific method by exploring different ways in which ecologists gather data to refute or support the proposed hypotheses. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

BIOL 305 - Evolution

(3 semester hours)
Prerequisites: BIOL 102-BIOL 103
Description: This course reviews evidence for evolution prior to Darwin's seminal work and follows through to modern neo-Darwinist concepts. Natural selection, phenotypic and genotypic variation, population biology, extinction, and speciation are covered. The student examines mechanisms of evolutionary change. Material looks at different scales and perspectives from molecular to ecological, generational changes in populations, as well as observable patterns over millennia. Offered Spring semester, odd-numbered years.

BIOL 320 - Genetics

(3 semester hours)
Prerequisites: BIOL 281-BIOL 282 and CHEM 151-CHEM 152, or BS-Nursing Major, or permission of instructor
Description: This course is an introduction to human and population genetics including Mendelian and non-Mendelian genetics (DNA replication, transcription, and translation; genetic recombination and mutation), genetic basis of gender (sex-linked and non-sex linked genetic diseases), and emerging areas of genetics research. The student connects facts

together to get a whole picture, to apply knowledge, then to solve a problem. Basic genetics introduces the student to the traditional elements of genetic biology and contemporary genetic topics. Offered Spring semester, annually.

BIOL 331 - Microbiology Lecture

(3 semester hours)
Prerequisites: BIOL 281-BIOL 282 and CHEM 151-CHEM 152
Corequisite: BIOL 332
Description: This course is an introduction to microbial cell structure, growth, and physiology. A broad range of infectious diseases are covered including etiologic agent identification, modes of transmission, prevention, as well as epidemiology and infection control. Offered Spring semester, annually.

BIOL 332 - Microbiology Lab

(1 semester hour)
Prerequisites: BIOL 281-BIOL 282 and CHEM 151-CHEM 152
Corequisite: BIOL 331
Description: This laboratory will cover basic laboratory techniques as well as aseptic bacteriological techniques including the identification of common pathogenic/nonpathogenic organisms utilizing staining, culturing, biochemical analysis, and microscopic inspection. The lab exercises will develop critical thinking skills, experimental design, data analysis, and presentation of results. Offered Spring semester, annually.

BIOL 351 - Applied Microbiology Lecture

(3 semester hours)
Prerequisites: BIOL 331 and BIOL 332
Corequisite: BIOL 352
Description: This course builds upon the principles learned in Microbiology, further developing the concepts of how microbes can be beneficial and detrimental to human society. Topics include clinical microbiology, microbiomes, development of antibiotic resistance, geomicrobiology, astromicrobiology, and environmental microbiology. Three hours of lecture and three hours of laboratory per week. Offered Spring semester, annually.

BIOL 352 - Applied Microbiology Lab

(1 semester hour)
Prerequisites: BIOL 331 and BIOL 332
Corequisite: BIOL 351
Description: In the laboratory portion of this course, the student will collect, isolate, and characterize microbes from food, water, and soil samples as well as learn techniques to grow anaerobic bacteria, viruses, fungi, and protozoa. Three hours of lecture and three hours of laboratory per week. Offered Spring semester, annually.

BIOL 371 - Molecular Biology Lecture

(3 semester hours)
Prerequisites: BIOL 281-BIOL 282 and CHEM 151-CHEM 152
Corequisite: BIOL 372
Description: This course focuses on molecular biology's fundamental principles and techniques. The complicated processes in living cells and organisms are presented in terms of the laws of chemistry and physics. The student will gain an in-depth knowledge of nucleic acid structure, molecular genetics, and the biochemistry of transcription and protein synthesis. Examining the genetic message in the form of DNA through transcription, translation, and the biosynthesis of macromolecules frames this course. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

BIOL 372 - Molecular Biology Laboratory

(1 semester hour)
Prerequisites: BIOL 281-BIOL 282 and CHEM 151-CHEM 152
Corequisite: BIOL 371
Description: The course focuses on both the fundamental principles and techniques of molecular biology. Experiments performed will strengthen the understanding of molecular mechanisms through the applications of laboratory techniques used in molecular biology research. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

BIOL 376 - Immunology

(3 semester hours)
Prerequisites: BIOL 281-BIOL 282
Description: This course is designed to familiarize the student with the aspects of the development of the immune system and the immune response in maintaining health and in fighting disease. The cellular, molecular, and regulatory mechanisms of innate and adaptive immunity are presented and put into context. Topics will include, but are not limited to, defining the immune system, structural and functional associations, generation of immune responses, effector mechanisms, and the immune system in health and disease. Offered Spring semester, odd-numbered years.

BIOL 380 - Special Topics in Biology

(1 to 4 semester hours)
Prerequisites: Consent of the instructor and academic advisor
Description: This course covers topics in biology. It is an in-depth study of a selected specialized area of biology and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

BTEC 100 - Nanobiotechnology Explorations

(2 semester hours)
Prerequisites: None
Description: This is an introductory course to nanobiotechnology, which is the use of existing elements of natural systems to develop new technologies. The concepts of how nano-structures are characterized are defined and a review is conducted of the applications of this new technology. The course includes a laboratory component in addition to lecture component. Offered Fall semester, annually.

BTEC 101 - Exploring Biotechnology Through Food, Science, and Cooking

(2 semester hours)
Prerequisites: None
Description: This course provides an overview of basic science and technology through the lens of food and cooking. The student explores the importance of biology, physics, and chemistry in creating food flavor, texture, aroma, and consistency. Visiting chefs explain techniques used to create food products in the kitchen while the student engages in interactive, experiential learning activities to understand the related scientific principles. The student is also being introduced to scientific methods used to evaluate food products. Offered as needed.

BTEC 102 - Exploring Nanobiotechnology

(1 to 2 semester hours)
Prerequisites: None

Description: Nanobiotechnology is a STEM field gaining significance as the next industrial revolution due to its diversely applied nature with career opportunities for high-paying jobs. This course aims at introduction of Nanobiotechnology, which is the use of very small natural (DNA and protein-based) and man-made structures to develop new and innovative technologies. The course allows the student to learn the unique concepts and applications of nanostructures in various fields of life spanning medicine, pharma, food, environment, biomedical devices, and many more. The course includes several cool hands-on activities to reinforce the concepts. The student works on a small class project that involves a small paper and a presentation. Limited to the Dual Enrollment student. Offered Summer semester, as needed.

BTEC 103 - Food Biotechnology - Farm to Fork

(1 semester hour)
Prerequisites: None
Description: This course focuses on the role of biotechnology in Food and Ag industry. Probiotic yogurts, nutritionally enriched crops, drought and pest resistant plants, intelligent packaging, and processed food - all involve biotechnology processes. The student will learn the structure and function of DNA and its applications. The class will cover the many methods DNA can be altered to create genetically modified organisms (GMOs)/products. The student will discuss the use of GMOs in today's society focusing on the pros and cons primarily in Ag-Food industry. This class also includes several labs for the student to review biotechnology applications as they create food products such as cheese and yogurt. The course also allows the student to explore various ways biotechnology creates efficient and advanced Ag/food products. Limited to the Dual Enrollment Student. Offered Summer semester, as needed.

BTEC 104 - Special Topics

(1 to 2 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in biotechnology. Due to the nature of evolving topics, this course may not be eligible for repeat. Limited to the Dual Enrollment student. Offered as needed.

BTEC 105 - The Art of Genes and Fusion

(3 semester hours)
Prerequisites: None
Description: The student is introduced to molecular concepts regarding DNA, genes, proteins, and chromosome mapping to describe the importance of biotechnology to help combat human diseases and disorders. The student examines links between diseases and genes, such as leukemia and cancer. Lastly, the student will use case studies and contemporary topics in biotechnology and genetic engineering to understand the significance of gene manipulation in technology development. Offered as needed.

BTEC 106 - Emerging Medical Biotechnologies

(1 semester hour)
Prerequisites: None
Description: Healthcare is getting revolutionized due to new medical biotechnologies. These are rapidly changing healthcare practices. Novel methods for Diagnostics and Medical Imaging now allow detection of Cancer in very early stages, even before the symptoms appear. Biomedical devices such as Blood Glucose monitoring systems or insulin patches have helped millions. Prosthetics and other biomedical devices are being redefined with new looks and mind-boggling functionalities. Pharma companies are buzzing with development of new drugs, novel drug packaging, targeted drug delivery, and so on. Regenerative medicine and Tissue Engineering are making significant progress as well. This course introduces the student to cellular concepts, biotechnology basics, and their role in development of various medical biotechnologies. Limited to the Dual Enrollment Student. Offered Summer semester, as needed.

BTEC 107 - Special Topics in Biotechnology

(1 to 3 semester hours)
Prerequisites: None
Description: This course covers emerging topics in biotechnology. It is an in-depth study of a selected specialized area of biotechnology and the content varies by semester. Offered as needed.

BTEC 110 - Medical Terminology

(1 semester hour)
Prerequisites: BIOL 102/BIOL 103 or High School Biology or permission of instructor
Description: This course introduces the medical terminology used by healthcare professionals, focusing on techniques to help the student understand and apply medical language effectively. The student will also explore body systems and present on common diseases and medical procedures used for treatment. Cross-listed with INSC 110. Offered Fall semester, annually.

BTEC 170 - Introduction to Biotechnology

(3 semester hours)
Prerequisites: BIOL 102-BIOL 103 (or taken concurrently) or BTEC 105 or High School Biology or permission of instructor
Description: This dynamic course provides an overview of the many branches of biotechnology, including medical, forensic, aquatic, industrial, agricultural, and nanobiotechnology. The student will explore how biotechnology transforms biological systems to create innovative products and solutions that impact industries such as pharmaceuticals, textiles, food, and agriculture.The course centers on three main goals: 1) to understand the biological processes involved in biotechnology methods; 2) to identify and criticize the benefits and drawbacks of current methods; and 3) to review new emerging technologies that focus on ecological solutions. Offered Spring semester, annually.

BTEC 200 - Introduction to Quality and Food Safety

(3 semester hours)
Prerequisites: None
Description: Overview of quality and food safety spanning all segments of the food industry. Topics include: meat, dairy, poultry, confectionary, and bakery segments including allied industry involvement. Offered as needed.

BTEC 210 - Food and Nutrition

(3 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: This course provides an overview of the diet and nutritional requirements of protein, energy, whole grains, major vitamins and minerals and other food groups that are determinants of health and diseases in human populations. The sources, recommended intake, role of major nutrients, and metabolism are explored, in addition to case studies that address the impact of nutrition on human growth and development of chronic or acute diseases (i.e. cancer, diabetes, heart disease, etc.). Offered as needed.

BTEC 215 - Introduction to Bioinformatics

(4 semester hours)
Prerequisites: MATH 120 and BIOL 102-BIOL 103 or BTEC 170
Description: Developing automated ways to deal with vast quantities of scientific information is an essential part of modern research. Bioinformatics aims to link scant pieces of seemingly unrelated information. This discipline seeds the

very origins of new lines of scientific research investigations. Bioinformatics is shaping many research disciplines from genetics and molecular biology through to drug discovery, computer science, and even entomology. Offered as needed.

BTEC 216 - Principles of Physics for Nanobiotechnology

(4 semester hours)
Prerequisites: MATH 120 and BTEC 100, or permission of instructor
Description: This course covers selected topics from the primary fields of physics including: Newton's mechanics, electromagnetism, optics, thermodynamics, and modern (atomic) physics with an emphasis on applications to nanobiotechnology. Algebraic equations are used throughout the course. Offered Spring semester, annually.

BTEC 220 - Applied Nanobiotechnology

(4 semester hours)
Prerequisites: BTEC 100 or permission of instructor
Description: This course addresses applications of nanobiotechnology for various fields such as medicine, drug-delivery, food and environment. The student explores how various nanostructures can be "functionalized" to perform targeted interactions. The need, application, limitations, and ethical positions for these topics are covered through a multimodal approach of lecture, lab, presentations, group discussions and interactive modules. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

BTEC 222 - Emerging Laboratory Techniques

(4 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: This course covers the planning, execution and implementation of experimental design, the first step toward independent research. The problem areas covered center primarily on abstract principles that are difficult to convey in the standard lecture format. Accordingly, this course is laboratory intensive with visual and hands-on experiments used to reinforce concepts. Three hours of lecture, three hours of laboratory per week. Offered as needed.

BTEC 235 - Applied Cell and Agro Culture

(4 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: The fields of biology, biochemistry, molecular biology and biotechnology are increasingly dependent on growing and experimenting with cells in culture. This course offers a concise, practical guide to the basic essentials of the techniques used in a modern cell culture laboratory. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, odd-numbered years.

BTEC 240 - Techniques for Biomolecular Research

(3 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: This course gives an in-depth, hands-on experience to fundamental laboratory techniques applied to bio-molecular research to the student in life sciences. The Biotech (life science in general) industry heavily depends on ability for use of these techniques for extraction, purification and characterization of biomolecules (proteins, a variety of types) using several bioanalytical techniques. This course allows the student to get a "life-at-the-bench" experience in application of these techniques. The course covers topics related to successful design of protocols for extraction, purification, characterization, and analysis of structure-function relationship of biomolecules for application in diagnostics, therapeutics, and several industrial applications. It also offers experience in using instrumentation generically used in medical, pharmaceutical, environmental, and other BTEC industries with an introduction to Good Laboratory Practices (GLP). Offered Spring semester, odd-numbered years.

BTEC 250 - Medical Biotechnologies of 2020

(3 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: The field of biotechnology is evolving quickly with innovative technologies. The course covers the concept of biomarkers, its application in diagnostics and therapeutics. Topics such as pharmacogenomics, gene therapy, medical imaging, regenerative medicine, prosthetics, and point of care devices are at the interface of emerging medical technologies and applied biotechnology. This course serves to introduce the student to these emerging trends and technologies in the field of medical biotechnology. Offered Spring semester, as needed.

BTEC 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

BTEC 311 - Pharmacology I

(3 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: This course studies how specific small molecules can impact and affect body behavior and responses. Small molecules or drugs made by man or from nature can modulate special gates and enzymes. These concepts are the first step into the world of pharmacology. The understanding of this course depends heavily on knowing what is considered normal for the body. Consequently, human physiological systems are featured as an integral part of this course. Offered Fall semester, annually.

BTEC 320 - Drug Design and Development

(3 semester hours)
Prerequisites: BTEC 311 or permission of instructor
Description: New drug discovery is a long process with soaring costs as the level of scientific complexity increases through research. This course is structured to follow the discovery process and is reliant on outside specialists and speakers. Offered Spring semester, as needed.

BTEC 340 - Forensic Biotechnology

(3 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: This course is designed to introduce the student to the hands-on techniques and opportunities in the field of biotechnology for the forensic field. The course covers topics including introduction to biotechnology, DNA applications in forensic investigation, spectroscopic techniques, molecular biotechnology, and DNA fingerprinting, etc. The course will cover various techniques used in biotechnology (very significant for forensics) such as PCR, DNA immobilization, and DNA diagnostics. There will be field visits, case studies, and group discussions about the latest events in the field of forensic biotechnology. Offered as needed.

BTEC 350 - Biotechnology Techniques

(4 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: This course develops the skills, competencies, and fundamentals of research procedures in biotechnology. The student is exposed to a variety of relevant biotechnology techniques in the laboratory at research or commercial centers. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

BTEC 351 - Biotechnology Applications

(4 semester hours)
Prerequisites: BTEC 350 or permission of instructor
Description: This laboratory-intensive course examines the various applications in the field of biotechnology at a molecular level, which aids the understanding of cellular mechanisms. The power, limitation, proper use and theoretical framework around biotechnology applications are explored. Biotechnology-related workforce growth, and the area corporations involved in this field, provide case study illustrations. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

BTEC 355 - Neurology and Biotechnology

(3 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: This course will provide a comprehensive overview of the molecular biology and genetic basis of both age-related and injury-induced neurological diseases. Biotechnological research on the molecular mechanisms of neurological pathologies, focusing on unique as well as common mechanisms of age- and injury-related conditions, can lead to emerging diagnostic methods and result in more effective treatments, therapeutic assessments, and strategies for prevention. Offered Spring semester, as needed.

BTEC 361 - Food Biotechnology Seminar

(1 semester hour)
Prerequisites: Minimum of 60 earned semester hours
Description: This course reviews advances and applications in the field of food biotechnology. Class activities include primary article reviews, internet research, critiquing of research articles and presentations on topics from food biotechnology such as safety and quality issues with the food industry and applications of food technology in the food safety and quality protocols. Offered Spring semester, as needed.

BTEC 362 - General Biotechnology Seminar

(1 semester hour)
Prerequisites: Minimum of 60 earned semester hours
Description: This course reviews newsworthy advances and application in the field of biotechnology. Class activities include primary article reviews, internet research, critiquing of research articles and presentations on topics from general biotechnology, such as the ethics of biotechnology. Offered Spring semester, as needed.

BTEC 363 - Nanobiotechnology Seminar

(1 semester hour)
Prerequisites: Minimum of 60 earned semester hours
Description: This course reviews newsworthy advances and applications in the field of biotechnology. Class activities include primary article reviews, internet research, critiquing of research articles and presentations on topics from nanobiotechnology and its application. Offered Spring semester, as needed.

BTEC 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guide the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship, and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

BTEC 370 - Genetically Modified Foods

(3 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: This course explores the impact of plant and animal biotechnology on food nutrition and provides an understanding of the techniques and methods in genetically-modified food products. The advantages and disadvantages of genetically modified foods are explored, in addition to cultivation, production, processing, and manufacturing concerns that are related to genetically modified foods. A broad knowledge of the current laws governing use of genetically modified foods, ethical discussions surrounding production of these foods, and the global impact of those laws are studied. Offered Spring semester, as needed.

BTEC 371 - Food Science and Technology

(4 semester hours)
Prerequisites: BTEC 170 or permission of instructor
Description: This course explores the fundamental principles of food science including the nature of foods, causes of deterioration, and related advances in technology used in food processing, production, and preservation. The student becomes familiar with the types of micro-organisms that are utilized in the food industry, in addition to the control and prevention of food-borne illnesses through biotechnology and quality-control case studies. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, as needed.

BTEC 380 - Special Topics in Biotechnology

(1 to 4 semester hours)
Prerequisites: None
Description: This course covers emerging topics in biotechnology. It is an in-depth study of a selected specialized area of biotechnology and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

BTEC 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

BTEC 401 - Biosensor Technology

(4 semester hours)
Prerequisites: BTEC 100 or permission of instructor
Description: The course covers aspects such as: what is a biosensor, the types of biosensors, and how to develop a specific assay for a specific detection system. Also covered are the major techniques used in developing and functionalizing nanoparticles for specific biosensor assays. Applications of biosensor technology in medical diagnostics, environmental monitoring, bioremediation and quality control in the food industry are reviewed. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

BTEC 405 - Applied Food Microbiology

(3 semester hours)
Prerequisites: BTEC 200
Description: This course provides insight into the most recent developments of food-borne pathogens, toxins, and contaminants that may occur in a food production plant environment. The course is delivered in classroom and laboratory environments and includes a mixture of theory, demonstrations, and practical sessions on the fundamentals of food microbiology and food safety. Offered as needed.

BTEC 411 - Pharmacology II

(3 semester hours)
Prerequisites: BTEC 311
Description: This course covers how specific small molecules affect body behavior and response. Various areas of pharmacology are explored, with a special focus on the central nervous system. The drugs covered modulate and alter signals that are in turn interpreted by special gates and enzymes, but pathways and control are typically more complex. These concepts mirror those of other disciplines, in particular biochemistry and molecular genetics, and require critical and procedural thought. A primary component of this course is an understanding of what is considered normal for the body. Accordingly, human physiological systems are studied as an integral part of this course. Offered as needed.

BTEC 420 - Food Safety and Quality Assurance

(3 semester hours)
Prerequisites: BTEC 200 or ENVS 340 or permission of instructor
Description: This course explores the fundamental principles of food quality assurance and quality control based on the principles of Safe Quality Foods (SQF) and Hazard Critical Control Point (HACCP) planning. The student becomes familiar with the seven HACCP principles for controlling food safety within the food processing, production, and manufacturing environments. In addition, the student is shown basic and advanced principles for safely managing quality assurance and quality control (QA/QC) within the food industry. Offered Fall semester, as needed.

BTEC 435 - Computer-Aided Drug Design

(4 semester hours)
Prerequisites: BTEC 215 or permission of instructor
Description: Conducting drug research in a directed and specific manner previously relied on how many small molecules could be tested per unit time. Over recent years, more and more drug design is coordinated with available literature and modern databases containing overwhelming amounts of information. To identify new potential drug molecules, automation has become essential to narrow the field before embarking on a biological screening process. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, as needed.

BTEC 498 - Project II

(3 semester hours)
Prerequisites: BTEC 298, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor
Description: This project must be in the student's program of study or concentration(s). It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

CHEM 150 - General Chemistry I

(4 semester hours)
Prerequisites: MATH 120
Description: This course with laboratory provides a general introduction to states of matter, atoms and molecules, chemical nomenclature, stoichiometry, reactions, concentration units, periodicity, chemical bonding, atomic and molecular structure, and thermodynamics, which serve as a prerequisite for advanced courses. Three hours of lecture, three hours of laboratory per week. Limited to the student enrolled in the BS-Exercise Science degree program. Offered Fall semester, annually.

CHEM 151 - General Chemistry I Lecture

(3 semester hours)
Prerequisites: MATH 120, MATH 140, or MATH 220
Corequisite: CHEM 152
Description: This course provides a general introduction to states of matter, atoms and molecules, chemical nomenclature, stoichiometry, reactions, concentration units, periodicity, chemical bonding, atomic and molecular structure, and thermodynamics, which serve as a prerequisite for advanced courses. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

CHEM 152 - General Chemistry I Laboratory

(1 semester hour)
Prerequisites: MATH 120, MATH 140, or MATH 220
Corequisite: CHEM 151
Description: Companion laboratory component that illustrates through hands-on experimentation the general introduction to states of matter, atoms and molecules, chemical nomenclature, stoichiometry, reactions, concentration units, periodicity, chemical bonding, atomic and molecular structure, and thermodynamics, which serve as a prerequisite for advanced courses. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

CHEM 160 - General Chemistry II

(4 semester hours)
Prerequisites: CHEM 150
Description: A study of chemical principles including acid/base chemistry, equilibrium, titration, transition metals, and solutions. Three hours of lecture, three hours of laboratory per week. Limited to the student enrolled in the BS-Exercise Science degree program. Offered Spring semester, annually.

CHEM 161 - General Chemistry II

(3 semester hours)
Prerequisites: C or higher in CHEM 151-CHEM 152

Corequisite: CHEM 162
Description: A study of chemical principles including acid/base chemistry, bonding, thermodynamics and electrochemistry. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

CHEM 162 - General Chemistry II Laboratory

(1 semester hour)
Prerequisites: C or higher in CHEM 151-CHEM 152
Corequisite: CHEM 161
Description: Companion laboratory component that illustrates the study of chemical principles including acid/base chemistry, bonding, thermodynamics and electrochemistry. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

CHEM 200 - Environmental Chemistry I

(3 semester hours)
Prerequisites: C or higher in CHEM 151-CHEM 152
Description: An introductory investigation of current concerns and problems dealing with chemistry of the environment. Chemistry of the atmosphere, biosphere and hydrosphere are examined and discussed. Offered Fall semester, even-numbered years.

CHEM 211 - Organic Chemistry I Lecture

(3 semester hours)
Prerequisites: C or higher in CHEM 161-CHEM 162
Corequisite: CHEM 212
Description: This course is designed as a first-level introduction to the carbon-based reactions involved in life chemistry. The course focuses on the nomenclature, structure, and fundamental basis for reactivity of organic compounds. It sets a background for advanced study in forensic or environmental chemistry and biochemistry. Offered Fall semester, annually; Summer Subterm A, as needed.

CHEM 212 - Organic Chemistry I Lab

(1 semester hour)
Prerequisites: C or higher in CHEM 161-CHEM 162
Corequisite: CHEM 211
Description: This course is the laboratory component for CHEM 211 - Organic Chemistry I Lecture. The lab is a first-level introduction to the carbon-based reactions involved in life chemistry. The lab focuses on fundamental techniques and instruments used in Organic Chemistry, the reactions that occur with organic molecules, and the importance of accurate record-keeping. Offered Fall semester, annually; Summer Subterm A, as needed.

CHEM 218 - Green Chemistry

(3 semester hours)
Prerequisites: CHEM 211 and CHEM 212
Description: This course delves into how chemistry can address global human health and environmental issues through sustainable practices. It covers key green chemistry principles such as waste prevention, the use of renewable feedstocks, energy efficiency, and designing safer chemicals. The student will learn to apply these principles to real-world problems, developing innovative solutions that minimize environmental impact. By bridging fundamental chemistry concepts with sustainability, this course equips the student to meet the growing industry demand for environmentally responsible chemists. Offered Fall semester, odd-numbered years.

CHEM 220 - Organic Chemistry II

(4 semester hours)
Prerequisites: C or higher in CHEM 211-CHEM 212
Description: This course builds upon the principles learned in the first course and is designed to provide a foundation in the fundamentals of organic compounds, their structures, reactions, and underlying reaction mechanisms. Three hours of lecture, three hours of laboratory per week. Offered Spring and Summer semester, annually.

CHEM 221 - Organic Chemistry II Lecture

(3 semester hours)
Prerequisites: C or higher in CHEM 211-CHEM 212
Corequisite: CHEM 222
Description: This course builds upon the principles learned in the first course and is designed to provide a foundation in the fundamentals of organic compounds, their structures, reactions, and underlying reaction mechanisms. It is the second in a series and focuses on aromatic compounds and compounds with a carbonyl group. Offered Spring semester, annually.

CHEM 222 - Organic Chemistry II Lab

(1 semester hour)
Prerequisites: C or higher in CHEM 211-CHEM 212
Corequisite: CHEM 221
Description: This course is the laboratory component for Organic Chemistry ll. It is designed as a first level introduction to the carbon-based reactions involved in life chemistry. This lab course focuses on the continued use of fundamental techniques used in Chemistry labs while exploring the synthesis of, and key reactions involving, carbonyl compounds and aromatics. It helps provide the background necessary for advanced study in forensics, environmental chemistry, and biochemistry. Offered Spring semester, annually.

CHEM 316 - Analytical Chemistry Lecture

(3 semester hours)
Prerequisites: CHEM 161-CHEM 162 and MATH 280
Corequisite: CHEM 317
Description: This course introduces theoretical and practical aspects of quantitative chemical analysis: primary analysis, error analysis, data handling; solution equilibria and acid-base titrations; spectrophotometry. Offered Fall semester, annually.

CHEM 317 - Analytical Chemistry Laboratory

(1 semester hour)
Prerequisites: CHEM 161-CHEM 162 and MATH 280
Corequisite: CHEM 316
Description: This course is the companion laboratory to Analytical Chemistry lecture. The student will learn how to correctly prepare standard solutions and samples, test samples using a variety of experimental methods, and analyze experimental data to determine concentration of unknown compared to standards. Error analysis, data handling, and quality control will be performed. Offered Fall semester, annually.

CHEM 320 - Bio-Organic Chemistry

(3 semester hours)
Prerequisites: CHEM 221 and CHEM 222

Description: This course is designed as an advanced undergraduate study of the structure and reactivity of carbon-based biomolecules. Approximately one-half of the course is devoted to a description of the structure and chemical properties of bio-organic compounds. The second half of the course draws upon the concepts from organic and inorganic chemistry in order to investigate enzymatic reactions and metabolism. Offered Fall semester, odd-numbered years.

CHEM 326 - Instrumental Chemical Analysis Lecture

(3 semester hours)
Prerequisites: MATH 280 and C or higher in CHEM 161-CHEM 162
Corequisite: CHEM 327
Description: This course introduces instrumental and method design, function, and operation applied to chemical analysis. Offered Spring semester, annually.

CHEM 327 - Instrumental Chemical Analysis Laboratory

(1 semester hour)
Prerequisites: MATH 280 and C or higher in CHEM 161-CHEM 162
Corequisite: CHEM 326
Description: This course is the companion laboratory to CHEM 326 and introduces instrumental and method design, function, and operation applied to chemical analysis. The laboratories emphasize hands-on instrument use, data analysis, and unknown identification. Offered Spring semester, annually.

CHEM 331 - Biochemistry I Lecture

(3 semester hours)
Prerequisites: CHEM 211 and CHEM 212
Corequisite: CHEM 332
Description: This course is an in-depth study of several classes of biomolecules: proteins, carbohydrates, and lipids. The course emphasizes the chemistry that dictates the structure and functions of biological molecules. Focus is given to: 1) amino acid and protein chemistry; 2) enzyme activity; and, 3) combination of the major classes of biological molecules to form biological membranes. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

CHEM 332 - Biochemistry I Laboratory

(1 semester hours)
Prerequisites: BIOL 102-BIOL 103 and CHEM 211-CHEM 212
Corequisite: CHEM 331
Description: This laboratory course provides hands-on experience with a variety of biochemical techniques and reinforces the theoretical concepts introduced in CHEM 331. Emphasis is placed on protein purification, enzyme kinetics, and applications of lipids. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

CHEM 351 - Biochemistry II Lecture

(3 semester hours)
Prerequisites: CHEM 331 and CHEM 332
Corequisite: CHEM 352
Description: This course is a detailed study of carbohydrate, fatty acid, and amino acid metabolism including biochemical thermodynamics. An in-depth study of nucleic acids and how their chemistry dictates their structure and biological function is also presented. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

CHEM 352 - Biochemistry II Laboratory

(1 semester hour)
Prerequisites: CHEM 331 and CHEM 332
Corequisite: CHEM 351
Description: This course is the companion laboratory to CHEM 351 - Biochemistry II Lecture . The student will learn assays and instrumental methods to analyze nucleic acids, carbohydrates, fats and the transformations they undergo in biological systems. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

CHEM 380 - Special Topics in Chemistry

(1 to 4 semester hours)
Prerequisites: Consent of the instructor and academic advisor
Description: This course covers topics in chemistry. It is an in-depth study of a selected specialized area, and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

CHEM 420 - Bioinorganic Chemistry

(3 semester hours)
Prerequisites: CHEM 211 and CHEM 212
Description: This course provides the student an advanced level of understanding of inorganic chemistry and its role in biological molecules. The relationship between structure, bonding, and reactivity of transition metals is discussed with a primary focus on coordination chemistry. Offered Fall semester, odd-numbered years.

COMM 110 - Speech

(3 semester hours)
Prerequisites: None
Description: This course builds on the skills acquired in ENGL 105 or ENGL 106. The student continues to study the process of effective communication, based on an understanding of purpose and audience using speaking techniques such as enunciation and modulation. The student builds an understanding of the basic skills needed to communicate across disciplines. Offered Each semester, annually.

CISC 100 - Lego Robotics Programming

(3 semester hours)
Prerequisites: Two years of high school algebra or equivalent
Description: This course provides an introduction to mobile robots and the fundamental concepts of programming by using Lego Mindstorms RCX robots. Lectures are followed by hands-on exercises performed in groups, where creativity is a key component. The primary goal is to obtain both visual and textual programming skills while promoting social aptitudes such as leadership and teamwork. Offered Summer semester, annually.

CISC 101 - Exploring Lego Robotics

(2 semester hours)
Prerequisites: None
Description: This course introduces mobile robots and the fundamental concepts of programming using Lego Mindstorms robots. Lectures are followed by hands-on labs where creativity and problem solving are key components. The primary goal is to obtain both visual and textual programming skills while promoting social aptitudes such as leadership and teamwork. Limited to the Dual Enrollment student. Offered Summer semester, annually.

CISC 104 - Special Topics

(1 to 4 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in Computer & Information Sciences. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered Summer semester, annually.

CISC 106 - Special Topics

(1 to 4 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in Computer & Information Sciences. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

CISC 120 - Programming I

(4 semester hours)
Prerequisites: MATH 120 or MATH 140
Description: This course introduces the concepts and techniques of computer programming. Emphasis is placed on developing the student's ability to apply problem-solving strategies to design algorithms and to implement these algorithms in a modern, structured programming language. Topics include fundamental programming constructs, problem solving techniques, simple data structures, Object- Oriented Programming (OOP), program structure, data types and declarations, control statements, algorithm strategies and algorithm development. Offered Fall and Spring semester, annually.

CISC 140 - Programming II

(3 semester hours)
Prerequisites: CISC 120
Description: This course builds upon fundamental concepts of programming and introduces several more advanced concepts. Emphasis is placed on the practical applications of the techniques and structures, as opposed to abstract theory, in the hopes of rendering the content accessible and useful in the context of using programming as a tool to solve problems. Topics covered include the basics of Object-Oriented Programming (OOP), sorting and searching algorithms, and basic data structures. Offered Fall and Spring semester, annually.

CISC 160 - Data Structures

(3 semester hours)
Prerequisites: MATH 210 (or taken concurrently) and one of the following, C or higher in CISC 120 or C or higher in CISC 140
Description: This lecture and laboratory course further develops the concepts and techniques of computer programming. Emphasis is placed on structured programming, top-down design, more advanced data structures, and the proper use of the programming language and development tools. . Topics include Object-Oriented Programming (OOP), arrays, dynamic arrays, linked lists, abstract data types (ADTs), stacks, queues, trees, recursion, priority queues, and heaps. Students will also be introduced to the concept of algorithmic analysis for comparing the performance of different data structures. Offered Fall and Spring semester, annually.

CISC 211 - Computer Organization and Architecture

(4 semester hours)
Prerequisites: MATH 210 (or taken concurrently) and one of the following, C or higher in CISC 120 or C or higher in CISC 140

Description: The goal of the course is to teach the design and operation of a digital computer. It serves the student in two ways: First, for those who want to continue studying computer architecture, embedded systems, and other low-level aspects of computer systems, it lays the foundation of detailed implementation experience needed to make the quantitative tradeoffs in more advanced courses meaningful; and, second, for a student interested in other areas of computer science, it solidifies an intuition about why hardware is as it is and how software interacts with hardware. Topics include technology trends and their implications, performance measurement, instruction sets, computer arithmetic, design and control of a datapath, pipelining, memory hierarchies, input and output, and brief introduction to multiprocessors. Offered Fall and Spring semester, annually.

CISC 225 - Information Systems Analysis and Design

(3 semester hours)
Prerequisites: C or higher in CISC 120 or C or higher in CISC 140
Description: This course is a foundation for database design and database security courses. Systems Analysis and Design is a fundamental, active field in which analysts continually learn new techniques and approaches to develop systems more effectively and efficiently. There is a core set of skills that all analysts need to know no matter what approach or methodology is used. All information systems projects move through the four phases of planning, analysis, design, and implementation; all projects require analysts to gather requirements, model the business needs, and create blueprints for how the systems should be built; and all projects require an understanding of organizational behavior concepts like change management and team building. This course captures the dynamic aspects of the field by keeping the student focused on doing Systems Analysis and Design while presenting the core set of skills that the analyst needs to know. Offered Fall and Spring semester, annually.

CISC 233 - Essential Algorithms

(3 semester hours)
Prerequisites: MATH 210 and one of the following, C or higher in CISC 140 or C or higher in CISC 160
Description: This course covers the basic techniques used to analyze problems and algorithms, including asymptotic, upper/lower bounds, and best/average/worst case analysis. Amortized analysis, complexity, and basic techniques are used to design algorithms and to analyze important classical algorithms including sorting, string, matrix, and graph algorithms. The goal for the student is to be able to apply all the above to design solutions for real-world problems. Offered Fall and Spring semester, annually.

CISC 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

CISC 301 - Operating Systems

(3 semester hours)
Prerequisites: C or higher in CISC 211 and C or higher in CISC 233
Description: This course provides an introduction to the design and implementation of operating systems. The student is exposed to different operating systems on various computer platforms and is expected to develop a significant operating system programming project in this area. Topics may include operating systems principles, computer

architecture, concurrency threads, CPU scheduling and dispatching, memory management techniques, computer security and system administration. Offered Fall and Spring semester, annually.

CISC 325 - Programming Languages Concepts and Paradigms

(3 semester hours)
Prerequisites: MATH 310 and C or higher in CISC 233
Description: This course introduces the student to the fundamental concepts in design and implementation of programming languages. We examine the evolution and the theory of language design with respect to syntax and semantics of programming language. Different approaches to programming paradigms and feature inclusions are discussed both with respect to their utility for developers as well as the underlying programming models which enable these features. This course examines the full range of programming models and language paradigms, starting from imperative, functional, and logic programming to the latest object-oriented programming languages. Offered Fall and Spring semester, annually.

CISC 333 - Defensive Programming

(3 semester hours)
Prerequisites: C or higher in CISC 233
Description: This course will look at principles, methodologies, tools, and best practices in defensive programming, or programming with the goal of minimizing errors and creating reliable and secure software. The student will understand when and where to apply defensive programming principles, as well as learning how to determine if defensive programming is unnecessary. Software engineering principles which are designed to communicate design goals or software requirements (such as design by contract) are emphasized as a methodology of minimizing bugs and miscommunication. Programming constructs, such as exceptions and exception handling, as well as object-oriented design principles are re-examined within the context of how they can eliminate confusion and make software debugging easier. Testing principles and approaches will be explored as means to squash bugs before software is released. These concepts are situated such that they are designed to be immediately practical to the student in a real-world development setting. Offered Spring semester, annually.

CISC 340 - Introduction to Artificial Intelligence

(4 semester hours)
Prerequisites: MATH 310 and C or higher in CISC 233
Description: This course serves as a survey of topics within the broad subject area of artificial intelligence (AI) and is used to establish a foundation for further courses in the subject area. Topics include the historical and cultural foundations of artificial intelligence, theoretical questions which form the basis for study, and approaches to view AI as a form of intelligent searching. There is also special attention given to the fundamental differences in theory and application of a more traditional symbolic approach to AI as well as an introduction to more contemporary methodologies within machine learning. The student will be expected to do independent research on a topic of their choice within the field and present that research to the class at the end of the semester. Offered Spring semester, annually.

CISC 349 - Smartphone Programming

(3 semester hours)
Prerequisites: CISC 225 and C or higher in CISC 233
Description: This course introduces the student to mobile computing and mobile application design process. This includes designing, implementing, testing, debugging, and publishing smartphone applications with an emphasis on the Android mobile operating system. Mobile computing will be discussed from three perspectives: mobile technology, mobile networking, and mobile security. As a major deliverable of the course, the student will complete an application development project with the goal of releasing the application on the Android marketplace. Offered Spring semester, annually.

CISC 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested, and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guide the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

CISC 380 - Special Topics in Computer Science

(1 to 4 semester hours)
Prerequisites: 60 credit hours completed and consent of the instructor and academic advisor
Description: This course covers emerging topics in Computer and Information Science. It is an in-depth study of a selected specialized area of Computer and Information Science and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered Fall semester, annually.

CISC 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours and one of the following, C or higher in CISC 120 or C or higher in CISC 140
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

CISC 397 - Principle of Software Engineering and System Analysis

(3 semester hours)
Prerequisites: CISC 225 and CISC 301
Description: This course develops specific programming designs and specifications and the formal methods used. It is particularly important that the student place a great deal of emphasis in understanding the different design models and the sections covering requirements analysis and system specification. Developing a complete set of requirements and specifications is one of the more difficult and critical tasks in software engineering. During the course, the student is involved with a real problem solving/software development situation. The student is required to gather functional requirements, identify the problem, form a solution and present this solution to a prospective customer. Offered Fall semester, annually.

CISC 399 - Formal Languages and Automata Theory

(3 semester hours)
Prerequisites: MATH 310 and C or higher in CISC 233
Description: This course presents a study of formal languages and the correspondence between language classes and the automata that recognize them. Formal definitions of grammars and acceptors, deterministic and non-deterministic systems, grammar ambiguity, finite state and push-down automata, and normal forms will be discussed. Offered Fall and Spring semester, annually.

CISC 400 - Computer Graphics

(3 semester hours)
Prerequisites: CISC 301 and MATH 250
Description: This course covers the fundamental techniques behind image manipulation and 3D graphics. It begins by building a mathematical model of the interaction of light with surfaces, lenses, and an imager. The student then studies the data structures and processor architectures that allow for efficiently evaluating that physical model. The student completes a series of programming assignments using various tools and technologies discussed in class for both photorealistic image creation and real-time 3D rendering. These assignments culminate in a multi-week final project. Topics covered in the course may include projective geometry, ray tracing, bidirectional surface scattering functions, binary space partition trees, matting and compositing, shadow maps, cache management, and parallel processing of GPUs. Offered Fall semester, annually.

CISC 411 - Elements of Computing Systems

(3 semester hours)
Prerequisites: CISC 301 and CISC 399
Description: This course covers the integration process of key notions from algorithms, computer architecture, operating systems, compilers, and software engineering in one unified framework. This is done constructively, by building a general-purpose computer system from the ground up. In that process, ideas and techniques used in the design of modern hardware and software systems are explored and discussed. This course provides in-depth overview of computer systems: sources of complexity and design principles, modularity, abstraction, layering, hierarchy, memory management, interpreters, and compilers along with operating systems design and management. Offered Fall semester, annually.

CISC 431 - Natural Language Processing

(3 semester hours)
Prerequisites: CISC 399
Description: This course introduces the fundamental concepts and ideas in natural language processing (NLP), otherwise known as computational linguistics. It develops an in-depth understanding of both algorithms for processing linguistic information and the underlying computational properties of natural languages. Word-level, syntactic, and semantic processing from both a linguistic and an algorithmic perspective are covered, aiming to get current with present research in the area. The course focuses on modern quantitative techniques in NLP using large corpora, statistical models for acquisition, disambiguation, and parsing and the construction of representative systems. Offered Spring semester, annually.

CISC 432 - Statistical Pattern Recognition

(3 semester hours)
Prerequisites: MATH 280 and 60 credit hours completed
Description: Many emerging applications, such as indexing, security, forensics, and information discovery, involve the use of novel ideas and effective techniques in teaching computers to recognize patterns in various signals and data, ranging from documents, images, audio, and other sensory signals. This course includes the introduction to basic theories, algorithms, and practical solutions of statistical pattern recognition. Topics covered include feature extraction, feature selection, Bayesian classifiers, neural networks, discriminative classifiers, clustering, performance evaluation, and fusion of models. The student gets some hands-on experience in the design, implementation and evaluation of pattern recognition algorithms by applying them to real-world problems. Offered Fall semester, annually.

CISC 435 - Machine Learning Fundamentals

(3 semester hours)
Prerequisites: CISC 340 and MATH 250
Description: This course provides a broad introduction to machine learning, statistical pattern recognition, and deep learning. The student gains practical knowledge and skills of machine learning algorithms by tackling real-world problems via programming projects. The lectures will cover linear models, kernel machines, mixture models, neural networks, and deep learning. Offered Fall semester, annually.

CISC 460 - Database Management System

(3 semester hours)
Prerequisites: CISC 225 and MATH 310
Description: This course introduces the management of database systems, with strong emphasis on understand the fundamentals of a Relational Database Management Systems (RDBMS). Central topics include data modeling and normalization, database architecting, and database creation using SQL as both the data definition and data manipulation language. Through these concepts, the student will design and implement a full database system, including all tables, views, triggers, functions, and procedures necessary for use at deployment. This course also introduces some advanced topics within field of database management such as physical database implementation, index creation, distributed databases, NoSQL systems, and big data. Offered Fall semester, annually.

CISC 481 - Special Topics in Computer Science

(1 to 4 semester hours)
Prerequisites: 60 credit hours completed or assigned based on specified topic
Description: This course covers emerging topics in Computer and Information Science. It is an in-depth study of a selected specialized area of Computer and Information Science and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

CISC 491 - Software Development Processes and Quality

(3 semester hours)
Prerequisites: CISC 397
Description: This course provides the student with a project-oriented practice in software engineering by covering popular process models and the steps associated with these models. Topics covered in this course include software principles, software processes, software design, software project management, and software evolution knowledge units, etc. The student is expected to learn this course through practical programming exercises and software development in a "learning-by-doing" manner, i.e., the student works in teams to develop a significant medium-sized software system using practices covered and recommended in this course. After successful completion of this course, the student is expected to be well-prepared to develop software systems in a collaborative environment or to continue graduate study in related fields. Offered Spring semester, annually.

CISC 495 - Applied Practice

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of the Office of Experiential Programs, and designation of an appropriate academic advisor
Description: This course offers the student the opportunity to reflect upon previous experiences and build on current experience to enhance professional and career development. The student is expected to transfer theory into extended application and practice. The student will reflect and apply the HU core competencies towards their previous experience, current experience and academic programs in preparation for their future career. The Applied Practice assists the student in the completion of their ePortfolio. It is an alternative to 365 Internship; the student needs to complete one or the other. Limited to the student enrolled in an HU Online Program. Offered as needed.

CISC 498 - Project II

(3 semester hours)
Prerequisites: CISC 298, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor
Description: This project must be in the student's program of study or concentration(s). It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

CISC 499 - Industry Software Ethics

(3 semester hours)
Prerequisites: Senior Status
Description: Ethical obligations have both a professional and a personal dimension. Each are essential to consider; without a sense of personal ethics, one would be indifferent to their effect on the lives of others in circumstances where one's professional code is silent. So personal ethics helps us to be sure that we take full responsibility for our moral choices and their consequences. This course teaches the student how to gain knowledge and understanding of a number of aspects of this claim, including: the types of harms the public can suffer as result of this work; how software engineers contribute to the food life for others; who exactly are the "public" to whom the engineer is obligated; why the software engineer is obligated to protect the public; what other ethical obligations software engineers are under; how software engineers can actually live up to ethical standards; what is the end goal of an ethical life in software engineering; what are the professional codes of software engineering ethics. Cross-listed with GEND 465. Offered Spring semester, annually.

CYOM 105 - Introduction to Cybersecurity

(3 semester hours)
Prerequisites: None
Description: This course provides students with basic concepts of cybersecurity fundamentals. Students receive a basic awareness of threats to information systems, vulnerabilities inherent to modern architectures and the options available to mitigate threats within a system.

CYOM 130 - Cybersecurity Ethics and Policy

(3 semester hours)
Prerequisites: CYOM 105
Description: This course provides students with an understanding of information security policy and how to apply industry and government best practice rules and guidelines. Students begin to create, implement, and institutionalize organization policies that ensure legal, ethical, privacy and compliance standards which are supported. The course compares and contrasts the role of government versus commercial security, to include funding, culture, stakeholders, and classified information protections.

CYOM 215 - Critical Thinking, Reasoning and Analysis in Cybersecurity

(3 semester hours)
Prerequisites: CYOM 130
Description: Relating to people, process and technology this course provides students the methods to think through and solve complex global cybersecurity problems. Students are introduced to specific methodologies regarding systems engineering and processes, such as Shewhart cycle, OODA loop, and RPR diagnosis as they apply to networks and cybersecurity.

CYOM 230 - Cyber Defense

(3 semester hours)
Prerequisites: CYOM 130
Description: This course provides students with a basic awareness of the options available to understand and mitigate threats within a system. It demonstrates the methodologies used by threat actors to exploit systems and how cybersecurity professionals can architect more secure systems that support business imperatives, while mitigating cyber risks. An overview of applications, networks, mobile devices, wireless security, and tool categories such as firewall, SIEM, and vulnerability management tools are discussed.

CYOM 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

CYOM 320 - Computer Forensics

(3 semester hours)
Prerequisites: C or higher in CISC 211 and C or higher in CISC 233
Description: This course provides the student with a unique hands-on experience in digital forensics using case studies. Emphasis is placed on computer incident responses and security risk assessments. Technical and legal issues regarding computer evidence are also covered, including the collection, analysis, and reporting of digital evidence to aid in the investigation. Computer evidence preservation is stressed using cross-validation of forensic tools and the documentation of computer evidence findings. Computer evidence processing methodologies and practices are also reviewed to combat legal challenges against the admissibility of computer-related evidence.

CYOM 322 - Fundamental Security Design Principles

(3 semester hours)
Prerequisites: CYOM 130
Description: This course provides students with a basic awareness for building defense in depth architectures and security controls into an organization's technology processes, workforce considerations and network architectures. As part of this course, students gain a preliminary understanding of cryptography and concepts such as authentication.

CYOM 340 - Cybersecurity Systems Administration

(3 semester hours)
Prerequisites: CYOM 130
Description: This course provides students with foundational knowledge in secure networking concepts, technology, and administration. Network security is an essential requirement in building a secure resilient infrastructure. Students explore technical and administrative components of secure networks, how to apply secure design principles to configure network resources (routers, switches, firewalls, IPSes) and how to securely administer the network. Threats to network security are examined and security controls are designed to appropriately mitigate risks. Network and system administration policies and procedures are examined.

CYOM 345 - Cybersecurity Planning, Management and Policy Development

(3 semester hours)
Prerequisites: None
Description: This course provides students with the ability to develop policies, plans and processes necessary to implement and measure an effective, risk-based cybersecurity program. Students synthesize current delivery practices and methodologies for measurable results within the cybersecurity program. Students in the management and leadership concentration complete this course.

CYOM 350 - Managing Cybersecurity Operations

(3 semester hours)
Prerequisites: Completion of Core Courses
Description: This course provides students with the knowledge and skills to manage a cybersecurity operations center (SOC). Processes, techniques and skills to architect and monitor technology systems, identify risks and potential attacks against these systems are discussed. Students examine current cybersecurity tools and approaches for designing, implementing and maintaining a security architecture. Complex interdependencies are also explored, such as cloud computing, mobile devices and practices to address these scenarios are demonstrated.

CYOM 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, and permission of Office of Experiential Programs and the Online Bachelor's Degree Program designation.
Description: An internship allows the student to put theory into practice. The student applies course experiences to the workplace at an off-site placement, where ideas are tested, and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs and the Online Bachelor's Degree Programs, and a site supervisor who guide the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship and represents the evolutionary and dynamic nature of the learning process.

CYOM 370 - Ethical Hacking

(3 semester hours)
Prerequisites: ISIT 330 and CISC 333
Description: Teaching the student how to identify security flaws of a computing system ethically is a legitimate means of identifying a company's network weaknesses and can be an effective component of computer security. This course introduces the student to the role of an ethical hacker and the essential hacking technologies required. The different phases involved in hacking are exploited. The student is introduced to the techniques of penetration testing, intrusion testing, and "red-teaming." The student also reviews of the legal considerations for working as an ethical hacker.

CYOM 410 - Cloud Cybersecurity and Governance

(3 semester hours)
Prerequisites: CYOM 130
Description: This course provides the student with the design fundamentals of the compliance and management governing of the deployment of cloud services. The technologies and services that enable cloud computing, different types of cloud computing models and the security and legal issues associated with cloud computing are covered.

CYOM 430 - Principles of Secure Database Design

(3 semester hours)
Prerequisites: CYOM 105
Description: This course teaches the student how database systems are used, managed, and issues associated with protecting the associated data assets. The course will describe the purposes and functionality of database systems, database design techniques, data access methods, and the challenges and opportunities associated with Big Data. The student will practice configuring database objects, writing SQL commands, and designing tables within a database management system. The student will be introduced to common careers associated with database systems.

CYOM 445 - Cyber Risk Analysis and Management

(3 semester hours)
Prerequisites: Completion of Core Courses
Description: This course provides the student with an understanding of risk assessment models, methodologies, and processes. The student is shown how to perform a mission-focused data risk assessment. The results are presented as strategic and tactical recommendations to senior leaders on how to best mitigate risks to the organization's data.

CYOM 448 - Emerging Technologies

(3 semester hours)
Prerequisites: Completion of Core Courses
Description: This course provides students with an awareness of the new and existing cyber threat technologies to understand and mitigate risks to a system. Demonstrates the methodologies used by threat actors to exploit systems and how cybersecurity professionals can architect more secure systems that support business imperatives, while mitigating cyber risks. An overview of applications, networks, mobile devices, wireless security, and tool categories such as firewall, SIEM, and vulnerability management tools are discussed.

CYOM 450 - Risk Identification by Penetration Testing

(3 semester hours)
Prerequisites: Completion of Core Courses
Description: This course provides students with an understanding of risk assessment models, methodologies, and processes. The student is taught how to perform a mission-focused data risk assessment. The results are presented as strategic and tactical recommendations to senior leaders on how to best mitigate risks to the organization's data.

CYOM 455 - Advanced Cloud Cybersecurity and Governance

(3 semester hours)
Prerequisites: Completion of Core Courses
Description: This course builds on the Cloud Cybersecurity and Governance course to apply advanced cloud cybersecurity governance, design concepts, and models. Students develop a cloud solution for a mock business. The objective is to implement a cloud solution, with a cloud service provider, to reduce operating costs, and support business growth objectives. The students apply architectural design tradeoffs, cloud security standards, write cloud contracts, and apply information assurance best practices for their cloud solution. Students present their cloud solution to the class and then conducts an asynchronous Q & A session with the other students.

CYOM 458 - Cybersecurity Program and Project Management

(3 semester hours)
Prerequisites: Completion of Core Courses
Description: This course provides students with the skills to develop an organization-wide cybersecurity program. The student is taught best practice methodologies for managing programs and projects and how to best communicate

program objectives, measures and investment needs to senior leadership. The student in the Management and Leadership concentration must complete this course.

CYOM 460 - Cyber Investigations and Legal Awareness

(3 semester hours)
Prerequisites: Completion of Core Courses
Description: This course provides students with the concepts of cybersecurity legal framework and investigations. The student receives an awareness of the legal duties of an organization and individuals as well as the types of investigations needed to support these duties, nationally and internationally.

CYOM 480 - System Security Engineering

(3 semester hours)
Prerequisites: Completion of Core Courses
Description: This course provides students with an understanding of the skills necessary to participate in the development of large scale IT systems. The student demonstrates the techniques, methods, and issues involved across the entire IT systems' life-cycle, from requirements identification and analysis, through various levels of design, implementation, testing and operation/maintenance. A course project allows students to use course concepts to further understand how System Security Engineering is used in organizations.

CYOM 498 - Project II

(3 semester hours)
Prerequisites: CYOM 298, an approved learning contract, permission of the Office of Experiential Programs and the Online Bachelor's Degree Program
Description: This project must be in the student's program of study or concentration(s). It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship.

CYOM 499 - Applied Practice

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of the Office of Experiential Programs, and designation of an appropriate academic advisor
Description: This course offers the student the opportunity to reflect upon previous experiences and build on current experience to enhance professional and career development. The student is expected to transfer theory into extended application and practice. The student will reflect and apply the HU core competencies towards their previous experience, current experience and academic programs in preparation for their future career. The Applied Practice assists the student in the completion of their ePortfolio. It is an alternative to 365 Internship; the student needs to complete one or the other. Limited to the student enrolled in an HU Online Program.

ENGR 106 - Special Topics in Engineering

(1 to 4 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in Engineering. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

ENGR 110 - Introduction to Engineering

(3 semester hours)
Prerequisites: None
Description: The student interested in entering engineering, applied science, and mathematics course of study and career will gain insight into the fundamentals and nuances associated with the many different engineering disciplines. The course focuses on engineering and other adjacent technological professions to fully inform the student as to the breadth and depth of the industry. The student will learn fundamental concepts unique to each field from math and science principles the student already knows. The student will have the opportunity to engage with practitioners and experts in the various fields and research how these many different STEM fields apply to our lives at scale, including specific ethical and civic responsibilities. Topics covered include an overview of the engineering profession, engineering design process, communication skills, ethics, fundamental concepts (such as dimensions, units, and properties of materials), computational tools, graphical communication, elementary statistics, and engineering economics. Offered Fall semester, annually.

ENGR 220 - Chemical Principles for Engineering Lecture

(3 semester hours)
Prerequisites: MATH 220
Corequisite: ENGR 221
Description: This course provides an introduction to fundamental concepts in chemical engineering, including thermodynamics, kinetics, equilibrium, structure and reactivity of organic molecules, mass and energy balance, and analysis of materials. Problem-solving tools include dimensional analysis, mathematical modeling, and engineering design examples. Three hours of lecture, three hours of laboratory per week. Offered Spring semester annually, or as needed.

ENGR 221 - Chemical Principles of Engineering Laboratory

(1 semester hour)
Prerequisites: MATH 220
Corequisite: ENGR 220
Description: This course is the lab component to the lecture course that provides an introduction to fundamental concepts in chemical engineering, including thermodynamics, kinetics, equilibrium, structure and reactivity of organic molecules, mass and energy balance, and analysis of materials. Problem-solving tools include dimensional analysis, mathematical modeling, and engineering design examples. Three hours of lecture, three hours of laboratory per week. Offered Spring semester annually, or as needed.

ENGR 330 - Computational Tools for Engineering

(2 semester hours)
Prerequisites: CISC 120
Description: This course teaches the essential MATLAB and LabView concepts for improving project-based learning by implementing computational tools in engineering problem-solving simulations. The student gains knowledge of computer-based problem-solving methods used in science and engineering fields. The student also practices the concepts taught by applying arrays, variables, conditional statements, loops, functions, and plots required to outline, test, and debug programs. The student can use MATLAB and LabView and the acquired skills in future coursework and scientific projects in a simulated environment. Offered Fall semester, annually.

ENGR 345 - Introduction to Engineering Design Lecture

(3 semester hours)
Prerequisites: ADMA 240 and PHYS 121-PHYS 122 or PHYS 331-PHYS 332
Corequisite: ENGR 346
Description: The student explores the engineering-design process using appropriate computer-based modeling software through hands-on team projects. The student will use knowledge of CAD software and previous mechanical proficiency

from the introductory physics course to help design and build a final working prototype. Weekly design reports featuring planning, budgeting, and testing engineering products help solve engineering problems and enhance project skills. This course provides significant components of competitive engineering programs and key-required written and presentation skills. The student also completes a required separate one-credit lab course. Three hours of lecture, three hours of laboratory per week. Offered Spring semester annually, or as needed.

ENGR 346 - Engineering Design Laboratory

(1 semester hour)
Prerequisites: ADMA 240 and PHYS 121-PHYS 122 or PHYS 331-PHYS 332
Corequisite: ENGR 345
Description: The student expands design-process skills gained through the co-requisite course ENGR 345 for completing weekly design-laboratory experiments using CAD and 3D printing features. The student will also employ basic erector kits, including bridges, simple machines, and other mechanical structures. The student uses data loggers to load cells and measure the tension and compression forces within the systems. This course provides the necessary hands-on experience to complete undergraduate experiential learning projects and gain skills required by an engineering, problem-solving work environment. Three hours of lecture, three hours of laboratory per week. Offered Spring semester annually, or as needed.

ENGR 351 - Engineering Mechanics: Statics

(3 semester hours)
Prerequisites: PHYS 331 and PHYS 332
Description: The subject of statics develops methods of identifying and analyzing the forces and torques acting on physical systems that are at rest (equilibrium). Topics will include identification of basic forces acting on a system, drawing free body diagrams, and application of Newton's Second Law, vector algebra, work, energy, and mometum to systems of isolated particles and rigid bodies to derive the stresses on the system. Offered as needed.

ENGR 352 - Engineering Mechanics: Dynamics

(3 semester hours)
Prerequisites: ENGR 351
Description: The subject of dynamics develops methods of identifying and analyzing physical systems in which the net forces and moments are not zero. Topics will include Rectillinear and Curvilinear kinematics, Newton's equations of motion in rectangular and cylindrical coordinate systems, The Principle of Work and Energy, Conservative Forces, Impulse and Momentum, Moments of Interia, Three dimensional kinetics of rigid body, and Angular momentum. Offered as needed.

ENGR 380 - Special Topics in Engineering

(1 to 4 semester hours)
Prerequisites: Minimum of 60 semester hours earned or permission of the instructor
Description: This course covers topics in engineering. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

EAMS 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and

analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

EAMS 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guides the learning process. The student integrates the collective observations, analyses, and reflections of the experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

EAMS 498 - Project II

(3 semester hours)
Prerequisites: EAMS 298, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor
Description: This project must be in the student's program of study or concentration(s). It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

ENGL 005 - College Composition Recitation

(0 semester hour)
Prerequisites: Placement by assessment
Corequisite: ENGL 105
Description: This course is offered as a companion to ENGL 105 for the student that requires improvement of college-level composition skills and serves as an opportunity to develop the foundations necessary to succeed in subsequent courses. Offered Each semester, annually.

ENGL 050 - Basic English

(3 semester hours)
Prerequisites: None
Description: This course develops the foundation composition skills necessary to succeed in required composition courses. Credits do not count towards graduation requirements Offered as needed.

ENGL 105 - College Composition

(3 semester hours)
Prerequisites: Placement by assessment
Description: This first-year composition course is an introduction to college-level writing strategies. By reading various

writing styles and genres, the student will contemplate how purpose and audience guide the writing process. Writing assignments are to be completed according to a deadline with a goal of improving style, grammar, and diction. Offered Each semester, annually.

ENGL 106 - Academic Writing and Critical Thinking

(3 semester hours)
Prerequisites: Placement by assessment
Description: This course introduces the student to academic writing expectations and techniques for reading critically, researching effectively, and writing persuasively. The student is shown how to use critical thinking as a tool for composition development. Writing assignments are to be completed according to a deadline with a goal of improving expanded thought and technical writing. Offered Fall semester, annually.

ENGL 200 - Advanced Composition and Technical Writing

(3 semester hours)
Prerequisites: COMM 110, and ENGL 105 or ENGL 106, and GEND 102
Description: This course introduces the student to technical communication and prepares the student for designing and producing technical documents. Practice strategies are used for effective professional and technical writing to produce documents in various formats with attention to clarity and design. Offered Each semester, annually.

ENGL 300 - English Language Literature

(3 semester hours)
Prerequisites: ENGL 200
Description: This course covers original literature written in the English language. The student studies the exemplary works of literary genres, the author(s), elements of the genre, and the historical context within which the genres developed, in order to understand the connection between the works in a genre and that the history of people leads to such a body of work. Offered Spring and Summer semester, annually.

ENGL 305 - The Art of the Narrative

(3 semester hours)
Prerequisites: ENGL 105 or ENGL 106 and GEND 102
Description: In this course the student will study the structure of narrative by exploring how stories take shape in the five art forms of poetry, fiction, non-fiction, drama, and film. The student examines the unique elements of each of these forms of art and also how the art forms borrow elements from each other. The course also explores how the structure of a narrative both creates and enhances the narrative's meaning. This exploration includes viewing narratives from five literary perspectives: formalist, historical, psychological, archetypal/mythological, and reader-response. Coursework will include creative as well as analytical writing. Offered as needed.

ENGL 310 - Creative Writing

(3 semester hours)
Prerequisites: ENGL 105 or ENGL 106
Description: This course explores the multi-genres of creative writing including poetry, creative nonfiction and fiction. The student will study a diverse range of texts and will be asked to complete writing assignments from each genre with a focus on craft, creativity, and voice. The student will choose from their constructed poems, short stories, and nonfiction essays to compile a final creative writing portfolio and will participate in a final reading of their work. Cross-listed with GEND 310. Offered Fall semester, annually.

ENGL 380 - Special Topics

(1 to 4 semester hours)
Prerequisites: Placement by assessment
Description: This course covers topics related to composition, literature or language arts. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

ENTE 100 - Live Entertainment: Backstage Pass

(1 semester hour)
Prerequisites: None
Description: Live Entertainment 1: Backstage Pass introduces the student to the business aspects of the music industry, including marketing and promotion, copyright law, publishing, contracts, licensing, management, concert promotion and production while providing hands-on learning experiences though HU Presents. The student will get a "backstage pass" to specific events throughout their term of study to connect the knowledge obtained in class to true-to-life experiences. Through engagement of these experiential learning opportunities with HU Presents, the student will produce functional assets common in the entertainment industry, such as one-sheets and press releases.

ENTE 101 - Audio Engineering: Pro Tools 1

(3 semester hours)
Prerequisites: None
Description: Audio Engineering Pro Tools 1 introduces the student to the digital audio workstation, Pro Tools and develops fundamental skills necessary for any music producer, engineer, or audio specialist from initial setup to final mixdown. The student also learns to build sessions that include multi-track recordings of live audio, MIDI sequences and virtual instruments. Hands-on exercises and projects introduce essential techniques for creating sessions, recording and importing audio and MIDI, editing session media, navigating sessions and arranging media on tracks, and using basic processing and mixing techniques to finalize a production.

ENTE 102 - Video Editing: Media Composer 1

(3 semester hours)
Prerequisites: None
Description: Video Editing: Media Composer 1 is the first step in achieving confidence, creativity, and efficiency with Avid Media Composer, the non-linear film/video editing application used in most movie and television productions. Together with the second course in the series, ENTE 202 - Video Editing: Media Composer 2 , this course provides the foundational training required to achieve the credential of Avid Certified User: Media Composer. Video Editing: Media Composer 1 is an introductory course designed to get a new user up-and-running on the software. In this course, the student develops an understanding of the video editing process and the basic skills to edit a video project from start to finish. This includes understanding the relationship between media and project files, media storage location, the abilities to create the project file; bring in the source video and audio files; edit the sequence, add titles, music, and basic effects, and then export the finished sequence.

ENTE 201 - Audio Engineering: Pro Tools 2

(3 semester hours)
Prerequisites: ENTE 101
Description: Audio Engineering Pro Tools 2 expands upon the basic principles taught in the ENTE 101 - Audio Engineering: Pro Tools 1 course and introduces the core concepts and techniques the student needs to competently operate a Pro Tools system running mid-sized sessions. The student learns to build sessions designed for commercial purposes and improve the results of their recording, editing, and mixing efforts. The hands-on exercises provide experience setting up sessions, importing media, working with digital video, spotting sound effects, using loop recording and MIDI Merge techniques, working with virtual instruments, warping with Elastic Audio, applying Real-

Time Properties, creating clip loops, applying signal processing, using automation, and using submixes and track groups to simplify a final mix.

ENTE 202 - Video Editing: Media Composer 2

(3 semester hours)
Prerequisites: ENTE 102
Description: Video Editing: Media Composer 2 is for students and video editors who have a rudimentary knowledge of editing in Media Composer, and are ready to broaden their foundational skills to take their editing to the next level. This course is designed to teach the student the technical and organizational skills of an assistant editor and develop their editorial skills with the tools and techniques required to produce a well-edited video. From using dynamic trim techniques to shape the actor's performances in a dramatic scene, to quickly assembling a news package to meet deadline, this course empowers novice users to take their Media Composer skills to the next level. Class projects and exercises are hands-on, giving the student the opportunity to work on a scripted short film and a promotional video. This course provides a foundation in Media Composer video effects capabilities and in conjunction with the ENTE 102 - Video Editing: Media Composer 1 course, will prepare you to earn the credential of Avid Certified User: Media Composer.

ENTE 230 - Pro Tools for Game Audio

(3 semester hours)
Prerequisites: ENTE 101 (*ENTE 201 is recommended*)
Description: The Pro Tools for Game Audio course provides the student with exposure to the core skills, workflow, and concepts involved in creating and implementing game audio using Pro Tools systems. It covers basic sound design techniques along with example workflows. Session time is divided between demonstration and hands-on practice, with ample time to experiment with sample material.

ENTE 380 - Special Topics in Entertainment Technology

(1 to 4 semester hours)
Prerequisites: None
Description: This course covers emerging topics in Entertainment Technology. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

ENVS 100 - Environmental Studies Seminar

(1 semester hour)
Prerequisites: None
Description: This introductory seminar class serves to orient the student with both the Environmental Science and Sustainability program offerings as well as possible career paths accessible to the student graduating with a degree in Environmental Science and Sustainability. Additionally, this course will highlight the importance of communication, teamwork, collaboration, and civic engagement in promoting environmental stewardship. Offered Fall semester, annually.

ENVS 101 - Introduction to Environmental Science

(4 semester hours)
Prerequisites: None
Description: Environmental science is the study of natural ecosystems, human impacts on the environment, and sustainable management of the Earth's resources. Processes of the physical and biological environment are used as a basis for consideration of current environmental topics. Other areas covered include: energy consumption and global

warming, water and air pollution, waste management, impacts of deforestation on biodiversity, and other environmental changes occurring on a global scale. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

ENVS 104 - Our Ocean World

(3 semester hours)
Prerequisites: None
Description: This course investigates the historical, geological, physical, chemical, and biological characteristics of the ocean environment. The basic language of marine science, and its underlying principles, are explored. The student pursues an understanding of the underwater history of the plant and the importance of the sciences, including the scientific method of research. Offered as needed.

ENVS 106 - Special Topics in ENVS

(1 to 4 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in Environmental Sciences. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

ENVS 110 - Introduction to Controlled Environment Agriculture

(1 semester hour)
Prerequisites: None
Description: This course presents an introduction to the environmental and economic benefits of controlled environment agriculture (CEA) as well as the relevant scientific principles as they apply to the CEA field, including the areas of aquaponics, hydroponics, vertical farming, etc. The business and management of running a CEA facility will also be introduced. Offered Spring semester, annually.

ENVS 119 - Drones for Agriculture

(1 semester hour)
Prerequisites: GSTC 107
Description: In the quest for sustainable and efficient farming practices, drones, also known as unmanned aerial vehicles, have emerged as game-changers in modern agriculture. This course will introduce the student to common applications of drones in agriculture, appropriate planning for collecting actionable data, analysis techniques, and communication strategies to aid farmers in making data-driven decisions. Offered as needed.

ENVS 120 - Horticultural Science and Practices

(3 semester hours)
Prerequisites: ENVS 110 or BIOL 102-BIOL 103 or permission of instructor
Description: This course presents scientific knowledge to support the practical application of horticulture to propagate plants; enhance plant growth and development; control the plant growth environment; and manage pests through integrated pest management. Throughout the course, different areas of horticulture will be examined including controlled environment agriculture vs. outdoor growing; hydroponic vs. soil production; and organic vs. conventional agriculture. Offered Fall semester, annually.

ENVS 201 - Introduction to Geology

(3 semester hours)
Prerequisites: ENVS 101

Description: This course is designed to give the student a tour through the planet Earth; from the inside to the outside and from the past to the present. The large-scale structure of the Earth, formation of mountains, explosive processes like volcanoes, earthquakes, and how water, glaciers, and other weather processes can shape the landscape are covered. Offered Fall semester, annually.

ENVS 211 - Introduction to Renewable Energy Systems

(3 semester hours)
Prerequisites: ENVS 101
Description: This course presents: photovoltaics, solar thermal systems, green building, fuel-cells, hydrogen, wind power, waste heat, biofuels, wave power, tidal power, and hydroelectric. Discussions of environment and social policy are integral components of the course. Offered Fall semester, annually.

ENVS 220 - Principles of Hydrology

(4 semester hours)
Prerequisites: ENVS 201
Description: This course covers the hydrologic cycle in great depth and will also examine how humans utilize their water resources. It also delves into the properties of water, physical and chemical, and subsurface flow. Field methods, regional hydrogeology, and subsurface contamination investigations are all covered. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually and as needed.

ENVS 230 - Soils in the Critical Zone

(4 semester hours)
Prerequisites: ENVS 201
Description: This course centers on the overlap of soil science, environmental science, and geology. Our goal is to explain the fundamental principles in soil sciences and introduce the concept of the "Critical Zone," where water, rock, biology, and atmosphere interact as a system. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually and as needed.

ENVS 240 - Recirculating Aquaculture Systems Management

(3 semester hours)
Prerequisites: BIOL 102-BIOL 103 (or taken concurrently), CHEM 151-CHEM 152, and ENVS 110
Description: This course provides the scientific foundation and practical management skills for recirculating aquaculture systems (RAS). Topics include the need for and history of aquaculture, engineering and scientific principles behind basic RAS components, water quality management, basic fish culture methods, and waste management practices to ensure sustainable production. Offered Fall semester, annually.

ENVS 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

ENVS 301 - Global Change: Physical Processes and Human Impact

(3 semester hours)
Prerequisites: ENVS 201
Description: This course examines the physical processes and potential human impact of global climate change. The physical, chemical, and biological cycles contributing to the global environment are covered with the study of the recent explosive growth of the human population and the impacts on land, air, and water resources and on biological diversity produced by human advances in technology and society. Offered Fall semester, even-numbered years.

ENVS 302 - Environmental Regulation and Management

(3 semester hours)
Prerequisites: None
Description: This course covers the fundamental approaches of managing land, air, and water resources for environmental protection and pollution control. The course also covers compliance with environmental laws, regulations, and policies currently in effect. Offered Spring semester, annually.

ENVS 303 - Environmental Impact of Agriculture and Industrial Pollutants

(3 semester hours)
Prerequisites: MATH 300 and BTEC 311
Description: The effects of human activities on the surrounding environment and water supplies are discussed from the perspective of pollutants entering water systems. A rational solution to the water supply problem may become an economic and environmental priority in the next 20 to 30 years. Offered Spring semester, annually and as needed.

ENVS 312 - Energy Transitions

(3 semester hours)
Prerequisites: ENVS 211, and ENVS 100 or ENVS 101, and ENGL 200 or COMM 110
Description: Affordable, abundant and reliable energy is fundamental to human well-being and prosperity. The development, expansion, and, most importantly, the transition of energy infrastructure are vital for maintaining secure and reliable energy systems. This course delves into the critical aspects of energy transitions, including the historic exploration and development of fossil fuel-based energy systems such as coal and oil, the proliferation and expansion of nuclear energy, and the current adoption of renewable energy and hydrogen technologies. Transition processes are examined through social, economic, political, technological, and environmental perspectives. Lessons from past energy transitions will be considered in the context of the current, profound transition away from fossil fuel-based energy to less carbon-intensive and more renewable systems. The student will explore available energy sources and emerging technological solutions to energy and environmental challenges while considering diverse viewpoints on facilitating energy transition and the practical challenges in bringing about change on a global scale. Finally, the student in this course will bring all these issues together to examine how the energy transition process is progressing on a specific technology/energy source and what we must do to create pathways to achieve transition goals. Offered Fall semester, annually.

ENVS 318 - Environmental Education and Interpretation

(3 semester hours)
Prerequisites: ENVS 101
Description: Environmental education is a dynamic process designed to foster environmental literacy, awareness, and action among individuals, communities, and organizations. Interpretation is a purposeful approach to communication that deepens understanding and inspires engagement with the world around us. This course examines the history, principles, and goals of environmental education and interpretation, and explores the hands-on application of

environmental education and interpretive strategies in formal and non-formal settings, as well as written and spoken formats. Offered as needed.

ENVS 320 - Climate Change Communication

(3 semester hours)
Prerequisites: COMM 110, ENGL 200, and ENVS 101
Description: This course offers an interdisciplinary examination of climate change, focusing on education, persuasion, problem-solving, and adaptation to this global challenge. The student engages with climate change through available facts, personal experiences, and diverse worldviews. Initially, climate change scholarship primarily involved one-way dissemination of information from experts to the public. This course empowers the student to assess their understanding, discern facts from controversies, and effectively communicate about climate change, fostering the development of an informed and literate citizen. Offered Spring semester, annually.

ENVS 335 - Sustainability Policy and Practices

(3 semester hours)
Prerequisites: ENVS 100 or ENVS 101, and, COMM 110 or ENGL 200
Description: From environmental, social, political, and economic perspectives, this course explores environmental studies and sustainability. Focus includes the history of the environmental movement, biodiversity and ecology, and climate change science. Examining the impact, resiliency/adaptation, environmental laws and policy, and sustainable manufacturing add to the course. Finally, students explore social sustainability and environmental justice, life cycle analysis, green building, and other related matters. Topics covered include socio-ecological systems, critical theory, sustainable food production, and conservation agriculture. The course also covers energy generation, life cycle analysis of consumer products, and the social and environmental impacts across each life cycle stage. Other topics include circular economy principles, environmental law and policy, environmental justice, greenhouse gas emission accounting, and the implications of climate change. Offered Fall and Spring semester, annually.

ENVS 340 - Aquaponic System Design and Management

(3 semester hours)
Prerequisites: ENVS 120 and ENVS 240
Description: This course builds upon the scientific principles of Horticultural Science and Practices as well as Recirculating Aquaculture Systems Management. The student will learn and apply biology, chemistry, and engineering principles to combine sustainable fish farming and hydroponic crop production into a single integrated farming system (IFS). Topics include the benefits of an IFS, simultaneously managing the specific needs of fish and plants, and managing the mass of nutrients produced through fish farming with the needs of vegetable crops. Offered Spring semester, annually.

ENVS 350 - Ecosystem Management and Restoration

(4 semester hours)
Prerequisites: BIOL 303 and BIOL 304
Description: The student is introduced to ecosystem management through both lecture and field studies, with introductions to impacted, restored, and managed areas. This course investigates ideas and concerns of ecosystems through basic theories to discussions of case studies. Local areas of consideration and concern are visited and assessed using techniques introduced through course materials. The student is expected to be well-versed to argue for or against various corrective actions, depending on different views and interests. Several protection groups and their goals, both inside and outside of government, are discussed. Successful ecosystem restoration requires a balance between site conditions and needs, as well as human impact and use necessities. The course also includes the "human factors" of economics, politics, and tradition in finding working solutions for management. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, even-numbered years.

ENVS 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guide the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

ENVS 380 - Special Topics in Environmental Science

(1 to 4 semester hours)
Prerequisites: Consent of the instructor and academic advisor
Description: This course covers topics in environmental science and renewable energy. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

ENVS 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

ENVS 401 - Environmental Modeling

(3 semester hours)
Prerequisites: ENVS 201 and MATH 220
Description: This course uses environmental models to examine environmental policies. Topics presented are: basic modeling ideas, including the systems modeling approach, model formulation, prediction, and validation. Offered Spring semester, even-numbered years.

ENVS 402 - Field Study of Environmental Pollutants

(3 semester hours)
Prerequisites: ENVS 303, MATH 300 and BTEC 311
Description: The course presents cross-discipline exposure. Topical research, specialist knowledge, and sampling to identify the presence of pharmaceutical or agricultural agents from water locally are practiced. Cataloging, reporting, and presenting findings subject the student to meaningful and extensive exposure to scientific methods, troubleshooting, design, and execution of environmental science- based experiments. Offered Spring semester, annually and as needed.

ENVS 425 - Greenhouse Gas Accounting and Climate Action

(3 semester hours)
Prerequisites: ENVS 320, and ENVS 100 or ENVS 101, and ENGL 200 or COMM 110
Description: Climate change and the associated impacts represent one of the greatest challenges facing modern society. Accounting for the greenhouse gas emissions that a community or organization is responsible for and setting a plan to address them is an important step toward both mitigation and adaptation to the ongoing effects of climate change. This course focuses on training the student to operate as sustainability professionals for local governments, for-profit businesses, and many other types of organizations. The student will learn the Global Protocol for Community-Scale Greenhouse Gas Inventories developed by the Worlds Resources Institute, C40 Cities, and ICLEI Local Governments for Sustainability. This protocol will provide the principles, protocols, and methods needed to complete a greenhouse gas inventory for a community (county, city or other municipality) or organization (NGO, Business, University, etc.). The developed greenhouse gas inventories will be utilized to create a mock climate action plan which addresses the identified emission sources and proposes various measures to meet emission reduction goal targets over time. The student will develop the skills necessary to complete greenhouse gas emissions inventories, develop action plans, and to effectively communicate and present them. Offered Fall semester, annually.

ENVS 498 - Project II

(3 semester hours)
Prerequisites: ENVS 298, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor
Description: This project must be in the student's program of study or concentration(s). It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

ESPT 110 - Competitive Gaming Seminar

(1 semester hour)
Prerequisites: None
Description: In this introductory course the student will explore the esports ecosystem; from its history to a review of current industry trends. The student will receive a broad understanding of various topics of esports through lectures, guest speakers and case studies. Offered Fall semester, annually.

ESPT 120 - Introduction to Esports

(4 semester hours)
Prerequisites: None
Description: This course is an overview of the esports industry. The student will explore financial, legal, ethical, marketing and operational issues surrounding esports. The goal is to gain insight and knowledge in esports as it relates to academic specializations and career opportunities. Offered Spring semester, annually.

ESPT 210 - Contemporary Issues in Esports

(4 semester hours)
Prerequisites: None
Description: The student will use inquiry skills to examine the issues that influence the esports industry. We will explore issues such as the history of esports, the political, social economics implications of a global industry. Further, we will explore the role that socio-cultural issues such as race, ethnicity, class, gender, sexuality, (dis)ability and age play in the understanding and practice of esports. The student will engage in research, discussion and problem solving in order to better understand and assess significant current issues. Offered Fall semester, annually.

ESPT 220 - Social Media Management

(4 semester hours)
Prerequisites: ENGL 200
Description: Social media is changing how business is done around the world in almost every industry. The business world is undergoing fundamental changes in how consumers identify, engage and support brands and connections. This course equips the student with the relevant knowledge, perspectives, and practical skills required for developing marketing strategies that leverage the opportunities inherent in social media and consumer-to-consumer social interactions for achieving business goals. Offered Spring semester, annually.

ESPT 225 - Coaching Principles

(3 semester hours)
Prerequisites: None
Description: This course provides a comprehensive overview of coaching principles, designed to equip the student with the knowledge and skills necessary to effectively lead and develop athletes in a variety of sports. Focusing on both the art and science of coaching, the student will explore foundational theories, techniques, and best practices that are essential for fostering athletic performance and personal growth. Offered as needed.

ESPT 235 - Digital Media in Esport

(3 semester hours)
Prerequisites: None
Description: This course explores the critical role of digital media in the esports industry, focusing on the creation, distribution, and impact of content across various platforms. The student will learn to produce high-quality multimedia content tailored to the unique demands of the esports audience, including video production, live streaming, social media management, and graphic design. The course emphasizes practical skills in using industry-standard tools and software, while also covering strategies for audience engagement, branding, and the ethical considerations of digital media in Esports. By the end of the course, the student will be equipped to craft compelling digital narratives that drive fan engagement and brand loyalty in the competitive world of Esports. Offered as needed.

ESPT 240 - Health and Wellness in Esports

(3 semester hours)
Prerequisites: None
Description: The Health and Wellness in Esports course provides a comprehensive exploration of the essential aspects of overall health and wellness for Esports participants. This course aims to equip the student with the knowledge and strategies needed to maintain optimal health and enhance overall well-being while navigating the demands of competitive gaming. Offered Spring semester, annually.

ESPT 245 - Esports Broadcasting

(3 semester hours)
Prerequisites: None
Description: In this course, the student will learn the fundamentals of various components of esports media such as writing strategies for broadcast, active voice, internet streaming, shooting on location, anchoring, play-by-play, and production of the various forms of esports media. Additionally, the student will examine economic, ethical, gender, and race issues in esports media. This experiential course offers the student an opportunity to apply knowledge and skills to esports production activities on campus. Offered Spring semester, annually.

ESPT 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

ESPT 310 - Live Event Management

(4 semester hours)
Prerequisites: ESPT 210
Description: This course focuses on the essential components needed for planning, building, managing, and closing of live events and projects. The student will gain general knowledge of techniques and strategies used for successful planning, promotion, implementation and evaluation of live events such as concerts, esports competitions and conferences. Offered Fall semester, annually.

ESPT 320 - Esports Field Studies

(3 semester hours)
Prerequisites: ESPT 310 or permission of instructor
Description: This experiential learning course is designed to provide extensive exposure to the roles, responsibilities, and challenges of planning, managing, and producing live events. The student will gain practical experience by taking on production roles at one of several esports events. Course assessments will be based on individual pre-event planning assignments, field notes, and final experiential summary paper and presentation. Offered Spring semester, annually.

ESPT 325 - Esport Coaching and Performance Strategies

(3 semester hours)
Prerequisites: ESPT 225
Description: This course delves into the specialized field of esports coaching and performance, offering students a comprehensive understanding of the strategies and techniques essential for guiding Esports athletes to success. The student will explore key concepts such as team management, player development, and performance optimization within the fast-paced and dynamic world of competitive gaming. The curriculum combines theoretical knowledge with practical applications, equipping the student with the tools to analyze gameplay, implement effective training regimens, and foster a positive team environment. Offered as needed.

ESPT 330 - Live Event Production

(3 semester hours)
Prerequisites: ESPT 210 or IMED 250
Description: Streaming live events is more than pointing a webcam and turning on a laptop. Streaming has expanded the reach of traditional broadcast while also opening the industry to more roles and specialized skillsets. In this course students will plan, design, and produce several live stream events. The student will research current technologies, apply best practices, and reflect upon the process for esports and live event production. Offered Spring semester, annually.

ESPT 335 - Human Performance in Esport

(3 semester hours)
Prerequisites: ESPT 240
Description: Human Performance in Esports is a comprehensive course designed to explore the physical, environmental, and cognitive factors that influence performance in competitive gaming. The student will delve into topics such as performance ergonomics, nutrition, rest and recovery, and the science of skill acquisition to understand how professional gamers maintain peak performance. The course will also cover training methodologies, body kinematics, and the impact of lifestyle choices on long-term success in Esports. Through a blend of theoretical insights and practical applications, the student will learn how to optimize human potential in the rapidly evolving world of competitive gaming. Offered as needed.

ESPT 340 - Revenue Generation In Esports

(3 semester hours)
Prerequisites: None
Description: This course provides the student with a deep understanding of the current marketplace for digital entertainment and electronic sports in preparation for successful careers in the esports and/or digital media industries. With a focus on entrepreneurialism, the student will cover a wide range of business, management and legal issues, including an overview of current business models in esports marketing and management. Topics will include pitching concepts, funding sources, copyright and intellectual property issues, production management techniques, revenue streams, and partnerships for aspiring entrepreneurs. Offered Spring semester, annually.

ESPT 345 - Sponsorship

(3 semester hours)
Prerequisites: None
Description: This course focuses on the dynamic relationship between brands and the rapidly growing esports industry. The student will explore the strategies behind successful sponsorship deals, including market research, audience analysis, and the creation of compelling sponsorship proposals. The course covers key topics such as brand alignment, ROI measurement, and the unique challenges of activating sponsorships in both live and digital esports environments. Through case studies and industry insights,the student will learn how to forge and manage sponsorship relationships that drive value for both brands and esports organizations, preparing the student for careers in this exciting and evolving field. Offered as needed.

ESPT 350 - Psychology of Performance

(4 semester hours)
Prerequisites: None
Description: This course offers an in-depth exploration into the psychological principles and theories that underpin all performance activities. This course is designed for students, professionals, and enthusiasts interested in understanding the mental and emotional aspects of any performance situation, including player behavior, motivation, and the impact of participation on mental health. Offered Fall semester, annually.

ESPT 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guides the learning process. The student integrates the collective observations, analyses, and reflections of the experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique

portfolio is constructed throughout the internship and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

ESPT 380 - Special Topics in Esports Management, Production and Performance

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course covers emerging topics in Esports Management, Production and Performance. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

ESPT 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

ESPT 415 - Fan Engagement Strategies

(4 semester hours)
Prerequisites: ESPT 310 or IMED 340
Description: Events like the Super Bowl, Olympics and World Cup that rally the country around a national team generally drive heavy fan engagement. For regular season play, however, pro teams are increasingly challenged to find new ways to connect or retain fans in an era where in-arena attendance is down. Today, fans have countless ways to watch games, check scores and keep up with teams and players, be it via broadcast television, social media or streaming services. In this course, the student will use this digital shift to explore new opportunity for sports brands to leverage data to boost engagement and revenues. Offered Fall semester, annually.

ESPT 420 - Leadership

(4 semester hours)
Prerequisites: ESPT 350
Description: This course offers a comprehensive review of contemporary issues and perspectives on esports leadership, including current trends and classical leadership theories. The emphasis is on application of concepts in actual leadership settings and situations. Topics include development of leadership theories, personal assessment and development, values and ethics, motivation, power, followership, group dynamics, multiculturalism in leadership, conflict resolution, performance excellence, and the change process. Through a process of readings, self-discovery, group observations, and case studies, the student will identify, observe, analyze, and apply new leadership behaviors. Offered Spring semester, annually.

ESPT 425 - Sport and Performance Administration

(4 semester hours)
Prerequisites: None
Description: This course is designed to provide the student with a deep understanding of the management and organizational skills required to lead in the sports industry. This course covers essential topics such as strategic planning, financial management, scheduling and event coordination, and human resource management, all within the context of sports organizations. The student will explore the intricacies of athlete management, team operations, and

the business aspects of sports, gaining insights into effective leadership, communication, and decision-making. Through case studies and real-world applications, the student will be equipped to navigate the complexities of sport and performance administration in both traditional and emerging sports environments. Offered Spring semester, annually.

ESPT 498 - Project II

(3 semester hours)
Prerequisites: ESPT 298, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor
Description: This project must be in the student's program of study or concentration(s). It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

ESPT 499 - Applied Practice

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of the Office of Experiential Programs, and designation of an appropriate academic advisor
Description: This course offers the student the opportunity to reflect upon previous experiences and build on current experience to enhance professional and career development. The student is expected to transfer theory into extended application and practice. The student will reflect and apply the HU core competencies towards their previous experience, current experience and academic programs in preparation for their future career. The Applied Practice assists the student in the completion of their ePortfolio. It is an alternative to 365 Internship; the student needs to complete one or the other. Limited to the student enrolled in an HU Online Program. Offered as needed.

EXSC 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

EXSC 310 - Fundamentals of Exercise Science

(3 semester hours)
Prerequisites: BS Exercise Science student
Description: Review course that allows the student to demonstrate competent knowledge and skills in the foundational content areas of exercise science. This course covers normal and abnormal functions of major systems, associated fundamental measurements, and knowledge of human movement as it relates to function. Offered Fall semesters, annually.

EXSC 315 - Health and Fitness Assessment

(4 semester hours)
Prerequisites: BS Exercise Science student
Description: This course is designed to develop the knowledge and skills associated with evidence-informed health and fitness assessment techniques for varied populations across their lifespan. The student will obtain the skills to select, implement, and interpret various tests for the four components of physical fitness including cardiorespiratory, muscular, body composition, and flexibility. Offered Summer semester, annually.

EXSC 320 - Facility and Program Management

(2 semester hours)
Prerequisites: BS Exercise Science student
Description: The course is designed to introduce the student to facility and program management for exercise scientists. Topics include facility design, safety, risk management, human resource processes, and financial management strategies. Offered Spring semester, annually.

EXSC 330 - Psychosocial Aspects of Health Behaviors Across the Lifespan I

(3 semester hours)
Prerequisites: BS Exercise Science student
Description: The course is designed as an introduction to developmental psychology, behavioral science, and learning theories. It will consider the role of psychology in fitness and health environments for a variety of populations across the lifespan. Offered Summer semester, annually.

EXSC 340 - Exercise Prescription and Implementation I

(3 semester hours)
Prerequisites: BS Exercise Science student
Description: This course is designed to introduce the student to evidence-informed techniques for prescribing and implementing safe and effective physical fitness programs for a variety of populations across their lifespans. The student will have the knowledge to create programs that address the four components of physical fitness including cardiorespiratory, muscular, body composition, and flexibility. Offered Fall semester, annually.

EXSC 360 - Exercise Physiology

(3 semester hours)
Prerequisites: BS Exercise Science student
Description: This course is designed to examine skeletal muscle structure and function and the immediate and long-term physiological responses and adaptations to exercise of the musculoskeletal, cardiovascular, respiratory, and neuromuscular systems in a variety of populations across their lifespan. Offered Summer semester, annually.

EXSC 375 - Exercise Nutrition

(2 semester hours)
Prerequisites: BS Exercise Science student
Description: Course designed to examine the interrelationship between nutrition, exercise, and well-being. Topics include efficacy of specific dietary regimens including macronutrients, micronutrients, hydration, and supplements. The student will be able to connect exercise and physical activity and nutritional plans for a variety of populations across their lifespan. Offered Summer semester, annually.

EXSC 399 - Professional Practice in Exercise Science

(2 semester hours)
Prerequisites: BS Exercise Science student
Description: The course is designed to introduce the student to professional standards in exercise science. Topics include communication strategies, conflict resolution, team leadership, ethics, customer engagement, and marketing strategies. Offered Spring semester, annually.

EXSC 410 - Certifications in Exercise Science

(2 semester hours)
Prerequisites: BS Exercise Science student
Description: Course designed to ensure student readiness for exercise science related certification examinations. The student will participate in case study modules and develop a patient-client program based on certification criteria and complete a practice exam in preparation for certification. Offered Spring semester, annually.

EXSC 440 - Exercise Prescription and Implementation II

(4 semester hours)
Prerequisites: EXSC 340
Description: This course is designed for the student to develop advanced knowledge and skills of evidence-informed techniques for prescribing and implementing safe and effective physical fitness programs for a variety of populations across their lifespans. The student will have the ability to create, implement, and progress programs that address the four components of physical fitness including cardiorespiratory, muscular, body composition, and flexibility utilizing a variety of methods, equipment, and environments. Offered Spring semester, annually.

EXSC 460 - Psychosocial Aspects of Health Behaviors across the Lifespan II

(2 semester hours)
Prerequisites: EXSC 330
Description: This course builds upon fundamental knowledge from EXSC 330. This course is designed to provide the student with the knowledge of counseling skills necessary to guide clients in changing health behaviors. The student will gain knowledge in health behavior change theory and motivational interviewing techniques to guide clients in prevention and wellness strategies. Offered Fall semester, annually.

EXSC 475 - Biomechanics

(4 semester hours)
Prerequisites: PHYS 121 and PHYS 122
Description: The purpose of EXSC 475 is to introduce the student to concepts of mechanics as they apply to human movement, particularly those pertaining to exercise, sport, and rehabilitation. This course will assist the student in developing the ability to link the structures of the human body with mechanical laws and principles. This course includes a lecture and lab. Offered Spring semester, annually.

EXSC 490 - Comprehensive Review

(2 semester hours)
Prerequisites: EXSC 310, EXSC 315, EXSC 320, EXSC 360, EXSC 375, EXSC 399, EXSC 440, and EXSC 460
Description: Course designed to ensure student readiness for the ACSM-Exercise Physiologist exam, as a program requirement, prior to completing their degree in exercise science. The student will take a practice exam that focuses on ensuring student knowledge in domain-specific areas, after which they are eligible to register for and take the certification exam. Offered Spring semester, annually.

EXSC 498 - Project II

(3 semester hours)
Prerequisites: EXSC 298, an approved learning contract, and permission of the Office of Experiential Programs
Description: This project must be in the student's program of study or concentration(s). It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and/or internship. Offered as needed.

EXPL 100 - Cornerstone

(1 semester hour)
Prerequisites: None
Description: This course meets throughout the semester and offers the mentorship of a faculty member in the transition of a first-year or transfer student. The course focuses on daily life at the University: academic requirements and resources, professional etiquette, student activities, and civic engagement. Offered Fall and Spring semester, annually.

EXPL 106 - Special Topics in Experiential Learning

(1 to 4 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in experiential learning. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

EXPL 200 - Steppingstone

(1 semester hour)
Prerequisites: EXPL 100 or Advanced Standing
Description: This course prepares the student for the subsequent components of experiential learning. It develops the depth and range of academic and professional skills in areas such as goal setting, time management, communication, interviewing, and career planning. The student is shown the value of and processes to plan and obtain mentorships, projects, and internships. This seminar also emphasizes the development of the civic engagement competency, and advances the planning and construction of the student's ePortfolio. At the conclusion of SEMR 200, the student should have a completed proposal for Project I and know how to plan for an Internship. Offered Fall and Spring semester, annually.

EXPL 298 - Project I Registration Prep

(3 semester hours)
Prerequisites: EXPL 200
Description: This temporary course prepares you for contract submissions for 298 that you must complete and submit by the first day of the semester. Upon completion and approval of your contract you will officially be enrolled in 298. You will be automatically dropped from this course if you do not submit your contract by the first day of the semester. Offered as needed.

EXPL 300 - Keystone

(1 semester hour)
Prerequisites: EXPL 200 and a minimum of 40 semester hours earned
Description: This course focuses on the refinement of the student's academic and professional identity. It emphasizes the importance of the University competencies, and the ways to measure, apply, and communicate the successful attainment of them. It further prepares the student for the Internship by reviewing the ways in which an external

experience fits into the program of study. If needed, the student is guided through the process of securing an internship. The student advances through active learning in the areas of civic engagement and teamwork, and further develop presentation skills. This seminar facilitates the successful completion of many subsequent components in the experiential program. Offered Fall and Spring semester, annually.

EXPL 364 - Real World Application

(1 to 6 semester hours)
Prerequisites: EXPL 300, minimum of 75 earned semester hours, permission of the Office of Experiential Learning and Faculty Advisor, and must have a demonstrated reason for this course such as one or all of the following: Internship canceled, proof of application to at least 3-5 internships, or extenuating circumstances preventing completion of an Internship.
Description: This course presents both theory and practical experience in completing an internship, preparing the student to become a young professional. The student will hone their skills in the following areas: leadership, teamwork, global awareness, and civic engagement. The student will implement their theoretical knowledge into completing an assigned group project; just as if they were at an internship site. As part of the commitment to experiential learning all students are required to complete an internship of 135 work hours. Throughout this experience this will be met through assignments, logs, discussions, and team projects. The student must complete all the outlined work, to meet the time and 135 hour requirements. Offered as needed.

EXPL 365 - Internship Registration Prep

(3 semester hours)
Prerequisites: EXPL 200
Description: This temporary course prepares you for contract submissions for 365 that you must complete and submit by the first day of the semester. Upon completion and approval of your contract you will officially be enrolled in 365. You will be automatically dropped from this course if you do not submit your contract by the first day of the semester. Students should begin searching for an Internship at least one semester prior to registration. The Office of Experiential Learning will be able to provide guidance with application materials and interview preparation. Students must secure an Internship site and have it approved by the Office of Experiential Learning before completing the Internship contract.
Offered as needed.

EXPL 380 - Special Topics in Experiential Learning

(1 to 4 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in experiential learning. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

EXPL 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

EXPL 400 - Capstone

(1 semester hour)
Prerequisites: EXPL 300 and Project I (Internship or Project II can be taken concurrently)
Description: The capstone challenges the student to reflect upon and integrate academic, experiential and co-curricular experiences in preparation for the workforce or graduate school. Assignments are designed to create a sense of culmination in the fourth year, and prepare the student for the transition to life beyond the University. The student completes the ePortfolio to demonstrate the achievement of competencies and the program of study; this is of potential utility to employers or graduate schools as unique and specialized evidence of the individual student's abilities. Offered Spring and Summer semester, annually.

EXPL 498 - Project II Registration Prep

(3 semester hours)
Prerequisites: Program Project I (298) Course
Description: This temporary course prepares you for contract submissions for 498 that you must complete and submit by the first day of the semester. Upon completion and approval of your contract you will officially be enrolled in 498. You will be automatically dropped from this course if you do not submit your contract by the first day of the semester. Offered as needed.

EXPL 499 - Applied Practice Registration Prep

(3 semester hours)
Prerequisites: EXPL 200 or permission of instructor
Description: This temporary course prepares you for contract submissions for the Applied Practice that you must complete and submit by the first day of the term. Upon completion and approval of your contract you will officially be enrolled in the Applied Practice course. You will be automatically dropped from this course if you do not submit your contract by the first day of the term. Offered as needed.

SEMR 050 - Academic Skills

(0 semester hour)
Prerequisites: None
Description: This course improves the student's opportunity for success in college-level work by teaching study habits in ten key areas: anxiety, attitude, concentration, information processing, motivation, selecting main ideas, self-testing, study aids, test strategies, and time management. Limited to the student on academic probation or financial aid appeal. Offered as needed.

NPTH 105 - Introduction to Online Advertising

(2 semester hours)
Prerequisites: None
Description: The course addresses the basic and intermediate aspects of online marketing and Google Ads, including the benefits of online advertising, how to set up and manage a Google Ads campaign, and how to measure and optimize a campaign's performance. Search engine optimization is introduced, and search engine advertising fundamentals and formats are also explored as a specific online advertising format that can be included in a Google Ads campaign. Client communication fundamentals are integrated throughout the exploration of technology solutions to emphasize the need to manage online ad campaigns within the context of client relationships. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 110 - Foundations in Information Technology

(2 semester hours)
Prerequisites: None

Description: The course focuses on the basic of computer hardware, software, mobile computing, networking, troubleshooting, and emerging technologies. The student learns about configuring operating systems, file and folder management, networks and network configuration, and the role of the OSI model in networking and troubleshooting. A fundamental understanding of computer hardware, operating systems, computer application software, networking technologies and protocols, web browsers, identifying security risks, troubleshooting errors, and system maintenance is gained. The course also included an exploration of cutting-edge technologies such as cloud computing and virtualization. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 115 - Web Site Statistics and Data Analysis

(3 semester hours)
Prerequisites: None
Description: The course addresses digital analytics best practices, using the Google Analytics platform, using Google Tag Manager for optimizing site analytics and performance, and customizing web site data analysis using Excel. While easy to use for beginners, Google Analytics is also a very powerful tool in the hands of knowledgeable users who can leverage Google Analytics to evaluate and optimize digital activities for their organizations. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 116 - Capturing, Organizing, and Presenting Data

(3 semester hours)
Prerequisites: NPTH 110
Description: This course explores spreadsheets and databases for capturing, organizing, and presenting data for improving decision making. The student will learn the essentials for editing worksheets and workbooks as well as how to visualize data in Microsoft Excel with charts, styles, templates, and PivotTables. The student will also develop the skills for relational database design and learn to create a new database, construct data tables, create reports and analyze queries and statements in SQL server. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 120 - The Fundamentals of Productivity Software

(3 semester hours)
Prerequisites: None
Description: The skills needed to increase productivity with data management, scheduling, and email management in Microsoft Excel and Outlook are developed in this course. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 122 - Software Testing Fundamentals

(2 semester hours)
Prerequisites: NPTH 116
Description: The course focuses on the fundamental concepts of software testing including a common language for efficient and effective communication with other testers and project stakeholders. Established testing concepts, the fundamental test process, test approaches, and principles to support test objectives for both performance and usability are also explored. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 130 - Technical Support for the Modern Enterprise

(3 semester hours)
Prerequisites: None
Description: Confidently handle the most challenging technical support issues across a variety of computer hardware and operating systems. The course covers the essential principles of installing, building, upgrading, repairing, configuring, troubleshooting, optimizing, and preventative maintenance on desktop and laptop computers. Elements of

the customer service and communication skills necessary to work with clients while providing technical support are also explored. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 135 - Processes and Components for Project Success

(2 semester hours)
Prerequisites: NPTH 116
Description: Processes and Components for Project Success is a 4-week course designed to provide the student with the skills needed to be a successful project coordinator in today's rapidly changing environment. The experience in this course will help the student avoid costly mistakes and increase their competitive edge in the project management profession. The student will apply recognized practices of project management and understand a project's life cycle, roles, and skills necessary to effectively initiate, plan, execute, monitor, control and close a project. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 140 - Introduction to Agile Project Management

(2 semester hours)
Prerequisites: NPTH 135
Description: Agile is a project management methodology that promotes continuous iteration of development and testing concurrently throughout the software development lifecycle. This 4-week course defines the core principles of Agile methodology and examines three different methods of Agile. The student learns strategies to effectively organize important Scrum events to build, manage, and refine the project roadmap. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 150 - Cloud Services Administration Fundamentals

(3 semester hours)
Prerequisites: NPTH 110
Description: The student learns to design, implement, and analyze networks by configuring, managing, securing, and maintaining essential network devices. The course also explores cloud computing for sharing services with multiple users and providing administrative control of data storage and applications and how those services are provided with Microsoft Azure. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 205 - Client and Server Technician Fundamentals

(3 semester hours)
Prerequisites: NPTH 110
Description: The course covers the principles of installing, building, upgrading, repairing, configuring, troubleshooting, optimizing, and preventative maintenance on client and server computers. Managing Windows Servers (including virtualization) and storage, along with monitoring and troubleshooting servers is included. Windows network services and applications are also addressed, and elements of customer service and communication skills are explored. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 210 - The Fundamentals of Networks and Security

(3 semester hours)
Prerequisites: NPTH 110
Description: The course combines fundamental networking and security concepts for broad knowledge and skills in network installation, maintenance, and security. Fundamental networking and security concepts are explored, and hands-on experience is applied to Windows Server, Windows-based networking, anti-malware, and firewalls. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 212 - Introduction to Agile Project Management and Software Testing

(3 semester hours)
Prerequisites: NPTH 122
Description: The 6-week Introduction to Agile Project Management and Software Testing course builds a foundation of Agile project management, including the Scrum framework. The student learns strategies to effectively organize important Scrum events to build, manage, and refine the project roadmap. Focusing on the Agile methodology key software testing skills are explored and aligned to the principles of Agile software development as outlined in the Agile Manifesto. The student will apply processes and procedures to assess risks and execute testing to support project development. Limited to students enrolled in NuPaths. Offered as needed.

NPTH 215 - Web Design and Development Fundamentals

(3 semester hours)
Prerequisites: None
Description: The course focuses on key features of Adobe Photoshop CC and the core functions of Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS) within the context of web design and development fundamentals, career paths in web design and development, and web site trends. Students also explore Word Press fundamentals for web site content management. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 217 - Network Installation, Security and Maintenance

(3 semester hours)
Prerequisites: NPTH 110
Description: The course prepares students to securely establish, maintain and troubleshoot the essential networks that businesses rely on by monitoring and optimizing networks to ensure business continuity. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 220 - IT Security Operations

(3 semester hours)
Prerequisites: None
Description: The course addresses the vital fundamentals of security to support the principles of confidentiality, integrity, and availability. Security layers, authentication, authorization, and accounting are explored, along with network security to protect the Server and Client. The student also learns to install and configure systems to secure applications, networks, and devices; perform threat analysis and respond with appropriate mitigation techniques; participate in risk mitigation activities; and operate with an awareness of applicable policies, laws, and regulations. The student prepares to take the Microsoft Technology Associate: Security Fundamentals and the CompTIA Security+ certification exams. Limited to the student enrolled in NuPaths. Offered as needed.

NPTH 230 - Building Web User Interfaces and Interactions

(3 semester hours)
Prerequisites: NPTH 215
Description: The course helps the student develop an understanding of key concepts for web application interfaces and interactions. The student learns how to manage the application life cycle, build the user interface by using HTML5, format the user interface with CSS, and code interactions with JavaScript. Limited to the student enrolled in NuPaths. Offered as needed.

FORS 118 - Drones for Forensics

(1 semester hour)
Prerequisites: GSTC 107
Description: With just-in-time deployment, high resolution sensing capabilities and strategic vantage points, drones have become an indispensable tool for public safety and law enforcement. The forensics applications of drone's course content will focus on key law enforcement activities tied to evidence collection, documentation, reconstruction, and investigation. Offered as needed.

FORS 125 - Forensic Science

(3 semester hours)
Prerequisites: None
Description: Introduction to Forensic Science is a course designed to familiarize the student with the various disciplines associated with forensic science analyses. In this course, the student will learn the fundamental principles of crime scene processing, fingerprinting, bloodstain pattern analysis, drug chemistry, firearms identification, forensic toxicology, forensic biology, and courtroom testimony among other topics. It is designed to instill proper practices for evidence collection and analysis. Introduction to Forensic Science exposes the student to the common misconceptions in crime scene investigations as well as laying a strong foundation on various techniques used to process both a crime scene and collected evidence. This course will fully prepare the student for future coursework involving specific forensic science techniques. This course is comprised of a combination of lectures and hands-on activities and students are encouraged to participate in the class lectures through questions and comments. Offered Fall and Spring semester, annually.

FORS 160 - Introduction to Forensic Computing

(3 semester hours)
Prerequisites: None
Description: Computers are increasingly critical to forensic investigations. This course introduces the student to the basics of computer-stored data and methods of hiding, erasing and recovering data from storage media. It also explores the relationship between computer technology and crime scene investigation. Offered Spring semester, odd-numbered years.

FORS 225 - Legal Procedure

(2 semester hours)
Prerequisites: ENGL 105 or ENGL 106
Description: This course will provide an introduction to legal theory and procedure, legal terms including types of evidence admitted in court, admissibility of expert testimony, and the specialized drafting of an expert report which shall include a review and logical use of the evidence. The student will also experience the art of testifying. Offered Fall semester, annually.

FORS 230 - Quality Assurance and Case Management

(1 semester hour)
Prerequisites: FORS 125
Description: Forensic laboratory accreditation is critical in forensic science. Accreditation standards and recommendations from federal forensic science organizations will be discussed. The student will demonstrate an understanding of quality assurance and quality control procedures that are used within accredited forensic laboratories. Safety procedures, personal protective equipment (PPE), case management, and movement of the evidence through the crime lab will be discussed. Offered Spring semester, annually.

FORS 250 - Forensic Photography

(3 semester hours)
Prerequisites: FORS 270
Description: This course will focus on basic photography skills including different features available on a standard digital single-lens reflex (dSLR) camera and peripheral equipment such as digital flash, tripod and sync cord. The student will complete various activities on the fundamentals of forensic photography including composition, proper lighting, painting with light, scale reference and bounce flash. Photograph documentation of specific types of evidence such as fingerprints, bloodstain pattern, impression evidence and injuries will be discussed. Offered Spring semester, annually.

FORS 270 - Crime Scene Investigation

(3 semester hours)
Prerequisites: FORS 125
Description: This is a fundamental course in forensic death investigations. The areas of specialized focus include the causes, manner, physical circumstances, and mechanisms of both natural and unnatural deaths. Death scenes are examined and investigations reviewed, with evidence pertaining to how people die. In addition, the course looks at the various legal considerations and methods germane to concluding equivocal death determinations. Offered Fall semester, annually.

FORS 298 - Project I

(3 semester hours)
Prerequisites: BIOL 102-BIOL 103, CHEM 151-CHEM 152, FORS 125, an approved learning contract, and permission of the Office of Experiential Programs
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

FORS 315 - Forensic Entomology

(4 semester hours)
Prerequisites: Minimum of 45 earned semester hours
Description: This introductory course in forensic entomology will familiarize the student with the identification, recovery, and analysis of various insects associated with forensic investigations. The student will learn how to identify and understand the life cycles, morphology, and behavior of flies and beetles commonly associated with medicolegal death investigations. General entomology and insect morphology, recovery methods, and evidence collection will be discussed. Additional topics include insect succession, processing and identifications of insects, techniques for the estimation of the postmortem interval, entomotoxicology, patterns of decomposition, and environmental considerations. Offered as needed.

FORS 320 - Forensic Pattern Analysis

(3 semester hours)
Prerequisites: FORS 270
Description: This course will provide the student with an overview of the principles and concepts required for the analysis of pattern evidence through lecture material and laboratory experiences. Methods of analysis for various types of forensic pattern evidence including fingerprints, footwear impressions, tire marks, tool marks, questioned documents, and fired bullets and cartridges will be discussed in addition to the necessary documentation and

interpretation. The student will be able to apply their knowledge by analyzing evidence in laboratory activities and mock cases. Offered Fall semester, annually.

FORS 325 - Forensic Toxicology

(3 semester hours)
Prerequisites: BIOL 102-BIOL 103 and CHEM 151-CHEM 152
Description: This lecture/laboratory-based course will provide the student with an overview of the principles and concepts of forensic toxicology. The student will be exposed to pharmacology before learning the key topics in forensic toxicology. The lectures will introduce the student to various drug classes including central nervous system depressants, stimulants, and psychotics. The student will learn the use and abuse of these drugs along with their effects on the human body. Offered Spring semester, annually.

FORS 330 - Forensic Instrumentation

(3 semester hours)
Prerequisites: BIOL 102-BIOL 103 and CHEM 151-CHEM 152
Description: The student will discuss and complete hands-on activities mocking actual casework. Scientific instrumentation and sample preparation will be discussed for a variety of samples commonly analyzed in forensic chemistry and biology. A specific focus will be on the theory, sample considerations, use of instrumentation, controls and standards, limitations, and documentation. Two hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

FORS 340 - Forensic Biology

(3 semester hours)
Prerequisites: BIOL 102-BIOL 103
Description: This lecture/laboratory-based course will provide the student with an overview of the principles and concepts of forensic biology. The student will be exposed to serology and DNA analysis as it applies to forensic science. The lectures will introduce the student to the basis of biological evidence including both the techniques to identify various biological fluids as well as the methodology required to analyze it. Select activities will be completed to introduce some of the forensic biology lab work that accompanies the material learned in the lectures. Offered Fall semester, annually.

FORS 345 - Drug Chemistry

(3 semester hours)
Prerequisites: CHEM 151-CHEM 152
Description: Drugs, substances, and certain chemicals used to make drugs are classified into categories or schedules depending upon the drug's acceptable medical use and the drug's abuse or dependency potential. This course will explore Controlled Dangerous Substances (CDS) as defined within the Controlled Substance Act (CSA) of the United States. Different CDS classifications will be discussed including their origins, synthesis, pharmacological effects, and chemical structure, and properties. This course will teach hands-on wet chemistry and analytical instrumentation methods. Offered Fall semester, annually.

FORS 350 - Trace Evidence Analysis

(3 semester hours)
Prerequisites: CHEM 151-CHEM 152
Description: The student will utilize microscopy, perform chemical analyses, and interpret analytical data to determine the identity and/or probative value of evidence recovered during the commission of a crime. This course will address a variety of evidence, specific instrumentation, and analytical processes. Topics will include gunshot residue analysis,

fiber, glass and paint comparisons, low explosive identification and polarized light microscopy. Offered Spring semester, annually.

FORS 355 - Crime Scene Management

(3 semester hours)
Prerequisites: FORS 270
Description: This course offers the student advanced knowledge and training in crime scene investigation, resource management, and coordination of various complex crime scenes. The student will learn personnel management considerations for security and safety, theory, and investigation, as well as workplace resilience, cognitive bias, and management of potential occupational stress or hazards specific to the position. Event-specific investigations and complex scenes will be analyzed, and the student will design and evaluate action plans and outcomes. Offered Spring semester, annually.

FORS 360 - Forensic Case Study

(3 semester hours)
Prerequisites: FORS 125 and FORS 270
Description: This course stresses field work and the application of collected evidence in the sometimes messy real world. The student analyzes several case studies, looking beyond the verdicts or newspaper reports to the actual workings of forensic science's involvement in the prosecution of criminal cases. Offered Spring semester, annually.

FORS 361 - Criminal Profiling

(3 semester hours)
Prerequisites: FORS 125 and FORS 270
Description: This course examines the process of profiling during the investigation of a crime. The process of psychological profiling was first institutionally used by the Federal Bureau of Investigation, but there are now multiple models for criminal profiling. The student studies the various models and how they relate both to expert witness standards and scientific methodologies. The course also examines the differences of these models and their application in case studies. Offered as needed.

FORS 362 - Medico-Legal Death Investigation

(3 semester hours)
Prerequisites: FORS 270 and CHEM 151-CHEM 152
Description: This course is a study of the process known as medico-legal death investigation. The course introduces the student to the legal systems surrounding the investigation of the cause and manner of death. The role of forensic pathology and the application of pathology to law are studied in relation to crime scene investigation. Natural, accidental, homicide and suicide deaths are explored in the perspective of the forensic pathologies. Offered as needed.

FORS 363 - Forensic Population Studies

(3 semester hours)
Prerequisites: FORS 125, FORS 270 and MATH 280
Description: This course utilizes large data sets to discern large scale crime patterns. The student is introduced to crime databases and follows criminal activity patterns correlated to such variables as physical area, time or economics. This course involves research design and statistical analysis and is a group project-driven course. Offered Fall semester, even-numbered years.

FORS 365 - FORS Internship

(3 semesters hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guide the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship and represents the evolutionary and dynamic nature of the learning process. Offered as needed. Offered as needed.

FORS 366 - Interrogation Techniques

(3 semester hours)
Prerequisites: FORS 125
Description: This course introduces the student to the principles of interview and interrogation by using innovative and effective techniques for obtaining information and detection of deception. The course also develops knowledge necessary to allow the student to understand laws used in dealing with interviews and interrogations. Offered as needed.

FORS 367 - Evidence

(3 semester hours)
Prerequisites: FORS 125
Description: This course demonstrates how evidence is maintained for legal integrity and presentation in a court of law. The student studies and applies the Pennsylvania Rules of Evidence in areas such as physical evidence, testimonial evidence (including fact and expert testimony), the procedure to include the introduction of evidence in court, and the scientific standard. Offered Spring semester, annually.

FORS 368 - Forensic Anthropology

(3 semester hours)
Prerequisites: None
Description: Forensic anthropology is a science applied to law which focuses on the identification of remains, human or non-human, that are beyond recognition due to decompositional changes and are more or less skeletonized. Osteology is the study of bone. The student studies basic human skeletal anatomy involving the axial and appendicular skeleton. The student uses that knowledge in osteology to determine sex, age, stature, and ancestry of unknown individuals. The student is then able to apply knowledge to casework and have a general understanding of forensic anthropology laboratory practices. Offered as needed.

FORS 380 - Special Topics in Forensics

(1 to 4 semester hours)
Prerequisites: Consent of the instructor and academic advisor
Description: This course covers topics in forensic science. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

FORS 385 - Advanced Crime Scene Interpretation

(3 semester hours)
Prerequisites: FORS 270

Description: This course offers advanced knowledge in crime scene interpretation and reconstruction of physical evidence and specialized crime scenes. The student will explore concepts, science-based principles, and interpretation considerations for physical evidence that may offer investigative information, scene activity, and/or the sequence of events at a crime scene. Topics will include bloodstain pattern analysis, shooting and accident reconstruction, and fire, explosive, and hazmat investigations. Offered Fall semester, annually.

FORS 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

FORS 498 - Project II

(3 semester hours)
Prerequisites: FORS 298, an approved learning contract, and permission of the Office of Experiential Programs
Description: This project must be in the student's program of study or concentration. It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

GAME 100 - History of Video Games: Technical, Economic & Socio-cultural Contexts

(2 semester hours)
Prerequisites: None
Description: This course will provide the student with an overview of the technological, economic, and socio-historical contexts of the history and development of video games in a global context. In developing an understanding of the social construction of history, nostalgia, and revisionist history, the student will explore video game history beyond the typical big historical moments such as the Crash of '83 and the key people in the American and Japanese game industries. The student will explore both successes and failures throughout video game history from a range of countries to understand how they shape technological innovations and how the socio-cultural contexts influence content, demographics, and business models over time. Offered Fall and Spring semester, annually.

GAME 145 - Introduction to Game Design

(2 semester hours)
Prerequisites: GAME 100 or permission of instructor
Description: This course will introduce the student to foundational elements of introductory game design. The student will examine a range of digital games to learn how to identify the fundamental structure, principles, and methodologies behind the design process. The student will be introduced to entry level game engines and learn how to develop creative ideas through the implementation of the key game design elements, principles and practices in an applied manner. Offered Spring semester, annually.

GAME 215 - Game Studies

(3 semester hours)
Prerequisites: GAME 145
Description:
This course focuses on defining and applying core concepts in game studies, research, and design. The student will learn a range of research methods specific to deconstructing existing digital games as designed interactive experiences and analyzing them as cultural artefacts that reflect the time and society they were created. In doing so, the student will be equipped to create games that build on existing technical and socio-material infrastructures with a deeper understanding of the social and cultural impact of digital games. Offered Fall semester, annually.

GAME 245 - Game Design 2: Principles & Practice of Game Design

(3 semester hours)
Prerequisites: GAME 145
Description: This course expands on content taught in GAME 145 and introduces the student to fundamental principles of design as they relate to game flow and player engagement. With a focus on advanced game mechanics, object rules, gameplay loops, game elements and rewards, balancing of skill and chance, and incremental challenge and difficulty, the student will demonstrate their understanding of these principles through a series of solo and collaborative game design projects, game pitches, and structured peer assessment. Offered Fall semester, annually.

GAME 250 - Prototyping 1: Ideation & Analog Prototyping Methods

(3 semester hours)
Prerequisites: GAME 245
Description: This course will introduce the student to different ideation and analog prototyping methods and processes to develop a range of interactive elements for game design. Through brainstorming in solo and group contexts, rapid analog prototyping techniques, and playtesting and peer feedback, the student will learn effective, and cost-effective strategies for creating and testing game elements early in the game design process. Offered Spring semester, annually.

GAME 270 - Game Art, Assets & Animation 1

(3 semester hours)
Prerequisites: IMED 170
Description: This course, the first of two in visual game design, will introduce the student to foundational concepts and principles of art and asset creation for digital games. Focusing on game art, aesthetics, and genre, the student will learn analog and 2-d animation techniques to create game assets, characters and environments. Offered Spring semester, annually.

GAME 288 - Level Design

(3 semester hours)
Prerequisites: GAME 245
Description: Level design is the foundation of interactive digital games. This course will introduce the student to fundamental principles of level design in digital games. From low level design (LLD) to high level design (HLD), the student will be introduced to the concepts and methods of creating engaging game objectives, diverse spatial interactions that connects mechanics and narrative throughout the gameplay experience.
Through interactive lectures, peer collaboration, and studio sessions, this course will provide the student with a theoretical, conceptual, and applied understanding of game level design across genres and platforms. Offered Spring semester, annually.

GAME 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, GAME 215 , an approved learning contract, permission of the Office of Career Services & Experiential Learning Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours.
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects involve research, experiences, gap analysis and development plans for the applied work in Project II. Offered as needed.

GAME 345 - Game Design 3

(3 semester hours)
Prerequisites: GAME 350
Description: This is the third and final course focusing on core game design fundamentals. This course will build on GAME 145 and GAME 245 with a focus on designing for a target demographic, playtesting, and iterative game design of a complete game in a collaborative context. The student will create two short games in pairs. They will utilize playtesting methods and techniques to gather player data, evaluate, and implement feedback into the game design process. Offered Spring semester, annually.

GAME 350 - Prototyping 2: Digital Prototyping for Video Games

(3 semester hours)
Prerequisites: GAME 250
Description: This course expands on the content from GAME 250 and introduces the student to a range of digital prototyping tools and techniques for game design. Through developing original, small scale game projects in solo and group contexts, the student will learn how to ideate, plan, and create digital prototypes and vertical slices of games. Offered Fall semester, annually.

GAME 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested, and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Career Services & Experiential Learning, and a site supervisor who guides the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team in weekly reflection journals that showcases the accomplishments of the experience. Offered as needed.

GAME 370 - Game Art, Assets & Animation 2

(3 semester hours)
Prerequisites: GAME 270
Description: This is the second of two courses in visual design and animation for digital games. This course expands on the materials taught in GAME 270 and introduces the student to advanced concepts and principles of art and asset creation for digital games. Focusing on semiotics and aesthetics of visual design as it relates to genre and gameplay communication, the student will learn to use industry standard tools for 3D animation techniques to create game assets, characters, and environments. The student will create art and assets for their own games for their portfolio throughout the course. Offered Fall semester, annually.

GAME 380 - Special Topics in Game Design

(1 to 4 semester hours)
Prerequisites: Minimum of 60 semester hours earned or permission of the instructor (Note: Prerequisite could be based on topic(s) covered)
Description: This course covers emerging topics in Game Design. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

GAME 382 - World and Narrative Game Design

(3 semester hours)
Prerequisites: GAME 350
Description: In this course, the student will expand their understanding of the connection between game mechanics, object and environment rules, and ludo-narrative devices in digital game worlds. Structured as a studio course, the student will work on a narrative-based game idea of their choice. With a focus on the design of gameplay progression through game mechanics, scalable challenges and difficulty levels, and tasks and rewards that aim to advance the narrative, students will develop relevant industry informed documentation and create a playable prototype demonstrating narrative design principles. In doing so, the student will learn to implement effective ludo-narrative elements as they are related to designing engaging digital gameplay experiences. Offered Spring semester, annually.

GAME 475 - Professional Development Seminar

(1 semester hour)
Prerequisites: GAME 345
Corequisite: GAME 485
Description: In preparation for jobs in the games and adjacent creative industries, the student will build upon previous coursework to gain an understanding of career opportunities, topics of study, and current issues in the game design industry. The seminar will include relevant guest speakers. This seminar will also provide the student with a guided structure to engage in professional development activities and maintain professional profiles and memberships in industry-connected associations. Offered Fall semester, annually.

GAME 485 - Game Studio 1: Ideation to Beta

(3 semester hours)
Prerequisites: GAME 345
Corequisite: GAME 475
Description: Drawing on the range of creative and technical skills and conceptual knowledge learned throughout the program, the student will brainstorm, ideate, document and plan their game concept following industry standards. Following their plan, the student will create an analog and digital prototype for their game. Offered Fall semester, annually.

GAME 495 - Game Studio 2: Prototype to Release

(4 semester hours)
Prerequisites: GAME 485
Corequisite: GAME 496
Description: In this course, the student will draw on the range of creative and technical skills and conceptual knowledge learned throughout the program. The student will re-evaluate the project plan based on the playtesting results from GAME 485 and implement any game design changes. Throughout the course, the student will continue development of their digital game as well as collaborate with classmates on distinct aspects of each other's

games. Successful coursework will result in a complete and polished game for the student's portfolio.
Offered Spring semester, annually.

GAME 496 - Game Distribution: Platforms, Policies and Procedures

(1 semester hour)
Prerequisites: GAME 475
Corequisite: GAME 495
Description: This course introduces the student to the range of self-publishing platforms, publishing costs, intellectual property regulation, publishing policies, and the technical processes and requirements of the different game platforms.
Offered Spring semester, annually.

GAME 498 - Project II

(3 semester hours)
Prerequisites: GAME 298, an approved learning contract, permission of the Office of Career Services & Experiential Learning, designation of an appropriate academic advisor.
Description: This project must be in the student's program of study or concentration. It should demonstrate application of the skills, methods, and knowledge of the discipline to an applied creative project. As with Project I, this is undertaken with the close mentorship of a faculty member, and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship.
Offered as needed.

GEND Group - Environmental and Life Sciences

(3 semester hours)
Description: Complete one of the following courses:

- BIOL 102 and BIOL 103
- GEND 104
- GEND 109
- GEND 113

GEND Group - Historical and Political Investigation

(6 semester hours)
Description: Complete two of the following courses:

- GEND 215
- GEND 230
- GEND 275
- GSTC 130

GEND Group - Historical and Political Investigation

(3 semester hours)
Description: Complete one of the following courses:

- GEND 215
- GEND 230
- GEND 275
- GSTC 130

GEND Group - Leadership and Business

(6 semester hours)
Description: Complete two of the following courses:

- GEND 325
- GEND 355
- GEND 400

GEND Group - Leadership and Business

(3 semester hours)
Description: Complete one of the following courses:

- GEND 325
- GEND 355
- GEND 400

GEND Group - Scientific Inquiry

(3 semester hours)
Description: Complete one of the following courses:

- CHEM 151 and CHEM 152
- ENGR 110
- FORS 125
- GEND 122
- INSC 115

GEND 102 - The Creative Mind I

Psychology, English Literature and Sociology
(3 semester hours)
Prerequisites: None
Description: This course addresses learning and creativity by drawing from three fields of study: psychology, English literature and sociology. More specifically, learning and creativity are exposed by focusing on the theme of creating self-identity through self-analysis and creating self-identity through interactions with other individuals or small groups. Offered Fall and Spring semester, annually.

GEND 103 - The Creative Mind II

Psychology, English Literature and Sociology
(3 semester hours)
Prerequisites: None
Description: This course addresses learning and creativity by drawing from the three fields of study: psychology, English literature and sociology. More specifically, learning and creativity are explored by focusing on the theme of serving a community through involvement with its social policies. Offered Fall and Spring semester, annually.

GEND 104 - Our Ocean World

(3 semester hours)
Prerequisites: None
Description: This course investigates the historical, geological, physical, chemical, and biological characteristics of the ocean environment. The basic language of marine science, and its underlying principles, are explored. The student

pursues an understanding of the underwater history of the planet and the importance of the sciences, including the scientific method of research. Offered Fall and Spring semester, annually.

GEND 106 - Special Topics in GEND

(1 to 4 semester hours)
Description: This course covers topics in general education. Offered as needed.

GEND 109 - Meteorology: An Exploration of Weather, Climate, and Human Impacts

(3 semester hours)
Prerequisites: None
Description: This course investigates the fundamentals of meteorology and the effects of weather and climate. This course stresses the interconnectedness of the natural world, demonstrably built on the foundations and building blocks of the basic physical sciences. The student pursues an understanding of the atmosphere and the importance of the sciences, including the scientific method of research. Upon completing this course, the student will have increased knowledge of the atmosphere's structure, processes, and changes, and be able to create their own forecasts. Offered Fall and Spring semester, annually.

GEND 112 - The Scientific Mind: Physical Sciences

Physical Science and Chemistry
(3 semester hours)
Prerequisites: None
Description: This course presents a broad overview of modern science by integrating basic scientific principles and methodology to various disciplines of the natural and applied sciences. The overall emphasis of the scientific mind series is to begin the development of critical thinking, problem solving, experimental, mathematical, and information research skills that lie at the heart of scientific inquiry. The course emphasizes how the interplay between theory and experiment has led to our current understanding of physical science and chemistry and how this knowledge has found application towards the advancement of technology. Offered as needed.

GEND 113 - The Scientific Mind: Life Sciences

Earth, Space, and Life Sciences
(3 semester hours)
Prerequisites: None
Description: This course presents topics from the natural sciences with the underlying framework of basic scientific principles and methodologies. This course stresses the interconnectedness of the natural world, demonstrably built on the foundations and building blocks of the basic physical sciences. Classwork includes technology applications for observing and understanding the natural world. The student explores the areas of cosmology and astronomy, earth sciences, and finally the biological sciences including genetics, ecology, and modern concepts of evolution. A student completing this sequence should have an understanding of scientific thought, advancement and philosophy that prepares them for higher- level courses. Offered Fall and Spring semester, annually.

GEND 120 - Self & Society: Introduction to Sociology

(3 semester hours)
Prerequisites: ENGL 105 and minimum of 24 earned semester hours
Description: Sociology focuses on the systematic understanding of the way self-identity, social interaction, social organization, social institutions, and social change occur in western societies like the United States. Major themes in sociological thinking include the interplay between the individual and society, how society is both stable and changing, the causes and consequences of social inequality, and the social construction of human life. Therefore, it can be said

that sociology is the study of social actions, relations, and roles for both individuals and groups, researched through inductive analysis of case studies and generalizations. Understanding sociology helps us discover and explain social patterns and see how such patterns change over time and in different settings, in interaction with different people and groups. Through analyzing, discussing and writing about the social basis of everyday life, sociology also develops our ability for critical thinking, by revealing the social structure and processes that shape diverse forms of human life. Offered Spring and Summer semester, annually.

GEND 122 - Computational Mind

(3 semester hours)
Prerequisites: None
Description: This course presents a broad overview of information technology and its impact on our lives. It will demonstrate basic scientific principles and methodologies through various aspects of information and computational sciences. The overall emphasis of the course is to begin the development of critical thinking, problem solving, experimental, mathematical, and information research skills that lie at the heart of scientific inquiry. This course will ask the student to grapple with the challenges surrounding the pervasiveness and ubiquity of technology in the modern world. This course will also introduce the student to concepts like algorithmic design and scripting, tools which will teach the student how to think analytically and to scientifically solve problems using technology. Offered Fall and Spring semester, annually.

GEND 130 - General Psychology

(3 semester hours)
Prerequisites: ENGL 105 and minimum of 24 earned semester hours
Description: This course is a survey presentation of the fundamental theories, principles, and research methods of psychology. Emphasis is placed on psychology as the scientific study of behavior and cognitive processes. The student is expected to demonstrate critical evaluation and creative thinking skills, an understanding of the data-gathering methods of psychology, and an ability to utilize information technology. Offered Fall and Spring semester, annually.

GEND 140 - Introduction to Astronomy

(3 semester hours)
Prerequisites: MATH 081
Corequisite: MATH 120 or equivalent
Description: This course demonstrates how we learn about our universe; its past, present and future through application of the scientific method. The approach to this investigation focuses on developing a conceptual understanding of the fundamental scientific theories and measurement tools used by astronomers to deduce the properties of objects throughout the universe. The course covers the evolution of stars, galaxies, and the universe itself. Offered as needed.

GEND 150 - The Learned Mind

Introduction to Philosophy and English Literature
(6 semester hours)
Prerequisites: COMM 110 and ENGL 105 or ENGL 106
Description: This course introduces the student to the readings and study of philosophy. This includes reading and reflecting on the great philosophies of modern history and, through a study of the people and their writings (literature), development of an appreciation of the power of the written word. The student is exposed to a large number of writings and learn to carefully critique both the approach and manner of writing. Offered Spring semester, annually and Summer semester, odd-numbered years.

GEND 215 - The Civic Mind

(3 semester hours)
Prerequisites: GEND 102
Corequisite: ENGL 200
Description: This course draws on topics related to American history, government, and macroeconomics. The course demonstrates the interconnection between these fields of study by focusing on the civic responsibility involved with decisions regarding the distribution of the nation's resources. The course provides a historical look at the American democratic system, political institutions, fiscal policy, monetary institutions and the national economy. Offered Fall and Spring semester, annually.

GEND 230 - The International Mind

(3 semester hours)
Prerequisites: ENGL 105 or ENGL 106
Description: This course introduces theories of international relations that explain the causes of war, the sources of peace, international trade, and more. It addresses the roles of international law and non-governmental organizations. Through interactive activities, the student will learn different perspectives on the core principles that drive the international system. Offered Fall and Spring semesters, annually.

GEND 251 - The Political Mind

International Governing Institutions and Global Health, Energy, Poverty, and Security
(6 semester hours)
Prerequisites: GEND 102 and GEND 215
Description: This course introduces the student to a wide spectrum of critical global topics in governance, energy, health, poverty and security. The primary objective of the course is to encourage the student to understand international issues that affect global communities at different levels. The role of international institutions, intergovernmental and non-governmental organizations that promote globalization, environmental issues, trade, international finance, peace and human rights are covered. Offered Fall semester, annually.

GEND 275 - Gender and Society

(3 semester hours)
Prerequisites: ENGL 105 or ENGL 106
Description: This course explains how gender affects people's lives in a variety of ways. Most people consider gender the learned or social differences between girls and boys, and women and men. Gender is a variable, and members of both sexes can vary in the extent to which they conform to gender roles and expectations. The course reviews the impact of gender on education, science, language, employment, history and politics. Offered Fall and Spring semester, annually.

GEND 300 - The Cultured Mind

World Cultures and Art
(6 semester hours)
Prerequisites: GEND 102
Description: This course integrates the study of culture and art and introduces the student to a global and comparative study of culture as a key to understanding human behavior in different societies. The formation and application of art and culture is studied in relation to the impact of religious belief and tradition in different societies. The course explores similarities and differences in the world's major cultures and attempts to pinpoint the impacts on social institutions and human behavior. Offered Summer semester, annually.

GEND 310 - Creative Writing

(3 semester hours)
Prerequisites: ENGL 105 or ENGL 106
Description: This course explores the multi-genres of creative writing including poetry, creative nonfiction and fiction. The student will study a diverse range of texts and will be asked to complete writing assignments from each genre with a focus on craft, creativity, and voice. The student will choose from their constructed poems, short stories, and nonfiction essays to compile a final creative writing portfolio and will participate in a final reading of their work. Cross-listed with ENGL 310. Offered Fall semester, annually.

GEND 315 - Science in Literature

(3 semester hours)
Prerequisites: ENGL 200
Description: In this course, the student will read a wide variety of literary works with scientific themes or topics in genres of fiction, literary nonfiction, and poetry. The student will use methods of rhetorical criticism to analyze literary strategies, and a primary theme of inquiry will be the historical and cultural exchange between authors' imaginations, reader reception, and scientific discourse. The culminating project will require research of primary and secondary source material to create an original interpretive analysis. Offered Spring semester, annually.

GEND 325 - Consulting

(3 semester hours)
Prerequisites: None
Description: Consulting is the practice of assisting organizations or individuals through the analysis of existing situations and development of plans and solutions to address problems. The course introduces the principles and practice of consulting in modern settings through case studies, examples, and real-life projects. The course explains different types of consulting models (for internal as well as external users) and covers the consulting life cycle from engagement start to finish. Topics include: business requirements gathering and analysis; teamwork and conflict resolution; consulting skills; problem-solving; and communications skills. Emphasis is placed on producing deliverables in a timely and professional manner. Offered Fall and Spring semester, annually.

GEND 355 - The Corporate Mind

(3 semester hours)
Prerequisites: COMM 110, ENGL 200, GEND 103, and completion of 60 semester hours
Description: This course provides an overview of concepts and tools useful for success within established businesses, along with an understanding of the role of business in the modern world through the lenses of leadership, organizational behavior, and microeconomics. It focuses on current issues in business through an inter-disciplinary synthesis and critique of theories of the modern business corporation. At the end of this course, the student will understand corporate structures, the role of management and leadership, and their role within those systems as employees, managers/leaders, and citizens. Offered Fall and Spring semester, annually.

GEND 380 - Special Topics in General Education

(1 to 4 semester hours)
Prerequisites: None
Description: This course covers topics in general education. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

GEND 400 - The Entrepreneurial Mind

Business and Social Entrepreneurship
(3 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: The student studies and compares key features of entrepreneurship from two important vantage points: business entrepreneurs and social entrepreneurship. The drive and creativity of individuals who question the status quo and explore new opportunities are examined. The student reads stories, completes case studies, and speaks with community entrepreneurs. Examples are taken from business and others from ordinary people who do remarkable work. The objective of this course is to help the student identify a specific entrepreneurial spirit, set goals, and develop skills in entrepreneurship. Offered Fall and Spring semester, annually.

GEND 425 - Globalization

(3 semester hours)
Prerequisites: GEND 215 and GEND 355
Description: This course explores the world citizenry's common interests in community, social, political, information, and financial systems. Students will develop interdisciplinary, sophisticated solutions to a given global issue. Offered Fall and Spring semester, annually.

GEND 450 - The Healthy Mind and Body

Personal and Environmental Health
(3 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course provides the foundation for a study of various current health issues. The student investigates a topic related to personal, community or environmental health to conduct research, formulate an opinion of the topic, discuss relevant facts, and write about the topic. The projects in this class focus on the development of competence in both oral and written communication and information literacy. Offered Fall semester, annually.

GEND 460 - The Ethical Mind: Research Ethics and Scientific Integrity

(3 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course addresses the important issues of professional ethics in sciences. These include normative standards of conduct and research integrity in diverse scientific disciplines. The course covers the core instructional areas identified by the U.S. Public Health Service's Office of Research Integrity. The student explores how to apply an ethics method to recognize and deal effectively with issues pertaining to human/animal experimentation, conflicts of interest, collaborative research, peer review, and other important issues that will benefit them now and in their future personal, academic, and professional endeavors. Offered Fall semester, annually.

GEND 465 - The Ethical Mind: Ethics in a Digital Age

(3 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course examines current issues in digital technologies from a range of ethical frameworks. While professional codes of conduct and ethical workplace practices are addressed and examined, the course focuses on critical thinking about the role of the software designer in the workplace, community, and world. Cross-listed with CISC 499. Offered Spring semester, annually.

GSTC 100 - Exploring Geographic Information Systems

(2 semester hours)
Prerequisites: None

Description: This course focuses on the concepts of Geospatial Technology, including topology, projections, data modeling and spatial operations managed by Geographic Information Systems (GIS). The course includes lectures on GIS concepts and usage as well as GIS exercises include data capture, storage, query, analysis, display and output using ArcGIS software. The course also introduces the student to other Geospatial Technology like Global Positioning systems and Remote Sensing. Limited to the Dual Enrollment student. Offered Summer semester, annually.

GSTC 106 - Special Topics

(1 to 4 semester hours)
Prerequisites: None
Description: This course covers topics in geospatial technology. Offered as needed.

GSTC 107 - Remote Pilot Certification and Applications

(3 semester hours)
Prerequisites: None
Description: This course will contain the content required to pass the FAA exam, which includes topic area modules related to Remote Pilot Certification knowledge and an overview of common Geospatial Technology applications of drones, such as mapping and multi-spectral sensing. Numerous field days will be included to provide hands-on drone flying experiences and piloting principles. It is expected that the student will be prepared to pass the FAA Part 107 Remote Pilot Certification exam at the end of the course. In addition to certification knowledge and geospatial applications, the student will be introduced to aspects of starting a drone business and the pathways to careers in manned aircraft and airport operations. Offered Spring semester, annually.

GSTC 130 - Applied Geography

(3 semester hours)
Prerequisites: None
Description: This course has three specific ways of looking at the geography of the world: 1) World Geography - where regions of the world are examined based on human and physical features; 2) Applied Geography - which focuses on applying physical and human geography concepts to phenomenon such as environmental, political, and economic; and 3) how modern geospatial technology is changing the way geographic information is studied and used. Laboratory exercise include research and map exercises for world geography, worksheets and diagramming for physical geography exercises, and final project research into a selected applied geography topic of interest to the student. Offered Fall semester, annually.

GSTC 140 - Introduction to GIS

(4 semester hours)
Prerequisites: None
Description: This course focuses on the first of three primary Geospatial Technologies, Geographic Information Systems, but also introduces the student to Remote Sensing and Global Positioning Systems (GPS). The course includes both lecture on concepts and applications as well as laboratory exercises designed to develop the student's abilities in core GIS functionality. GIS exercises include spatial data capture, storage, query, analysis display and map output using the industry standard, ArcGIS software. Practical applications of GIS to areas such as environmental analysis, land use planning, emergency management and fundamental mapping techniques. The student finishes the course by completing a custom mapping project on a topic of interest. Offered Spring semester, annually.

GSTC 210 - Cartography

(3 semester hours)
Prerequisites: GSTC 140

Description: The presentation of data is both an art and a science. The student uses GIS to produce high-quality maps that expose complex spatial information and relationships in a clear and easy-to-understand display. Cartographic concepts and techniques, used to create not only hard copy printed maps but also prepare cartographic data for modern devices such as web pages and digital media, are explored. The class emphasizes laboratory work and a final project that uses GIS from an initial map concept, through data collection and analysis, to a final product. Offered Fall semester, annually.

GSTC 220 - Applied Geospatial Technology

(4 semester hours)
Prerequisites: GSTC 140
Description: This course bridges the gap between the concepts and tools introduced in GSTC 140 and the more advanced functions of ArcGIS, including spatial operations and data modeling. The student integrates diverse datasets, creates methodologies for data conversion/migration, and develops guidelines for spatial data quality control. The course continues to build competency in alternative GIS software solutions including Open Source GIS. Advanced modules of ArcGIS, including Spatial Analyst and 3D Analyst, are introduced. Offered Fall and Spring semester, annually.

GSTC 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

GSTC 320 - Geospatial Management and Policy

(3 semester hours)
Prerequisites: GSTC 140 and GSTC 220
Description: Through the use of geospatial technology examples, current policies and spatial data/analysis management methods are explored. The student utilizes foundational knowledge and skills in geospatial technology to understand the impact and constraints required in both public and corporate policies and mangement. Knowledge of GIS is used to explore emerging public policy, management practices, professional standards, ethics, and future directions of geographic data. Offered Fall and Spring semester, annually.

GSTC 330 - Spatial Database Management

(4 semester hours)
Prerequisites: CISC 140 and GSTC 220
Description: This course is intended for the student who is interested in designing and implementing a spatial database and also teaches to write spatial queries that solve real-world problems through retrieving data from a spatially enabled database. The course is designed to cover the basics of the relational model for database management where data can be accessed and reassembled in different ways that are of relevance to both geographic and non-geographic context. The student will learn a domain-specific language such as Structured Query Language (SQL) to be able to manage data, and it also gives the student a solid background in vector, raster, and topology-based Geographic Information System (GIS) in order to analyze, view, and map data. Offered Fall semester, annually.

GSTC 340 - Advanced Spatial Analysis

(4 semester hours)
Prerequisites: GSTC 220
Description: This course focuses on critical evaluation of real-world case studies to determine the appropriate spatial data and advanced-level geospatial technology and tools to analyze, replicate and improve upon past solutions. The student works independently and in teams to develop and apply geospatial problem solving skills to a range of real-world scenarios. The growing requirement for the integration of GIS and 3-D data for use in terrain analysis, facilities management and emergency response is explored. Offered Fall and Spring semester, annually.

GSTC 345 - Remote Sensing

(4 semester hours)
Prerequisites: GSTC 220 and a minimum of 60 earned semester hours
Description: Remote sensing through the use of satellites and other aircraft is the science of acquiring and analyzing information about feature or phenomena from a distance. Satellite-borne sensors observe, measure and record the electromagnetic spectrum reflected or emitted by the earth and its environment for subsequent analysis and extraction of the information. Applications for satellite remote sensing include military surveillance, oil, insurance, real estate, transportation, city planning, environmental monitoring and other uses. The student works with raster-based satellite and aerial images to manipulate and analyze the electromagnetic signatures gathered from this technology. Offered Fall semester, annually.

GSTC 350 - Web GIS Development

(4 semester hours)
Prerequisites: CISC 140, ISIT 300 and GSTC 220
Description: This course introduces the student to basic topics in spatial web-based software design and creation. Building on skills acquired in prerequisites in both GIS and Computer Science, the student uses industry standard tools and technologies to explore and develop foundational components of a functioning spatial web application and database. The bulk of the classroom time will be spent on a practical project in small groups with guidance from the instructor. The student must demonstrate a final project at the end of the semester. Offered as needed.

GSTC 360 - Sub-Artic Geospatial Field Studies

(4 semester hours)
Prerequisites: None
Description: This course exposes the student to the application of geographic and geospatial technology knowledge in a field studies environment. Learning activities focus on regional and cultural geography, geomorphology, climatology and GPS/GIS field data collection. Exposure to different cultures and environments is intended to provide practical experience with global awareness and a broader, more external, understanding of informational literacy. Offered as needed.

GSTC 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guide the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique

portfolio is constructed throughout the internship, and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

GSTC 380 - Special Topics in Geospatial Technology

(1 to 4 semester hours)
Prerequisites: None
Description: This course covers emerging topics in geospatial technology. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered Spring semester, even-numbered years.

GSTC 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

GSTC 420 - Professional GIS Operations

(3 semester hours)
Prerequisites: GSTC 320
Description: As graduates enter the workforce with a foundational Geospatial Technology background they must also operate within a managed technical environment. GIS professionals do not just use GIS software, but also must manage the development of solutions to address requirements, and the overall systems architecture that support day to day operations. This course reviews the administration of ESRI's ArcGIS Online Organization and provides an overview of the ESRI Enterprise GIS environment. The student is exposed to the methods for effective requirements gathering and proposal writing. The course concludes with an overview of how Python and ArcPy GIS application development can benefit GIS operations. Offered Fall semester, annually.

GSTC 450 - Desktop GIS Development

(4 semester hours)
Prerequisites: CISC 140 and GSTC 220
Description: This course immerses the student into desktop GIS software design and creation. Building on skills acquired in prerequisites in both GIS and Computer Science, the student uses industry standard tools and technologies to design and create a functioning spatial desktop scripts and applications. The bulk of the classroom time will be spent on practical project in small groups with guidance from the instructor. The student must demonstrate a final project at the end of the semester. Offered Spring semester, annually.

GSTC 498 - Project II

(3 semester hours)
Prerequisites: GSTC 298, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor
Description: This project must be in the student's program of study or concentration(s). It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the

close mentorship of a faculty member, and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

ISIT 103 - Introduction to Computers & Information Sciences

(4 semester hours)
Prerequisites: None
Description: This course serves as an introduction to computing and information systems. It uses both lecture and laboratory practice to introduce the student to the use of computers to solve problems. The student is presented the techniques, concepts, analysis, and reports on experiences and technologies and trends. This includes the concepts of hardware, software, networking, computer security, programming, database, e-commerce, decision support systems, and other emerging technologies. The student is introduced to techniques that search, evaluate, validate, and cite information found online. Widely-used applications including word processing, spreadsheets, databases, presentation, and web development software are also studied. Offered Fall semester, annually.

ISIT 104 - Raspberry Pi

(3 semester hours)
Prerequisites: None
Description: This course is designed to introduce cost effectively hard and software problems to the student. With the help of a Raspberry Pi, the student learns the basic programming skills to operate extra hardware that can be attached to it. Limited to the Dual Enrollment student. Offered as needed.

ISIT 106 - Special Topics

(1 to 4 semester hours)
Description: This course covers topics in information systems and information technology. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

ISIT 140 - Introduction to Information Systems

(3 semester hours)
Prerequisites: None
Description: Businesses rely on data-driven information to thrive and succeed. Information systems provide the means and the medium to collect, store, safeguard, retrieve, share, analyze, and present the data; therefore, information systems play an important role in our modern world. Almost all services ranging from banking to travelling to complex healthcare applications exploit information systems for data manipulations. In this course, the core concepts of any information system, namely people, processes, and technology, are discussed, and their social and organizational roles are explored. In this course, an overview of fundamental concepts of information systems, definition of key terms and current trends, the role and importance of information and information systems for businesses and management, social and organizational implications, along with some applications of information systems are explored and discussed through lectures and case studies. Offered Fall semester, annually.

ISIT 170 - Introduction to Data and Information Management

(4 semester hours)
Prerequisites: ISIT 140
Description: Data plays an essential role in an information system. In fact, an information system constructs the framework for data capturing, data safeguarding, data analysis, and data presentation in accordance with software, hardware, business processes, and people. Therefore, IS specialists should develop the knowledge and understanding of tools and applications along with best practices in capturing, organizing, and presenting data. This course explores the most popular software employed in information systems. The student explores the application of spreadsheets,

databases, and other software for technical data management. Business intelligence tools and concepts are introduced. Other topics include the essentials of editing, formatting, and printing worksheets and workbooks and data visualization by exploring Microsoft Office® suite. In particular, students gain experience with Microsoft Excel®, Microsoft Access®, Microsoft SharePoint®, Microsoft Word®, Microsoft Excel®, and Microsoft PowerPoint® through assignments and projects. Other popular applications, text editors, and software will be examined and discussed. Offered Fall and Spring semester, annually.

ISIT 180 - Special Topics in ISIT

(1 to 4 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in Information Systems and Information Technology. Due to the nature of evolving topics, this course may not be eligible for repeat. Limited to the student enrolled in NuPaths. Offered as needed.

ISIT 240 - Introduction to Networking

(3 semester hours)
Prerequisites: ISIT 140
Description: This course covers basic networking concepts within the context of the networks we encounter every day. The student develops hands-on networking skills and understand the role networks play in our lives. In addition to networking concepts, the student learns about data protection, cybersecurity, most common threats, vulnerabilities, cyber-attacks, and related discussions. Topics include introduction to networks, routing and switching essentials, protocols and services, network design and installation using real equipment and connecting the network to the Internet, practicing verification and troubleshooting the network and Internet connectivity, recognizing and mitigating network security threats, configuring common Internet applications, setting up sharing between computers, and configuring basic IP services. Other topics including WAN topologies, IP errors, security best practices, quality of service, cloud and virtualization, and network programming can be introduced and discussed. Offered Fall semester, annually.

ISIT 250 - Introduction to Operating Systems

(3 semester hours)
Prerequisites: ISIT 140
Description: This course provides practical knowledge of operating systems. Running at the core of all computers and networks, an OS manages resources and provides the environment for the execution of programs. Different operating systems have different features and capabilities, and it is important to select, properly install, and correctly configure the right OS so that it serves the needs of the business and ultimately runs the information system successfully. In this course, fundamental concepts of operating systems along with specific features of Microsoft's Windows®, Linux OS, and mobile operating systems will be discussed. The student learns the key concepts of process management, memory management, I/O operations, and security through hands-on practices and projects. The student learns to select, install, configure, maintain (i.e. update and upgrade), and troubleshoot operating systems. This course has both lecture and lab components. Offered Fall semester, annually.

ISIT 260 - Introduction to Cloud Services

(3 semester hours)
Prerequisites: ISIT 140
Description: Cloud services have transformed traditional IT structure and business operations. Today, cloud technology dominates consumer and business applications, network services, and data center providers. Organizations are moving rapidly towards cloud services, and ISIT specialists should now have a good understanding of cloud and its services. This course provides a deep understanding of key cloud concepts, cloud services, and their applications to increase business productivity and effectiveness. Other topics include various cloud models, deployment models, different service platforms (IaaS, SaaS, PaaS, and other XaaS), comparison of cloud platforms, migration to cloud and its

challenges, cloud security, cloud design, and industry best practices. Moreover, implementation, configuration, and management of cloud services will be practiced and examined through hands-on projects. Offered Spring semester, annually.

ISIT 280 - Special Topics in ISIT

(1 to 4 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in Information Systems and Information Technology. Due to the nature of evolving topics, this course may not be eligible for repeat. Limited to the student enrolled in NuPaths. Offered as needed.

ISIT 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

ISIT 300 - Web Technologies

(3 semester hours)
Prerequisites: CISC 225 or MEBA 210
Description: The student studies, explores and examines tools and technologies used in web applications and web services. Coursework is accomplished both individually and in teams to build, launch, and market a website for a community member or as a university project. Topics include HTML, CSS, Java and Java scripting, database, and SQL. Offered Fall semester, annually.

ISIT 315 - Data Center Hard and Software Administration

(3 semester hours)
Prerequisites: ISIT 250 and ISIT 260
Description: The course ensures that IT professionals at the administrator level are able to do the job in any environment because the course is not restricted to a single platform. The course covers essential hardware and software technologies of on-premise and hybrid server environments, including high availability, cloud computing, and scripting. During the course, the student will solve performance-based questions that require the student to demonstrate multi-step knowledge to securely deploy, administer, and troubleshoot servers. Offered Fall semester, annually.

ISIT 330 - Advanced Networking I

(3 semester hours)
Prerequisites: ISIT 240
Description: The course covers fundamental concepts of computer networks and protocols as well as relevant standards and underlying theory. Topics include properties of signals and media, information encoding, error detection and recovery, LANs, backbones, WANs, network topologies, routing, packet switching, congestion control, Internet

protocols, quality-of-service, network measurement, network management, and network application. Offered Spring semester, annually.

ISIT 355 - Advanced Operating Systems I

(3 semester hours)
Prerequisites: ISIT 250
Description: In part one and two of the course, the student will develop the professional skills that are common to major distributions of Linux. The student will learn how to install and maintain Linux distributions using both the command line as Graphical User Interface (GUI). The first part is aligned to the Linux Professional Institute LPIC-1 101 professional certification exam. The second part is aligned to the Linux Professional Institute LPIC-1 102 professional certification exam. Offered Spring semester, annually.

ISIT 358 - Advanced Operating Systems II

(3 semester hours)
Prerequisites: ISIT 250
Description: In this course, the student will gain expertise in configuring and managing Windows Server on-premises, hybrid, and infrastructure as a service (IaaS) platform workloads. The student learns to administer core and advanced Windows Server workloads and services using on-premises, hybrid, and cloud technologies and gain expertise in implementing and managing on-premises and hybrid solutions, such as identity, management, compute, networking, and storage. Offered Spring semester, annually.

ISIT 360 - Advanced Networking II

(3 semester hours)
Prerequisites: ISIT 330
Description: In this course, the student is taught how to install, operate, and troubleshoot a small enterprise branch network, including basic network security. Moreover, the student learns to diagnose, restore, repair, and replace critical networking and system devices at customer sites. Working closely with professional teams to quickly and efficiently resolve support incidents is explored. Hands-on practices and real-world applications are examined and practiced by collaboration with Cisco Networking Academy in this course. In particular, the student is introduced to Cisco network services and learns the application and configuration of Cisco router and switches. Even though the course exploits Cisco technology, fundamental concepts and universal principles are discussed and explored. Offered Fall semester, annually.

ISIT 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200, or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested, and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guide the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

ISIT 380 - Special Topics in Information Systems & Information Technology

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours or consent of the instructor
Description: This course covers emerging topics in information systems and information technology. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

ISIT 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in the area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be part of that contract. Offered as needed.

ISIT 440 - Advanced Networking III

(3 semester hours)
Prerequisites: ISIT 360
Description: This course exposes the student to authentication, access control, and auditing (the 3As), which are the fundamental mechanisms required in enterprise security management for countering the various types of threats on wireless based systems. The student is presented with an approach to managing enterprise security policies using wireless devices in order to effectively monitor and defend trusted domains. Specifically, the student will describe security architecture for designing and implementing a wireless-enabled solution for enterprise security management. Offered Spring semester, annually.

ISIT 465 - Advanced Cloud Computing

(3 semester hours)
Prerequisites: ISIT 250 and ISIT 315
Description: The course is designed for the student to develop Cloud Architects and Solutions Architects design solutions on AWS and Azure using best practices. It will expose the student to architecting concepts relevant to AWS and Azure, while lab activities provide a mechanism to build skills. The course will also prepare the student for the AWS Certified Solutions Architect - Associate and AWS Certified Solutions Architect - Professional certification exams or the Microsoft Certified: Azure Administrator Associate exam. Offered Fall semester, annually.

ISIT 470 - Emerging Technologies in ISIT

(3 semester hours)
Prerequisites: Senior Status in ISIT or consent of the instructor
Description: This course explores a topic or collection of topics of special interest that is timely and in response to critical or emerging topics in the broad field of information systems and information technologies. Topics may include hardware, software, organizational and social aspects of ISIT, ethical and legal considerations and frameworks, future trends and innovations, and ISIT implications on management, businesses, and marketing. Offered Fall and Spring semester, annually.

ISIT 475 - Virtualization

Virtualization
(3 semester hours)
Prerequisites: ISIT 240, ISIT 250, and ISIT 260

Description: This course will cover how virtual machines (VMs) are implemented. The course will be organized as a mixture of theory and implementation. The student will implement their own hypervisor, and extend the hypervisor as an open-ended course project. Topics to be covered include: memory management, paravirtualization, hardware virtualization, OS-level virtualization (containers), security, and advanced research topics. Offered Spring semester, annually.

ISIT 498 - Project II

(3 semester hours)
Prerequisites: ISIT 298, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor.
Description: This project must be in the student's program of study or concentration. It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

ISIT 499 - Applied Practice

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of the Office of Experiential Programs, and designation of an appropriate academic advisor
Description: This course offers the student the opportunity to reflect upon previous experiences and build on current experience to enhance professional and career development. The student is expected to transfer theory into extended application and practice. The student will reflect and apply the HU core competencies towards their previous experience, current experience and academic programs in preparation for their future career. The Applied Practice assists the student in the completion of their ePortfolio. It is an alternative to 365 Internship; the student needs to complete one or the other. Limited to the student enrolled in an HU Online Program. Offered as needed.

IMED 104 - Special Topics in IMED

(1 to 4 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in Interactive Media. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

IMED 105 - Introduction to Game Modding

(2 semester hours)
Prerequisites: Two years of high school algebra or equivalent
Description: Many video game companies are actively promoting "modding" (the modification of) existing video games, a trend sweeping the industry. This course is a mix of game design and game play. Skills needed to create maps, import models, and mod nearly every aspect of the game experience are taught. Once completed, the student leaves with the latest tips and tricks to begin a career path in game design and development. Offered Fall semester, even-numbered years.

IMED 110 - Introduction to Digital Design

(2 semester hours)
Prerequisites: None (If Interactive Media Major, must have Concentration declared)
Description: This foundational course introduces the student to the essentials of visual computing, graphic design, web technologies, and more, focusing on skills such as image manipulation, HTML/CSS design, interactive experiences,

and 3D modeling. Designed for aspiring creatives and digital innovators, it offers a hands-on approach to exploring various design disciplines, setting the stage for specialized advanced studies. IMED 110 is the gateway for the student to unlock their potential within the interactive media landscape. Offered Spring semester, annually.

IMED 120 - Introduction to Media Computation

(4 semester hours)
Prerequisites: None
Description: This course will introduce the student to computing by creating and manipulating digital media. In the course, the student will create expressive media by manipulating computational materials (like arrays and linked list). The student will manipulate images by changing pixels, create sounds by iterating over samples, render linked lists into music, and create artifacts like collages, music, and digital video special effects. Offered Spring semester, annually.

IMED 140 - Introduction to Interactive Media

(2 semester hours)
Prerequisites: Interactive Media Major
Description: Interactive media encompasses a broad range of disciplines, technologies, processes and experiences. This course will introduce the student interested (and enrolled) in the primary areas offered in the Interactive Media program including interactive experience design, media production, and digital games design. This course will be co-taught by several IMED faculty members based on their areas of expertise. Offered Fall semester, annually.

IMED 150 - Digital Photography I

(3 semester hours)
Prerequisites: None
Description: This course is designed to introduce three major components of digital photography; camera mechanics, image composition and digital photo editing. The student is expected to confidently control the photographic process and produce a portfolio of work that has been carefully imagined, executed, edited and presented. A digital SLR camera and Adobe Creative Cloud license are required for this course. Offered Fall semester, annually.

IMED 170 - Visual Design Fundamentals

(3 semester hours)
Prerequisites: None
Description: This course introduces the basic concepts of design or print and time-based digital media. The principles of composition and color theory, and how these are affected by movement, duration and display, are covered. Vector and bitmap manipulation tools are explored in relation to graphic production across the design fields. Offered Fall semester, annually.

IMED 200 - Cross-Media Communications

(2 semester hours)
Prerequisites: None
Description: Cross-media communications are integrated, interactive experiences that occur across multiple media, with multiple authors and have multiple styles. This course presents how the audience becomes an active participant in the cross-media experience. Offered as needed.

IMED 210 - Effective Copywriting

(3 semester hours)
Prerequisites: COMM 110

Description: IMED 210 unveils the strategic art of persuasive writing in the realm of marketing, guiding the student through the nuances of crafting compelling copy that transcends mere storytelling. This course delves into the core principles of copywriting, emphasizing the creation of content that captivates and entertains but also prompts the reader to act. The student will learn the foundational elements, objectives, and methodologies for developing impactful copy that enhances brand visibility, encourages consumer engagement, and drives campaign success. Through a structured step-by-step process, this course equips future marketers with the skills to create attention-grabbing content that effectively communicates the value of an offering. Offered Spring semester, annually.

IMED 217 - Digital Media I

(3 semester hours)
Prerequisites: IMED 170
Description: This course immerses the student in the vibrant world of digital media production, offering a unique blend of creativity and practical application. This course is structured to provide an engaging hands-on environment where the student is tasked with producing a diverse range of digital media projects. Utilizing state-of-the-art hardware, cutting-edge software, and versatile web-based tools, the student will cultivate the creative and critical thinking skills essential for thriving in digital production careers. Additionally, this course encourages the student to pursue the Adobe Certified Professional certification, adding a valuable credential to their professional toolkit. By the end of this course, the student will have not only developed a robust portfolio of digital works but also prepared themselves for advanced opportunities in the digital media landscape. This course is a pivotal step for the student aiming to excel in the digital production domain. Offered Fall semester, annually.

IMED 220 - Sociotechnical Theories

(3 semester hours)
Prerequisites: GEND 103 and IMED 110 or permission of instructor
Description: This course will introduce the student to the theories and perspectives of human sociotechnical behavior. Drawing on canonical and new social science literature, the course will present the student with overviews of theories of information, action, sociality, conflict and interaction within traditional and digital environments. The course includes attention to sociotechnical theories around communities of practice, online communities, social media, and enterprise knowledge management. This seminar-type survey course offers the student a better understanding of the contexts and perspectives within which people interact with others, around and through offline, online, and hybrid environments. Offered Spring semester, annually.

IMED 225 - Design Tools and Processes

(3 semester hours)
Prerequisites: IMED 110 or permission of instructor
Description: This course is intended to offer the student the opportunity to work with a variety of tools and processes that support design practice. The course exposes the student to traditional and digital tools, templates, and techniques for design, grouped according to the five different stages in the Design Thinking practice. The course is run as a series of hands-on studio sessions. Offered Spring semester, annually.

IMED 230 - Foundations and Strategies of Marketing

(3 semester hours)
Prerequisites: COMM 110
Description: IMED 230 provides a comprehensive introduction to the essentials of digital marketing, equipping the student with a solid foundation in the field's core principles and strategies. This course is meticulously designed to enhance the student's understanding of marketing within a business framework, focusing on critical concepts such as market segmentation, targeting, crafting unique value propositions, and the importance of metrics for success. Through a blend of theoretical learning and practical exercises, the student will develop the analytical skills necessary to construct and present a digital marketing plan tailored to a company of their choice. Offered Fall semester, annually.

IMED 235 - Cinema Studies

(2 semester hours)
Prerequisites: ENGL 105 or ENGL 106 and GEND 102
Description: This survey course investigates major movies, historical events, schools of thought, and developments in the history of film and mass communication. Through readings, lectures, and independent research, the student focuses on the relationships between history, technology, and media development and explore the impact motion media and mass communication have on society and the economy. Offered Fall semester, annually.

IMED 240 - Interactive Media I

(4 semester hours)
Prerequisites: IMED 110
Description: The fundamental theory and practice of new media is explored in this course. It prepares the student for creative expression and technology application in all aspects of multimedia for effective message communication, whether it is for a specific product, a game or entertainment site, instruction, or eCommerce. New and emerging interactive digital media is used to create, store, transmit and sell products and services. The student may work on a project to enhance a local employer to recruit and expand business. Offered Fall semester, annually.

IMED 250 - Video Production I

(2 semester hours)
Prerequisites: IMED 235
Description: This course explores the fundamental theory and practice of creating digital media. The course also prepares the student for creative expression and technology application in all aspects of media for effective message communication, whether it is for a specific product, a game or entertainment site, instruction, or eCommerce. New and emerging digital media tools are used to create, store, transmit and sell products and services. The student employs these new skills to develop portfolio-ready pieces. Offered Spring semester, annually.

IMED 251 - Video Production II

(2 semester hours)
Prerequisites: IMED 250
Description: This course builds on digital video production skill development. The student uses visual design principles, motion graphics, sound design, and creative camera techniques and editing to produce client-based projects. This course also includes considerable training on the use of studio equipment, including its care and maintenance. Offered Fall semester, annually.

IMED 255 - Audio Production

(3 semester hours)
Prerequisites: None
Description: Audio production can make or break media-based projects. Understanding how sound is created, recorded, processed and managed in digital formats is at the heart of crafting interactive experiences. This course is designed as an introduction to computer based recording, editing, mixing and production of sound. A software purchase is required. Offered Spring semester, annually.

IMED 265 - Front-End Web Development

(3 semester hours)
Prerequisites: IMED 240 or MEBA 210
Description: This course prepares the student for a career in web development. The student will expand their

knowledge of the emerging web technologies while applying sound design methodologies to frontend web development. This multi-faceted course introduces the student to a variety of web development tools and the role of a web designer focused on user interface design. The student will also spend a large portion of the semester transforming interface designs and wire frames into functioning web sites using Adobe Brackets, HTML, CSS, JavaScript and other web technologies as necessary. Offered Spring semester, annually.

IMED 270 - Research Methods for Interactive Design

(3 semester hours)
Prerequisites: IMED 110 or permission of instructor
Description: This course introduces the student to the package of study design and research methods employed in design science. Lessons is structured around design research methodology, execution and reporting. The student engages in learning about and practicing research skills and methods, in order to develop the capacity needed to research the people, processes, contexts and temporalities of digital interaction opportunities. Through readings, discussions, and the exploration of examples, guidelines, and heuristics, the course engages the student in the methodological aspects of human-focused research within design practice. Offered Fall semester, annually.

IMED 275 - Marketing Analytics and Performance Optimization

(3 semester hours)
Prerequisites: IMED 230
Description: This course aims to give the student the skills needed to analyze the results of marketing efforts. The student will learn about factors that drive conversion and how to optimize their efforts using data and A/B testing. The student will understand what the key metrics for digital marketing are. The student will be assessed through three projects that give them an opportunity to get hands-on experience using spreadsheets, Google Analytics, and analyzing an A/B test. Basic internet skills and an understanding of Microsoft Office applications are recommended. Offered Spring semester, annually.

IMED 280 - Usability and Interface Design

(3 semester hours)
Prerequisites: IMED 110 or permission of the instructor
Description: Usability is at the core of the interactive experience design. This course focuses on usability methods and processes to evaluate the design options and digital interfaces for interactive products, services and experiences. This course looks at product usability assessment across the design lifecycle, using published case studies and real-life projects. Interface design activities include product usability study design, execution, evaluation, and reporting. Through reading, analysis and hands-on labs, the student will learn the cost of bad design, and gain a practical understanding of common interface assessment tools. Offered Fall semester, annually.

IMED 298 - Project I

(3 semester hours)
Prerequisites: IMED 240, EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

IMED 300 - 3D Modeling I

(3 semester hours)
Prerequisites: None
Description: Media arts and animation is used in various industries including architecture, television, advertising, education, and forensics. Skills needed in the media arts and animation industry include design, illustration, compositing, and three-dimensional computer modeling. Additionally, the student improves skills in story development, background and layout design, and special effects. This interactive course utilizes industry-related technology and software. Offered Fall semester, annually.

IMED 310 - 3D Modeling II

(3 semester hours)
Prerequisites: IMED 300
Description: The creation of rigs and the motion of characters and objects in games and animation are explored, including full character, muscle, facial, and dynamic rigs. Also reinforced are the principles of animation, such as movement and weight. Offered Spring semester, annually.

IMED 315 - Tabletop Game Design Studio

(3 semester hours)
Prerequisites: ENGL 200
Description: This course is a studio course meant for the student who is interested in becoming game designers and/or developers within the tabletop game industry or are curious about how to design tabletop games instead of video games. The student will design, build, playtest, and self-publish a tabletop game (board game, card game, or dice game). Most classes involve minimal instruction and will instead focus on hands on research and development guided by project milestones, one on one guidance between teacher and student, and group critiques/discussions about each student's game. Activities will include guided and development sessions, internal and external playtest sessions, trips to local game conferences, and guest lectures. By the end of the course, each student will have their very own self-published tabletop game prototype. *There is a cost for the purchase of the published prototype.* Offered Fall semester, annually.

IMED 325 - Interactive Design Perspectives

(3 semester hours)
Prerequisites: IMED 270 and IMED 280 or permission of instructor
Description: This course will introduce the student to the design perspectives encountered most often in interaction design. Design perspectives are attitudes towards how to design which reflect their political, social, and technological beliefs about design practice. Through readings and case studies, the student explores a variety of perspectives in the domain of digital interactive design. The student also explores the foundations of design practice through different standpoints, histories, frames of reference and interpretations of different views of the 'best' way to design. Offered Fall semester, annually.

IMED 330 - Interactive Information Design

(3 semester hours)
Prerequisites: IMED 170 and MATH 280
Description: The increasing amount of data that an individual is exposed to is simultaneously creating an increase in cognitive load. Information Visualization (InfoVis) systems and techniques are intended to aid in dealing with this deluge. Information visualization is the use of interactive interfaces to visually represent abstract data. This course is intended for the student interested in understanding and utilizing information visualization in their own work. Offered Fall semester, annually.

IMED 333 - Social Media Marketing

(3 semester hours)
Prerequisites: IMED 275
Description: IMED 333 delves into the strategic role of social media in digital marketing, equipping the student with the skills to navigate various platforms and implement best practices effectively. This engaging course emphasizes the creation of a social media strategy and the application of knowledge through a capstone project, where the student designs a simulated ad campaign on Facebook. Tailored for individuals with basic internet and Google Workspace skills, it offers a practical approach to mastering social media marketing tools and techniques. Offered Spring semester, annually.

IMED 335 - Introduction to Game Engines

(3 semester hours)
Prerequisites: IMED 120 or CISC 120
Description: Through creating games in two industry standard game engines, this course is intended to introduce the student to the essentials of game development, including Game Editor, Assets Store, Prototype, Game Physics, Character Animation, 2D Features, C#, and C++ Game Scripting. Upon successful completion of this course, the student will be able to use two industry standard game engines to develop both 2D and 3D games; evaluate different engines in game design & development process; and develop collaboration skills through working in game development studio format. Offered Fall semester, annually.

IMED 340 - Interactive Media II

(4 semester hours)
Prerequisites: IMED 240
Description: This course focuses on analyzing, managing, producing, and deploying interactive media projects. Topics include initial planning, proposal writing, information architecture, interface design, project management, user testing, and installation. The student develops various project ideas and presents a final design concept to potential museum, hospitality, theme park or government agency client. Software, hardware, and resources vary based on technical aspects and unique aesthetics of an interactive encounter. Offered Fall semester, annually.

IMED 345 - Mobile Experience Design and Development

(3 semester hours)
Prerequisites: CISC 120 or permission of the instructor
Description: This course will introduce the student to mobile design and development using the industry standard mobile app development system. The weekly topics cover mobile application lifecycle, mobile interface design, data and app distribution. Through weekly homework assignments, the student will design mobile experiences for intended audience, and build mobile applications/games. The student will also be introduced to current mobile design and development practices, such as project management, troubleshooting, and software testing. Offered as needed.

IMED 355 - Users and Populations

(3 semester hours)
Prerequisites: IMED 270 and IMED 280 or permission of instructor
Description: This course will introduce the student to the design-based theories and contexts of users and populations, as found in interaction design. This course is structured around three design contexts: cohorts; environments; and capabilities. The course takes place as a series of case-based seminars. Through readings, discussions, and the exploration of examples and heuristics, the course draws the student's attention to the need to develop their comprehension of used-based theories within design practice. Offered Fall semester, annually.

IMED 358 - Patterns and Contexts

(3 semester hours)
Prerequisites: IMED 270 and IMED 280 or permission of instructor
Description: This course introduces the student to the contextual design of patterned interfaces in interaction design. This course is structured as a series of lectures and seminars around four design areas: contexts; visuals; patterns; and actions. Taking the approach of goal-driven design, the student engages in reading, discussing, experimenting, and presenting design rationales for design choices around traditional and new digital interfaces. The student will be challenged to consider areas of conflict and divergence within a design thinking framework. The student will analyze and reconcile conflicts between goal orientations, contextual needs, and environmental challenges within interactive design practice. Offered Spring semester, annually.

IMED 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guide the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship, and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

IMED 370 - Producing Creative Projects

(3 semester hours)
Prerequisites: IMED 340
Description: This course evaluates design and development procedures used across creative industries. The student is introduced to effective team and process management procedures utilized through the lens of interactive experiences and software development. These topics are further developed through guest lectures, collaborative learning exercises and the development of individual project plans which primarily focus on the people, pixels and processes used in interactive media development. Offered Spring semester, annually.

IMED 380 - Special Topics in Interactive Media

(1 to 4 semester hours)
Prerequisites: Consent of the Instructor and Academic Advisor
Corequisite: 60 credit hours completed
Description: This course covers emerging topics in Interactive Media. It is an in-depth study of a selected specialized area of Interactive Media and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

IMED 382 - World and Narrative Design for Digital Games

(3 semester hours)
Prerequisites: Permission of instructor
Description: In this course, the student will expand their understanding of the connection between game mechanics, object and environment rules, and ludo-narrative devices in digital game worlds. Structured as a studio course, the student will work on a narrative-based game idea of their choice. With a focus on the design of gameplay progression through game mechanics, scalable challenges and difficulty levels, and tasks and rewards that aim to advance the

narrative, the student will develop relevant industry informed documentation and create a playable prototype demonstrating narrative design principles. In doing so, the student will learn to implement effective ludo-narrative elements as they are related to designing engaging digital gameplay experiences. Offered Fall semester, annually.

IMED 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: IMED 240 and a minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

IMED 420 - Games User Research

(3 semester hours)
Prerequisites: Permission of Instructor
Description: This class aims to bridge concepts, principles, and methods of usability and playability assessment for digital games design. The class will cover a range of game related theories, focus on learning different methods of game-play data collection, evaluate what methods work best at different points of the development cycle, and teach the student how to effectively communicate the collected data to the designers/development team. The overall goal of this class is to develop the student's knowledge of the theories, methods, application and communication of games user research and play-testing. Offered Fall semester, annually.

IMED 440 - Interactive Studio

(4 semester hours)
Prerequisites: IMED 370
Description: This course is an upper-level production course focusing on the creation of innovative, workable prototypes using a variety of interactive techniques and emerging technologies. New media (games, digital simulations, mobile applications, and social experience design) is the latest development genre and are analyzed as cultural artifacts. The aesthetics of user experience, personal interaction, and delivery systems are covered along with an analysis of leadership techniques used in independent and AAA production firms. Offered Spring semester, annually.

IMED 450 - Design Studio

(3 semester hours)
Prerequisites: All previous Interactive Media-User Experience Design Concentration Course Requirements
Description: This course is a hands-on practice-oriented studio course. This course requires the student to work with internal and external local clients to conduct and report original design space research within the domain of interaction and experience design. Using a Design Thinking approach, the student will ideate, produce, and test a conceptual prototype that addresses the design problem identified through the research and analysis done in this studio course. Offered Fall semester, annually.

IMED 455 - Professional Practice in Digital Marketing

(3 semester hours)
Prerequisites: IMED 370
Description: IMED 455 is a studio-style practicum crafted to arm graduating undergraduates with the real-world skills and experience needed to thrive in digital marketing careers. This course offers an immersive dive into actual projects and scenarios, providing the student with an in-depth understanding of industry best practices, the latest emerging

trends, and the professional standards expected in the digital marketing field. Through collaborative group projects, sessions with guest speakers from the industry, and networking opportunities, the student will gain practical experience and begin to build a solid professional network. Designed for those on the cusp of launching their careers, IMED 455 lays the groundwork for professional success in digital marketing. Offered Fall semester, annually.

IMED 460 - Designing for Extended Reality

(3 semester hours)
Prerequisites: IMED 340 and CISC 120 or IMED 120
Description: This course covers the design and development of augmented and virtual reality experiences. The student uses the studio model to learn and explore the unique affordances and design opportunities inherent in mixed reality platforms. An understanding of the concepts and techniques of computer programming is required. Offered Fall semester, annually.

IMED 465 - Generative AI Tools and Practices

(3 semester hours)
Prerequisites: A minimum of 60 earned semester hours, ENGL 200, and Project I (program '298' course)
Description: This course explores the rapidly evolving field of generative AI and its applications in content creation and interactive media. The student will gain hands-on experience with cutting-edge AI tools while developing a critical understanding of their impact on creative processes. Through a combination of lectures, workshops, and projects, the student will explore various generative AI technologies, their practical applications, and ethical considerations. Topics include text-to-image generation, natural language processing, and AI-assisted design. The course emphasizes both technical proficiency and creative problem-solving, preparing the student for the growing integration of AI in media production and STEM fields. By the end of the course, the student will have developed a portfolio demonstrating their ability to leverage generative AI tools in innovative content creation projects. Offered Spring semester, annually.

IMED 485 - Game Design Studio

(3 semester hours)
Prerequisites: Permission of Instructor
Description: Through interactive seminars and studio work, the student gains experience applying the fundamentals of game design learned throughout their degree into the development process. Projects are developed using standard game development environments and provide interactive media experiences for the student's e-portfolio. Offered Fall semester, annually.

IMED 498 - Project II

(3 semester hours)
Prerequisites: IMED 298, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor
Description: This project must be in the student's program of study or concentration. It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member, and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

INSC 101 - Introduction to Scientific Research I

(3 semester hours)
Prerequisites: None
Description: This course teaches the student how to identify an interesting science project, research the relevant

scientific literature, write a research proposal, collect and analyze data, and communicate this research and results at various science fairs/competitions. Limited to the College in the High School student. Offered as needed.

INSC 110 - Medical Terminology

(1 semester hour)
Prerequisites: BIOL 102/BIOL 103 or High School Biology
Description: This course introduces the medical terminology used by healthcare professionals, focusing on techniques to help the student understand and apply medical language effectively. The student will also explore body systems and present on common diseases and medical procedures used for treatment. Cross-listed with BTEC 110. Offered Fall semester, annually.

INSC 115 - The Chemistry of Life

(3 semester hours)
Prerequisites: None
Description: What's Organic about Organic Chemistry? This is one of the many discussions that occur. Why is organic chemistry important for a future nurse, lawyer, teacher, scientist or informed citizen? To answer this question, organic chemistry in the context of everyday life is presented. Teamwork and laboratory activities keep the student moving and thinking while studying the chemistry of life. Offered Fall and Spring semester, annually.

INSC 120 - The Scientific Method and Public Opinion

(3 semester hours)
Prerequisites: None
Description: Public opinion is often dictated by preconceived notions, tradition and superstition. This class uses the power of the scientific method, experimental design and statistics to explore some of the things accepted by the public as givens: lunar cycle effects; life, death and holidays; and superstition and old wives' tales. Data-mining techniques are employed, followed by a discussion and application of the appropriate quantitative methods to explore the phenomena under scrutiny. This course has field trips, with one overnight stay. Relations with local hospitals and police officials are developed for access to data. Offered Summer semester, annually.

INSC 200 - Applications of Field Ecology

(4 semester hours)
Prerequisites: CHEM 151-CHEM 152, and MATH 120
Description: Organism data is used to understand evolutionary relationships. Field ecologists collect ranges of species samples and specimens. This work is crucial for learning how and where new infections and invasive species evolve. Applied molecular biology is studied and practiced. One to three field trips are required. Offered Fall semester, annually and as needed.

INSC 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, ENGL 200, C or higher in BIOL 102-BIOL 103, C or higher in CHEM 151-CHEM 152, PHYS 121-PHYS 122 (or taken concurrently), an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours for Biology, Biological Chemistry, and Chemistry
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research. The final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty

member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences. Offered as needed.

INSC 310 - Conservation Biology

(3 semester hours)
Prerequisites: BIOL 303 and BIOL 304
Description: This course covers the importance of biodiversity, the existence of a wide variety of plant and animal species in their natural environment, and the causes and consequences of its reduction and the efforts at prevention of its loss. The student becomes familiar with the history of conservation efforts and identifies instances of success and failure. Material includes applications of conservation science to single species, communities or ecosystems. Offered Spring semester, odd-numbered years.

INSC 320 - The Study of Disease

(3 semester hours)
Prerequisites: BIOL 281-BIOL 282 and minimum of 45 earned semester hours, or BS Nursing Major, or permission of instructor
Description: The human body is studied in health and disease with a focus on the contemporary causes of human pathology. Information on metabolic and infectious disorders that affect major body systems is explained. The study surveys system organ structure and metabolic/genetic aspects of disease, from simple to complex. Offered as needed.

INSC 335 - Field Studies: Estuarial Ecosystems - Chesapeake Bay

(3 semester hours)
Prerequisites: Minimum of 45 earned semester hours or permission of instructor
Description: This course introduces the student to a broad range of subject areas in matters associated with the Chesapeake Bay and its watershed. During the week-long field trip, the ecologically-rich area is visited and studied. Historic and economically important sites are also visited. Research methodologies are introduced to the student and participation leads to a better understanding of the environment. Offered Summer semester, annually.

INSC 336 - Field Studies: Tropical Ecosystems

(3 semester hours)
Prerequisites: Minimum of 45 earned semester hours or permission of instructor
Description: This course introduces the student to a broad range of subject areas in matters associated with tropical ecosystems. During the week-long field trip, the ecologically-rich area is visited and studied. Historic and economically important sites are also visited. Research methodologies are introduced to the student and participation leads to a better understanding of the environment. A non-refundable deposit of $500 is required in order to preregister for this course. Offered Spring semester, annually.

INSC 337 - Field Studies: Wetland Ecosystems

(3 semester hours)
Prerequisites: Minimum of 45 earned semester hours or permission of instructor
Description: This course introduces the student to a broad range of subject areas in matters associated with wetland ecosystems. During the week-long field trip, the ecologically-rich area is visited and studied. Historic and economically important sites are also visited. Research methodologies are introduced to the student and participation leads to a better understanding of the environment. A non-refundable deposit of $500 is required in order to preregister for this course. Offered Summer semester, annually.

INSC 350 - Animal Behavior

(4 semester hours)
Prerequisites: BIOL 102/BIOL 103
Description: This course exposes the student to a broad range of topics within the area of animal behavior, from evolutionary and ecological perspectives. Natural selection and adaptation as functions of behavioral ecological and socio-biological processes are the focus. Ethological questions are also addressed. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, odd-numbered years.

INSC 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guide the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship, and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

INSC 380 - Special Topics in Integrative Sciences

(1 to 4 semester hours)
Prerequisites: None
Description: This course covers emerging topics in integrative sciences. It is an in-depth study of a selected specialized area and the content varies by semester. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

INSC 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

INSC 410 - Epidemiology

(3 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course studies how diseases are detected, identified, and distributed within populations. Epidemiology is the study of the distribution and determination of health-related states or events in specific populations and the application of this study to the control of health problems. The student is shown the medical and scientific investigative skills needed to critically think, strategize, and predict new epidemics and control current ones. Mathematics is used to model disease progression. Offered as needed.

INSC 498 - Project II

(3 semester hours)
Prerequisites: INSC 298, MATH 280, an approved learning contract, permission of the Office of Experiential

Programs, designation of an appropriate academic advisor
Description: This project must be in the student's program of study or concentration(s). It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member, and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

MEBA 100 - Exploring Entrepreneurship

(2 semester hours)
Prerequisites: None
Description: This course focuses on entrepreneurship and innovation. The goal is to improve the participant's understanding, insight, and skill as a potential entrepreneur. The key skill areas addressed are creativity, critical thinking, collaboration and communication. The topic of ethical decision-making as a component of entrepreneurship is also addressed. This course is designed for the student who is interested in defining and transforming a creative, problem solving idea into a sustainable business or program. *Limited to the Dual Enrollment student.* Offered Summer semester, annually.

MEBA 104 - Special Topics in MEBA

(1 to 6 semester hours)
Prerequisites: None
Description: This course covers topics in Management, Entrepreneurship, and Business Administration. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

MEBA 106 - Entrepreneurship Immersion Camp: The Shark Tank

(1 semester hour)
Prerequisites: None
Description: This course is an Entrepreneurship Immersion Summer Camp for High School students. The goal of this camp is to introduce students to the ideas of entrepreneurship, enhance their communication, planning and execution skills, that are needed for starting a new private business. Throughout this camp the student will learn firsthand how to generate and develop new business ides, conduct product and market analysis, create marketing and communication plans, and how to pitch their ideas to potential investors. The ideas will be evaluated by a panel of judges, who will determine the winners of the competition. Coaching, computers, and other resources will be available to the attendees. Limited to the Dual Enrollment student. Offered Summer semester, annually.

MEBA 110 - Introduction to Business and Entrepreneurship

(3 semester hours)
Prerequisites: None
Description: The goal of this course is to introduce entrepreneurship concepts by providing insight into entrepreneurial processes-from finding and evaluating good business opportunities to new venture start-up and growth issues-and entrepreneurial behavior, a critical success factor in new venture creation. The student is taught how businesses are structured and study data from business operations. The student will analyze and evaluate business data to make decisions. The student practices how to use spreadsheets for analysis to make informed decisions, use written communication to justify those decisions, and deliver oral presentations to communicate those decisions. Offered Spring semester, annually.

MEBA 201 - Independent Study

(1 to 4 semester hours)
Prerequisites: MEBA 110
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

MEBA 210 - Web Development for Business

(3 semester hours)
Prerequisites: None
Description: Information Systems enable and drive the modern enterprise. The student is exposed to the key building blocks (programming languages, web technologies, and databases) of the modern technology infrastructure. Modern technologies are explained through hands-on assignments. The course exposes the student to the main aspects of web-based software development processes with the emphasis on how to manage the outcomes of these processes. The student also has an opportunity to develop a simple web portal that involves simple database queries by using SQL. Offered Spring semester, annually.

MEBA 220 - Principles of Business Management

(3 semester hours)
Prerequisites: None
Description: The student is provided with analytical tools to understand and synthesize the most current applications of theories and concepts in business management and is exposed to the debate on the dynamic of business environment, evolving business models, economic systems, and scale of domestic and global competition in the market place. Offered Spring semester, annually.

MEBA 225 - Accounting

(3 semester hours)
Prerequisites: MEBA 110
Description: The student is introduced to the basic concepts and standards underlying managerial accounting systems. The student learns how to produce income statements, balance sheets, and cash flow statements. The student also learns how these documents describe the state of the firm in terms of revenue recognition, inventory, long-lived assets, present value, and long-term liabilities. The emphasis of this course is for the student to understand the internal operations of a firm and how those operations are reflected in documentation. Offered Fall semester, annually.

MEBA 230 - Marketing

(3 semester hours)
Prerequisites: MEBA 110
Description: Marketing is defined as the process of getting the right products to the right people, at the right place, time, and price by using the most effective promotional course of action. Marketing is also defined as providing goods and services that meet or exceed expectations of potential consumers' needs and wants. The student is shown what makes a company embrace ethics in professional decision-making; what encourages corporations to become socially responsible; what the processes are for product concepts, product development, and types of consumer products and services; how companies research the market, configure market segmentation, and target their market; and how companies develop online marketing strategies in order to target consumers and businesses. Offered Fall semester, annually.

MEBA 232 - Business Research Design and Methods

(2 semester hours)
Prerequisites: None
Description: This course will provide the student with the skills and knowledge needed to employ research methodologies in a business setting. Traditional experimental and quasi-experimental approaches will be covered. The student will learn to use the scientific method to develop assessment tools, for market testing and product development, and to engage in targeted marketing. Offered Fall semester, annually.

MEBA 250 - Corporate Innovation and Entrepreneurship

(3 semester hours)
Prerequisites: MEBA 110
Corequisite: None
Description: This course covers the use of entrepreneurial capabilities to develop new ventures, products, and processes. These concepts can be used with start-ups or within an established organization. The student is introduced to some of the core concepts and analytical tools used in entrepreneurship as part of a strategy for growth, updating a company's offerings, or developing totally new products. In order to instantiate these changes, the student will integrate services, markets, internal processes, quality, community relationships, and customer experience. Offered Spring semester, annually.

MEBA 298 - Project I

(3 semester hours)
Prerequisites: EXPL 200, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor, and a minimum of 40 earned semester hours
Description: This first project in the student's experiential program challenges the student to identify, investigate and analyze a particular topic in the program of study or a concentration. A key objective is to apply skills, methods, and knowledge obtained in prior courses with independent thinking and research; the final product represents the successful and purposeful application of knowledge. The project is undertaken with the close mentorship of a faculty member and may involve a community partner. Projects can involve scientific-based research or laboratory experiences, needs analysis or development plans for external organizations, or market studies and business plan proposals. Offered as needed.

MEBA 310 - Integration of Business Technology and Commerce

(3 semester hours)
Prerequisites: MEBA 210
Description: This course studies, analyzes, and evaluates how business and technology integrate in order to create sustainable systems within the modern economy. The student will build small web and mobile applications in order to better understand how business and technology comes together. Case studies are used to explain the business processes and scenarios that drive new enterprises. Economic trends and emerging web and mobile computing technologies are explored to understand the technical, business, and social processes that are shaping the modern marketplace. Offered Spring semester, annually.

MEBA 312 - Leadership and Organizational Behavior

(3 semester hours)
Prerequisites: MEBA 220 and MEBA Major, BS-Cybersecurity Operations and Management Major, BS-Nursing Major, or a minimum of 60 earned semester hours
Description: Modern organizations are characterized by constant change, market fluctuations, increased automation, and globalization. This course explores and examines the basic framework for leadership styles focuses on ethical leadership in times of change and crisis through use of case studies and examples. The course examines the behavior of individuals and groups in the modern global settings and concentrates on improving productivity, job satisfaction, team development and continuous improvement practices experiences. Offered Fall semester, annually.

MEBA 322 - Decision Theory

(3 semester hours)
Prerequisites: MEBA 220
Description: This course provides the student with general and applied decision theory. Decision making processes and biases are discussed within individual, group, and organizational levels. The student learns how decision biases can be leveraged to predict and "nudge" behavior and to improve impressions. Ethical considerations are also discussed. Offered Spring semester, annually.

MEBA 330 - Sales and Sales Management

(3 semester hours)
Prerequisites: MEBA 230
Description: This course examines sales management strategies, approaches and best practices in creating an adaptive sales force. Areas explored include the human dimension of hiring and firing employees, how to look proactively at how to market and sell in a global and technological environment and identify where people skills and competencies are vitally important. The productivity and assessment of the sales force, through motivation and training, are also explored. Methods to advertise and sell over the Internet are studied. Current events, market trends and areas, and regional associations for the various sales trades are covered. Offered Spring semester annually, or as needed.

MEBA 340 - Introduction to Innovation and Design Thinking

(3 semester hours)
Prerequisites: MEBA 250
Description: This course introduces the student to the tools and mindset required to be an innovator and an entrepreneur. Through innovation, design thinking, and entrepreneurship, this course leads the student through the processes used for finding problems worth solving and mobilizing the resources to solve them. Offered Fall semester, annually.

MEBA 352 - Consumer Behavior

(3 semester hours)
Prerequisites: MEBA 230
Description: This course includes an understanding of consumer behavior in the digital marketplace and the foundation for digital marketing strategy. The student is introduced to consumer segmentation, use of consumer research, and trends in adoption of digital media. Exploration for channels of digital communications including desktop, mobile, tablet, gaming and TV are discussed and analyzed. The student is shown how to plan and execute basic consumer research using digital tools and the use of CRM (customer relationship management) tools to track and market to different consumer types. Offered Spring semester annually, or as needed.

MEBA 354 - Integrated Marketing Communications

(3 semester hours)
Prerequisites: MEBA 230
Description: Agencies and individuals need to possess expertise in professional marketing practices and mediums. Integrated marketing merges all aspects of marketing communication such as advertising, sales promotion, public relations, direct marketing and social media, through a mix of tactics, methods, channels, media and activities into a unified user-centric strategy. Through critical evaluation and marketplace analysis, the student applies theories, utilizes frameworks, examines case studies, and integrates marketing practices in both team and individual projects. Offered Fall semester annually, or as needed.

MEBA 360 - Healthcare Systems

(3 semester hours)
Prerequisites: None
Description: This course introduces the business, operational, and management aspects of healthcare. Through case studies and examples, the student is introduced to a wide range of healthcare topics such as healthcare business processes, healthcare clinical systems and services (patient care, physician support systems, healthcare networks), hospital systems, healthcare management, and government regulations. Offered Fall semester, even-numbered years.

MEBA 365 - Internship

(3 semester hours)
Prerequisites: EXPL 200, or permission, an approved learning contract, permission of Office of Experiential Programs, designation of an appropriate academic advisor, and a site supervisor
Description: An internship allows the student to put theory into practice. The student applies classroom experiences to the workplace at an off-site placement, where ideas are tested and competencies and skills are developed. Throughout the internship, the student works regularly with a faculty supervisor, the Office of Experiential Programs, and a site supervisor who guide the learning process. The student integrates the collective observations, analyses, and reflections of this experiential team into an internship portfolio that showcases the accomplishments of the experience. The unique portfolio is constructed throughout the internship, and represents the evolutionary and dynamic nature of the learning process. Offered as needed.

MEBA 372 - Analytics Tools and Techniques

(3 semester hours)
Prerequisites: MATH 280 or MEBA 210
Description: The use of analytics is a common practice in modern business settings. This course introduces the basic concept and practice of analytics and its role in business. The emphasis is on the tools and techniques of analytics with case studies and examples. Topics include: data querying and reporting; data access and management; data cleansing; statistical programming; data mining introduction; relational databases; and, statistical analysis of databases. The student is also introduced to Business Intelligence (BI) and statistical methodology (i.e. clustering, decision tree, etc.) along with using popular analytics packages such as SAS, Google Analytics, Business Objects, Aginity, and others. Offered Fall semester, annually.

MEBA 375 - Statistics for Managers

(3 semester hours)
Prerequisites: MATH 280 or BS Nursing Major
Description: This course applies statistical knowledge to business. The student explores the ability to define problems, form questions, collect data, analyze the data using inferential tools, and how to formulate and test hypotheses. The student is expected to master probability concepts within the realm of decision making. Offered Spring semester annually, or as needed.

MEBA 380 - Special Topics in Management Entrepreneurship, and Business Administration

(1 to 4 semester hours)
Prerequisites: MEBA 110 and permission of the instructor
Description: This course covers emerging topics in business, entrepreneurship, management, and technology. The topics change as the field evolves but will span strategy, business models, and societal trends. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

MEBA 381 - Special Topics in Digital Health

(3 semester hours)
Prerequisites: MEBA 360 and permission of instructor
Description: This course covers emerging topics in Digital Health. The topics will change as the field evolves but will span digital healthcare management, security and privacy issues, the role of public policies and regulations in healthcare IT, electronic health records (EHR), and the growing role of information and communication technologies in global health. Offered Spring semester, even-numbered years.

MEBA 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: MEBA 110 and permission of the instructor
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

MEBA 410 - Business Entrepreneurship in Practice

(3 semester hours)
Prerequisites: MEBA 250
Description: The student will learn the process of how to create an innovation-based new venture. As a framework for this, we use the business planning process and the student develops the essential parts of a business plan and investor pitch as a useful vehicle to achieve this goal. The student works in teams to launch companies, working through issues of the market analysis, technology viability assessment, competitive positioning, team-building, product life-cycle planning, marketing strategy, sales channel analysis, and a strong emphasis on the entrepreneur as a sales person. Offered Spring semester, annually.

MEBA 411 - Entrepreneurial Investment

(3 semester hours)
Prerequisites: MEBA 250
Description: This course examines the elements of entrepreneurial finance, focusing on technology-based start-up ventures and the early stages of company development. This course addresses key questions which challenge all entrepreneurs: how much money can and should be raised; when it should be raised and from whom; what is a reasonable valuation of a company; and how funding, employment contracts, and exit decisions should be structured. This course aims to prepare the student for these decisions, both as an entrepreneur and venture capitalist. Offered Spring semester, annually.

MEBA 420 - International Business and Strategies

(3 semester hours)
Prerequisites: MEBA 220 and MEBA 230
Description: This course discusses how global markets impact managerial processes. The questions under investigation are how managers adapt their organizational practices to accommodate global and local cultures and businesses practices in different parts of the world. The course explores the best practices in global strategic management, organizational design, human resource processes and organizational behavior. Also discussed are business strategy, Porter Models, and micro-macro economics in global and extended enterprises. Global supply chains and global operation management, with an emphasis on total quality management (TQM), are also examined. Offered Spring semester, even-numbered years.

MEBA 425 - Product Management

(3 semester hours)
Prerequisites: MEBA 230
Description: This course provides the student with the critical information needed to develop a product and brand strategy that generates both quick wins and long-term value. By completing this course, the student is in a position to create an activity plan to bring their brand strategy to life - both externally towards consumers and internally to employees. Offered Spring semester, annually.

MEBA 432 - Management and Innovation Strategies

(3 semester hours)
Prerequisites: MEBA 225 and MEBA 312
Description: To capture the high level of complexity under which strategic management takes place, this course predominantly uses the case method to examine how general managers create and maintain a competitive advantage for their organizations. The student examines critical strategic issues confronted by top executives of organizations, as well as take a general management and a multi-functional approach to these strategic issues by using all the core business functions. Offered Fall semester, annually.

MEBA 435 - Business Law and Ethics

(3 semester hours)
Prerequisites: MEBA 220
Description: The purpose of this course is to define fundamental legal terminology regarding contracts, torts, property, and wills, as well as differentiate between business ethics and legal issues. The course provides the student with foundational information about the U.S. legal system and dispute resolution and their impact on business. The major content areas include general principles of law, the U.S. Constitution, legal systems, the relationship between law and ethics, contracts, sales, torts, agency law, intellectual property, and business law in the global context. Offered Fall semester, annually.

MEBA 450 - Finance

(3 semester hours)
Prerequisites: MEBA 225
Description: This course builds on MEBA 225 Accounting. The student will learn how to analyze firms' financial statements and disclosures and determine how to use financial statements in valuation of a firm's strategy and future. This course is very applied and uses data from a variety of sources, especially data generated from the student's experiential projects. The student will acquire an understanding of both the "how" of accounting procedures and the underlying reasons "why" these practices are adopted. These skills are essential for pursuing a broad range of professions in management, analysis, entrepreneurialism, law, and finance. Offered Spring semester, annually.

MEBA 470 - Business Systems Analysis, Modeling and Design

(3 semester hours)
Prerequisites: MEBA 432
Description: This course prepares the student to analyze business information systems and to build models and logical designs that can be implemented later. Emphasis is on understanding the business processes and business requirements and building conceptual models that help in the analysis of business requirements. Complex systems and to build designs and architectures that can satisfy the business requirements are discussed. The course emphasizes business process modeling, business patterns, object orientation, design patterns and component-based design approaches. Topics include modern system life cycles, project management, BRODE (buy, rent, outsource, develop, extend) strategies in system building, business system modeling, requirements analysis, conceptual design, architectures, physical design, and design for the modern mobile systems with security and integration considerations. Offered Spring semester, annually.

MEBA 472 - Business Intelligence and Decision Support Systems

(3 semester hours)
Prerequisites: MEBA 310
Description: Modern electronically-enabled enterprises rely increasingly on knowledge that needs to be managed and processed through a variety of intelligent tools. This course covers the vital issue of business intelligence and knowledge management in modern enterprises and discusses how decision support and expert systems tools can be used for effective decision making in organizations. Topics include artificial intelligence in a business context, business intelligence and business analytics, data mining, data warehousing, click stream mining, knowledge management, decision support and expert systems, artificial intelligence principles, neural networks, learning systems, and intelligent agents in a business context. Offered Fall semester, annually.

MEBA 480 - Enterprise Architectures and Integration for a Global Economy

(3 semester hours)
Prerequisites: MEBA 310
Description: Modern digital enterprises are characterized by increased automation, mobile services, extended B2B operations with global business partners, and on-demand business services. The main concern in such enterprises is to architect and integrate a very wide range of services quickly and effectively. This course highlights the role of information and communication technologies, enterprise models, and emerging service oriented architectures (SOA) standards in developing flexible and integrated business architectures. Offered Spring semester, even-numbered years.

MEBA 482 - Quantitative Methods in Managerial Decision-Making

(3 semester hours)
Prerequisites: MEBA 210 and MEBA 375
Description: This course will provide the student with a solid foundation in the statistical methodologies required for quantitative decision-making. The student will learn how to identify the correct statistical analysis to perform given the research question and the format (type) of data. The student will learn how to perform these analyses using a variety of tools. The student will use various programming languages to collect, organize, and analyze data. Focus will be placed on the use of statistical results to make informed decisions in a business context. Offered Spring semester, annually.

MEBA 485 - Marketing Analytics

(3 semester hours)
Prerequisites: MATH 280
Description: This course introduces the student to researching the needs and wants of customers. The student performs statistical analysis on multiple factors involved in developing marketing campaigns, such as pricing, digital marketing, multiple marketing channels, segmentation, and others. Offered Spring semester annually, or as needed.

MEBA 488 - Marketing Research

(3 semester hours)
Prerequisites: MEBA 375 and MEBA 230
Description: This course uses marketing research to make business decisions. The student identifies a marketing problem, collects marketing data regarding the stated problem, analyzes the collected data, interprets findings, presents implications and findings; and applies findings as proposed business actions. The student's research includes quantitative, qualitative and mixed method approaches; they collect data using questionnaires (close and open-ended), focus groups, panels, interviews (structured and unstructured) and to analyze and interpret the results. Offered Spring semester annually, or as needed.

MEBA 498 - Project II

(3 semester hours)
Prerequisites: MEBA 298, an approved learning contract, permission of the Office of Experiential Programs, designation of an appropriate academic advisor
Description: This project must be in the student's program of study or concentration(s). It should demonstrate application of the skills, methods, and knowledge of the discipline to solve a problem or answer a question representative of the type to be encountered in the student's profession. As with Project I, this is undertaken with the close mentorship of a faculty member, and may involve a community partner. The ideal project has a clear purpose that builds directly upon the learning that occurs within the student's first project and internship. Offered as needed.

MEBA 499 - Applied Practice

(3 semester hours)
Prerequisites: EXPL 200 or permission, an approved learning contract, permission of the Office of Experiential Programs, and designation of an appropriate academic advisor
Description: This course offers the student the opportunity to reflect upon previous experiences and build on current experience to enhance professional and career development. The student is expected to transfer theory into extended application and practice. The student will reflect and apply the HU core competencies towards their previous experience, current experience and academic programs in preparation for their future career. The Applied Practice assists the student in the completion of their ePortfolio. It is an alternative to 365 Internship; the student needs to complete one or the other. Limited to the student enrolled in an HU Online Program. Offered as needed.

MATH 081 - Prealgebra

(3 semester hours)
Prerequisites: Placement by assessment
Description: This course is offered to the student who needs additional preparation in algebra or who has been away from mathematics for several years. Subject areas to be covered include: arithmetic of whole numbers, fraction and decimals, ratios and percent's, and basic algebraic concepts. Math study skills are an integral part of this course. Prepares the student for College Algebra. Credit does not count towards graduation requirements. Offered Each semester, annually.

MATH 082 - Prealgebra Recitation

(0 semester hour)
Prerequisites: IP grade in MATH 081
Description: This course is required for the student who earned a grade of in progress (IP) in MATH 081 in a previous semester. The student has the opportunity to complete topics presented in MATH 081 under the supervision of an instructor on a scheduled basis. Offered as needed.

MATH 104 - Special Topics

(1 to 3 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in Mathematics. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

MATH 106 - Special Topics in MATH

(3 semester hours)
Prerequisites: Based on topic(s) covered or permission of instructor
Description: This course covers topics in Mathematics. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

MATH 120 - College Algebra

(3 semester hours)
Prerequisites: C or higher in MATH 081 or by assessment
Description: This course is designed for the student with an elementary knowledge of algebra. Topics include properties of real numbers, problem-solving using equations and inequalities, algebraic functions, graphing, systems of equations and inequalities, polynomial functions and graphs, exponents and radicals, the binomial theorem, zeros of polynomials, inverse functions, and applications and graphs. Free on-line graphing and calculating utilities are used in lieu of a graphing calculator. This course meets a total of 4 hours per week to permit active learning activities each week driven by student interests or needs. Offered Each semester, annually.

MATH 140 - Precalculus

(3 semester hours)
Prerequisites: Placement by Assessment into College Algebra
Description: This course develops the properties, definitions and graphs of the algebraic, logarithmic and trigonometric functions and their inverses. The treatment emphasizes how to construct models of applications using the algebraic and transcendental functions. Offered Fall and Spring semester, annually.

MATH 150 - Applied Mathematical Reasoning

(3 semester hours)
Prerequisites: MATH 120
Description: The course introduces some of the major themes and ideas in mathematical reasoning and focuses on mathematical applications relevant to a non-physical science student. The content in the course will help the student to use mathematical concepts effectively in their respective disciplines. The course lays a lot of stress on geometry and trigonometry. Topics covered in the course include plane geometry, transformational geometry, trigonometry, set theory, logic, and elementary graph theory. Offered Fall and Spring semester, annually.

MATH 210 - Discrete Mathematics I

(3 semester hours)
Prerequisites: MATH 120 or MATH 220
Description: This course provides the student with an understanding of multiple mathematical concepts and methods, which shape the foundation of modern information science in a form that is relevant and useful. Discrete mathematics plays a fundamental role for computer science, which is similar to that played by calculus for physics and engineering. Many concepts in computer science are best understood from a perspective that requires expertise with mathematical tools and certain reasoning skills associated with mathematical maturity. The topics covered draw on current material from several mathematical disciplines: Boolean Algebra, Formal logic, Set theory, Number Theory, Combinatorics and Relations. Offered Fall semester, annually.

MATH 220 - Calculus I

(3 semester hours)
Prerequisites: MATH 120 or MATH 140 or MATH 280
Description: This course introduces techniques to evaluate limits and covers continuity, special trigonometric limits, absolute value limits and differentiation of algebraic, trigonometric, and logarithmic functions. The course explores intermediate value theorem, mean value theorem, and extreme value theorem. Other topics for exploration are application and formal definition of derivative average rate of change versus instantaneous rate of change, velocity, and the introduction of the definite integral and its applications. A graphing calculator is required for this course. Offered Fall and Spring semester, annually.

MATH 250 - Introduction to Linear Algebra

(3 semester hours)
Prerequisites: MATH 120 or MATH 220
Description: As science and engineering disciplines grow so does the use of mathematics; new mathematical problems are encountered, and new mathematical skills are required. In this respect, linear algebra has an essential role in various engineering and scientific disciplines. This course develops the fundamental algebraic tools involving matrices and vectors to study linear systems of equations and Gaussian elimination, linear transformations, orthogonal projection, least squares, determinants, eigenvalues and eigenvectors and their applications. This course develops concrete computational skills along with theoretical considerations. Offered Spring semester, annually.

MATH 260 - Calculus II

(3 semester hours)
Prerequisites: MATH 220
Description: This course focuses on the exploration of differential calculus, the derivatives of all functions. An emphasis is placed on the rules of differentiation and their proofs. The course analyzes graphs of functions using the concept of derivative and its application and includes an introduction to integral calculus, integration properties, differential equations and notation. Problem solving is learned using elementary integration techniques, elementary trigonometric integration, and hyperbolic functions. A graphing calculator is required for this course. Offered Fall and Summer semester, annually.

MATH 261 - Calculus III

(3 semester hours)
Prerequisites: MATH 260
Description: This course develops vector algebra, the calculus of more than one variable; partial derivative; volume; surface and line integrals; the polar, cylindrical and spherical coordinate systems; and the theory of vector fields. It develops the theory of vector calculus and conservative vector fields which lead to the conservation laws of nature. In addition, the course fully treats the mathematical framework of defining geometry in three dimensions. Offered Spring semester, annually.

MATH 280 - Introductory Statistics

(3 semester hours)
Prerequisites: MATH 120 or MATH 220 or BS Nursing Major
Description: This course covers elementary topics from the probability and statistics of both discrete and continuous random variables. Topics include independence and dependence, mean, variance and expectation, and distributions of random variables. Statistics is applied to hypothesis testing. This course provides the student with a broad, general knowledge and understanding of statistics. The emphasis of this course is on the utility and practical application of statistics rather than on the mathematical derivation of statistical principles. Offered Each semester, annually.

MATH 300 - Experiment Design and Analysis

(3 semester hours)
Prerequisites: MATH 280
Description: This course is an introduction to applied design of experiments and the statistical analysis of scientific data. It provides a detailed development of specific parametric and non-parametric statistical procedures and their application to various experimental designs. This course is well-suited for a student to apply sound data analysis technique to experimental data. Key course objectives are: designing experimental procedures to obtain the desired information, application of the statistical procedures consistent with the design, and to draw meaningful inferences from the results. Offered Spring semester, annually.

MATH 310 - Discrete Mathematics II

(3 semester hours)
Prerequisites: MATH 210 or MATH 260
Description: This course ensures that the student reaches the level of mathematical maturity necessary for the study of Computer and Information Sciences. Topics covered draw on current material from the study of Graph Theory, Mathematical Induction and Advanced Counting Techniques. Offered Spring semester, annually.

MATH 320 - Ordinary Differential Equations

(3 semester hours)
Prerequisites: MATH 260
Description: This course serves as an introduction to Ordinary Differential Equations (ODEs) and their applications. Topics include: Existence, uniqueness and the stability of solutions; first and second order ODEs; applications; the Laplace transform; numerical methods; systems of ODEs and solutions of linear equations with constant coefficients. Developing applied models taken from a wide variety of fields and learning to communicate your understanding by writing effective arguments are key objectives of this course. Offered Spring semester, annually.

MATH 370 - Numerical Methods

(3 semester hours)
Prerequisites: MATH 210 or MATH 220
Description: This course covers the math methodologies that underlie the techniques of scientific computing and related numerical methods. Topics include: direct and iterative methods for linear systems, eigenvalue decompositions and factorizations, stability and accuracy of numerical algorithms, the IEEE floating-point standard, sparse and structured matrices, and linear algebra software. Other topics may include memory hierarchies and the impact of caches on algorithms, nonlinear optimization, numerical integration, FFTs, and s ensitivity analysis. Problem sets will involve use of C++ programming language. The course is intensely practical with solved examples and graded exercises. Offered Fall semester, annually.

MATH 380 - Mathematical Modeling

(3 semester hours)
Prerequisites: MATH 220
Description: This course involves applications of mathematics to real-world problems drawn from industry, research, laboratories, the physical sciences, engineering and scientific literature. Techniques used include parameter estimation, curve fitting, calculus, elementary probability, optimization, computer programming, and ordinary and partial differential equations. People routinely solve problems using estimation, probability, optimization, and simulation or modeling techniques without considering themselves mathematicians. This course broadens and strengthens the exposure of the interested student to applications of mathematics frequently seen in industry, science, and government. Offered Spring semester, annually.

MATH 381 - Special Topics

(1 to 4 semester hours)
Prerequisites: Consent of the Instructor and Academic Advisor
Description: This course covers topics in Mathematics. Due to the nature of evolving topics, this course may not be eligible for repeat. Offered as needed.

MATH 390 - Independent Study

(1 to 4 semester hours)
Prerequisites: Minimum of 60 earned semester hours
Description: This course is designed for the student who demonstrates an interest in an area of study not offered or who wishes to pursue a discipline in greater depth than possible through existing courses. An independent study counts as an elective and may not be used for accelerated or remedial credit. A learning contract between the student and instructor defines the responsibilities of the parties and specifies the learning objectives and standards for successful completion of the project. A calendar of meeting times and deadlines shall be a part of that contract. Offered as needed.

MATH 420 - Mathematical Methods and Analysis

(3 semester hours)
Prerequisites: MATH 320
Description: Several topics in advanced calculus are developed in this course including functions of a complex variable, infinite series, Fourier series, Partial Differential Equations, Probability Theory and Mathematical Statistics. Applied problems arising from many fields of science and data analysis are treated using the mathematical topics covered. Computer Aided Software is used to supplement the material in each topic. Offered Fall semester, annually.

NANO 211 - Materials, Safety and Equipment Overview for Nanotechnology

(3 semester hours)
Prerequisites: CHEM 161/CHEM 162, MATH 120, and PHYS 121-PHYS 122
Description: Nanofabrication processing equipment and materials handling procedures with a focus on safety, environment, and health issues. *Course available only at The Pennsylvania State University - University Park campus.* Offered Each semester, annually.

NANO 212 - Basic Nanotechnology Processes

(3 semester hours)
Corequisite: NANO 211
Description: Step-by-step description of equipment and processes needed in top-down, bottom-up, and hybrid nanofabrication. *Course available only at The Pennsylvania State University - University Park campus.* Offered Each semester, annually.

NANO 213 - Materials in Nanotechnology

(3 semester hours)
Corequisite: NANO 212
Description: The use of materials for nanotechnology as well as the unique material properties available at the nano-scale. *Course available only at The Pennsylvania State University - University Park campus.* Offered Each semester, annually.

NANO 214 - Patterning for Nanofabrication

(3 semester hours)
Corequisite: NANO 212
Description: Lithographic process from substrate preparation to exposure; process from development through inspection; advanced optical lithographic techniques. *Course available only at The Pennsylvania State University - University Park campus.* Offered Each semester, annually.

NANO 215 - Materials Modification in Nanotechnology Applications

(3 semester hours)
Corequisite: NANO 212
Description: Processing steps used in modifying material properties in nanofabrication. *Course available only at The Pennsylvania State University - University Park campus.* Offered Each semester, annually.

NANO 216 - Characterization, Testing of Nanofabricated Structures and Materials

(3 semester hours)
Corequisite: NANO 212
Description: Measurements and techniques essential for controlling device fabrication. *Course available only at The Pennsylvania State University - University Park campus.* May substitute Project I. Offered Each semester, annually.

PHYS 120 - General Physics I

(4 semester hours)
Prerequisites: High School Physics and Algebra II, or MATH 120, or MATH 140, or MATH 220
Description: This course provides an introductory treatment of classical Newtonian physics, covering kinematics in one and two dimensions, forces, Newton's laws of motion, uniform circular motion, work and energy, linear and angular momentum, rotational kinematics and dynamics, and simple harmonic motion. The course emphasizes the development of problem-solving skills through worked examples, exercises, and homework assignments. Applications of physics to problems in medical technology are highlighted throughout the course. The 3-hour weekly lab component reinforces theoretical concepts covered in lectures through experimentation, data analysis, and scientific reporting. Three hours of lecture, three hours of laboratory per week. Limited to the student enrolled in the BS-Exercise Science degree program. Offered Fall semester, annually.

PHYS 121 - General Physics I Lecture

(3 semester hours)
Prerequisites: MATH 120, MATH 140, or MATH 220
Corequisite: PHYS 122
Description: This course provides an introductory treatment of classical Newtonian physics and covers kinematics in one and two dimensions, vector forces, Newton's laws of motion, uniform circular motion, work, conservation of energy, momentum and angular momentum, rotational kinematics and dynamics, and simple harmonic motion. Emphasis is placed on the application of basic concepts through mathematical problem-solving. Applications of physics to problems in medicine are presented and medical technology is highlighted throughout the course. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

PHYS 122 - General Physics I Lab

(1 semester hour)
Prerequisites: MATH 120, MATH 140, or MATH 220
Corequisite: PHYS 121
Description: This laboratory course provides hands-on experience with various measurement technologies and reinforces the theoretical concepts developed in PHYS 121. Emphasis is placed on correct setup of experimental equipment to obtain valid results, troubleshooting errors, and data analysis in support of a hypothesis. Three hours of lecture, three hours of laboratory per week. Offered Fall semester, annually.

PHYS 130 - General Physics II

(4 semester hours)
Prerequisites: PHYS 120
Description: This course extends the study of classical physics and covers topics in electrostatics, magneto statics,

electric circuits, electromagnetic waves, optics, interference and diffraction, and the quantum theories of atomic and nuclear physics. Mathematical problem-solving skills and applied problems in medical technology are emphasized. Applications of elementary and differential and integral calculus to physics are introduced. The course includes laboratory experiments to expose the student to advanced electronic and radiation measurement technologies and enhance the theoretical development of each topic. Three hours of lecture, three hours of laboratory per week. Limited to the student enrolled in the BS-Exercise Science degree program. Offered Spring semester, annually.

PHYS 131 - General Physics II Lecture

(3 semester hours)
Prerequisites: PHYS 121-PHYS 122 or PHYS 331-PHYS 332
Corequisite: PHYS 132
Description: This course extends the study of classical physics and covers topics in electrostatics, magneto statics, electric circuits, electromagnetic waves, optics, interference and diffraction, and the quantum theories of atomic and nuclear physics. Mathematical problem-solving skills and applied problems in medical technology are emphasized. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

PHYS 132 - General Physics II Lab

(1 semester hour)
Prerequisites: PHYS 121-PHYS 122 or PHYS 331-PHYS 332
Corequisite: PHYS 131
Description: This laboratory course provides hands-on experience with various measurement technologies and reinforces the theoretical concepts developed in PHYS 131. Emphasis is placed on correct setup of experimental equipment to obtain valid results, troubleshooting errors, and data analysis in support of a hypothesis. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

PHYS 301 - Physical Thermodynamics

(3 semester hours)
Prerequisites: CHEM 161-CHEM 162, MATH 220, PHYS 131-PHYS 132 , and PHYS 320 (or taken concurrently) or permission of instructor
Description: This course is designed for the student who has an interest to apply knowledge gained in calculus, physics and chemistry to the study of thermodynamics and chemical equilibrium. Offered Spring semester, even-numbered years.

PHYS 315 - Quantum Mechanics and Spectroscopy

(3 semester hours)
Prerequisites: CHEM 221-CHEM 222, MATH 260, PHYS 131-PHYS 132 , and PHYS 320 (or taken concurrently) or permission of instructor
Description: This course integrates knowledge gained in calculus and physics to atoms and molecules of chemistry. Quantum mechanical theory is introduced and applied to understand how electrons are arranged in atoms and molecules and ultimately studied using spectroscopy. Offered Fall semester, even-numbered years.

PHYS 320 - Physical Chemistry Laboratory

(1 semester hour)
Prerequisites: CHEM 221-CHEM 222, MATH 220, and PHYS 131-PHYS 132 or permission of instructor
Corequisite: PHYS 301 or PHYS 315
Description: The student will be introduced to principles and practical techniques, including spectroscopic, thermodynamic and kinetic experiments. Real-world applications will be explored through discovery labs emphasizing

teamwork, problem-solving skills, and student-guided experimental design. Offered Fall semester, odd-numbered years and Spring semester, even-numbered years.

PHYS 331 - University Physics I Lecture

(3 semester hours)
Prerequisites: MATH 260
Corequisite: PHYS 332
Description: This calculus-based physics course introduces the classical physics founded upon Newton's Laws, and the conservation of energy and momentum. Applications of these principles treat topics such as the rotational dynamics of rigid bodies, Newton's theory of gravity, oscillations, fluids and elasticity. Offered Fall semester, annually.

PHYS 332 - University Physics I Laboratory

(1 semester hour)
Prerequisites: MATH 260
Corequisite: PHYS 331
Description: This laboratory course reinforces the theoretical concepts covered in PHYS 331 - University Physics I Lecture by providing hands-on experience with various measurement techniques. Throughout the course, the student will gain practical skills in setting up and operating laboratory equipment, acquiring and analyzing data, and using the results to test hypotheses and derive scientific conclusions. Offered Fall semester, annually.

PHYS 350 - University Physics II

(4 semester hours)
Prerequisites: PHYS 331 and PHYS 332
Description: This course is a continuation of University Physics I. University Physics II develops the physical principles of electricity and magnetism, DC electric circuits, electromagnetic radiation, interference phenomena, quantification, and quantum theory of the atom. The course makes extensive use of vector calculus. Three hours of lecture, three hours of laboratory per week. Offered Spring semester, annually.

PHYS 351 - University Physics II Lecture

(3 semester hours)
Prerequisites: PHYS 331 and PHYS 332
Corequisite: PHYS 352
Description: This course is the second part of the calculus-based university physics sequence. It develops the physical principles of electricity and magnetism, DC electric circuits, electromagnetic radiation, interference phenomena, quantization, and the quantum theory of the atom. The course makes extensive use of vector calculus. Offered Spring semester, annually.

PHYS 352 - University Physics II Laboratory

(1 semester hour)
Prerequisites: PHYS 331 and PHYS 332
Corequisite: PHYS 351
Description: This laboratory course reinforces the theoretical concepts covered in PHYS 351 - University Physics II Lecture by providing hands-on experience with various measurement techniques. Throughout the course, the student will gain practical skills in setting up and operating laboratory equipment, acquiring and analyzing data, and using the results to test hypotheses and derive scientific conclusions. Offered Spring semester, annually.

Professional Development

Professional Development is responsible for all contracted training, non-credit certificates, and professional development offerings for employers and working professionals. The professional development programs offered through Harrisburg University provide specific and advanced skills training and certificates within the University's mission of science and technology.

The University works with various organizations to develop a wide range of professional development solutions and programs that include:

- non-credit training events, series, and certificates;
- customized trainings, on-site and off-site offerings such as workshops, institutes, clinics, and specializations;
- on-site and off-site credit-based offerings and degree programs; and
- needs evaluation for employer training.

The University partners with various outside agencies including, but not limited to: corporations, government agencies, and school districts to develop customized solutions that contribute to professional development of the existing workforce. In particular, the University's professional development offerings serve:

- science, technology, and management professionals;
- educators and administrators; and
- senior staff responsible for innovation and decision-making.

All professional development programs follow the University's commitment to applied, experiential, and competency-based training and education. They focus on enhancing the ability of professionals to apply what they have learned immediately (and over the long term) to their jobs and careers.

Because the programs offered are demand-driven and change from year to year, up-to-date information on the current offerings is posted online at https://www.harrisburgu.edu/professional-dev/.

For more information on customized training or the calendar of upcoming professional development, contact ProfessionalEd@HarrisburgU.edu or call 717.901.5190.

University Administration

Harrisburg University of Science and Technology is a private, not-for-profit organization providing instruction, research, and service to the community. The University is governed by a Board of Trustees. The immediate regulation and direction of the academic, research, and service activities of the University are delegated by the Board of Trustees to the President and the faculty of the University. A listing of the administration, staff, and full-time and part-time faculty, their titles, and areas of instruction are available at the University website at https://harrisburgu.edu/faculty-and-staff-listing/.

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David Schankweiler, HU Interim President
Kevin Purcell, Ph.D., Provost and Chief Academic Officer
Duane F. Maun, CPA, Chief Operating Officer and Chief Financial Officer

University Policies and Disclosures

These are some University policies that guide the conduct of the student, faculty, and staff. Additional details can be found in the Student Handbook, Faculty Handbook, and Employee Handbook.

Family Educational Rights Privacy Act (FERPA)

Introduction

The Family Educational Rights and Privacy Act, (FERPA), is a Federal law that ensures the privacy of a student's education records. It applies to all educational institutions, including colleges and universities, that receive federal funds under any program administered by the US Department of Education.

FERPA provides college students the general rights to:

- Control the disclosure of their education records to others except to the extent that FERPA authorizes disclosure without consent;
- Inspect and review their own education records; and
- The ability to review and amend errors in their education records.

Definitions

Eligible Student. An "eligible student" whose records are protected under FERPA is an individual 18 years of age or older or who is currently enrolled, or was enrolled, in a HU credit-bearing course at any age.

Education Records. Those records that are: (1) directly related to a student; and (2) maintained by HU. A record is directly related to a student if it contains personally identifiable information (PII) or enough tangential information that would allow a reasonable person within the HU community to identify the student. Examples of education records include but are not limited to:

- Financial aid and account information
- Transcripts and class schedules
- Housing agreements
- Disability accommodation records
- Disciplinary records/grade appeals
- Athletic records (if not deemed directory information).

Education records do not normally include (but can become FERPA protected if shared):

- Sole Possession Records. Records kept in the sole possession of the maker, are used only as a personal memory aid, and are not accessible to any other person except a temporary substitute for the maker of the record.
- Law Enforcement Records (including non-commissioned security officers).
- Employment Records. However, records of an employee who is employed by HU and is also a student ARE education records such as work-study students, graduate teaching assistants, and Resident Advisors (RAs).
- Alumni Records. Alumni records must be created or received by HU after an individual is no longer a student and are not directly related to the individual's attendance as a student unless the record falls within directory information. A student that opted out of sharing director information as of graduation remains in an opt out status unless it is updated.
- Treatment/Medical Records. Treatment/Medical records are specifically excluded as protected FERPA records under HIPAA. However, state confidentiality rules still apply to treatment professionals. Treatment

records may become subject to FERPA if forwarded and used by others for the student's benefit such as documenting a disability for purposes of an academic accommodation. Treatment records are:

- Made or maintained by a physician, psychiatrist, psychologist, or other recognized professional or paraprofessional acting in a professional capacity or assisting in a paraprofessional capacity;
- Made, maintained, or used only in connection with treatment of the student; AND
- Disclosed only to individuals providing the treatment.

School Official: Any person employed by HU in any administrative, supervisory, academic, research, or support Staff position (including security and health services Staff); any person or company with whom HU has contracted to provide a service to or on behalf of HU (such as an attorney, auditor, or collection agent); or any student serving on an official committee or assisting another school official in performing his or her tasks.

Legitimate Educational Interest. A School Official has a "legitimate educational interest" if the official needs to review an education record in order to fulfill the official's professional responsibilities as specified in their position description or as stated in a contractual agreement with a third party acting as an agent for HU.

Written consent: The election by a student of individuals, such as a parent or guardian, for the granting of access to the student's educational records. When granting consent, a student should specify the records that may be disclosed (or generically all of HU education records); the purpose for which they may be disclosed (for general information to assist me with their college experience) and the persons to whom they may be disclosed (parents, guardians, employer, etc.).

Student's Right to Review and Request Amendment of FERPA Records.

All students have the right to view their education records. Students should submit in writing any request to review their education records to the Records and Registration office and identify which records are to be inspected. Within 45 days of receiving a request, Records and Registration will make arrangements for access and notify the student of the time and place where the records may be inspected. Records that are customarily open for student inspection will be accessible without written request. Records will not be copied or mailed.

If a student believes their records are inaccurate, the student can submit a written request to HU's Records and Registration office to amend his or her education records that identifies the records to be amended and the basis for the alleged inaccuracies. Records and Registration will notify a student of its decision and, if the decision is negative, provide additional information regarding a student's right to appeal the decision. The FERPA process is not a substitute for a grade appeal only the recorded inaccuracy of a grade issued.

Disclosure without a Student's Consent

FERPA permits HU officials to disclose educational records and certain information to parents, or others, without consent of the student under certain circumstances:

- During a health or safety emergency to protect the student or other individuals;
- Any record to the parent when the student is a dependent for federal income tax purposes;
- Law enforcement unit records, including outside law enforcement authorities;
- Parental information when a student under 21 has violated any law or HU policy concerning the use or possession of alcohol or a controlled substance.

Directory Information

Directory information is contained in the educational records of a student that is not generally considered to be harmful or an invasion of privacy if disclosed. Consequently, it can normally be released without the need to obtain a student's consent.

HU defines directory information as:

- student's name

- both permanent and temporary addresses
- email address
- telephone number(s)
- class year, program of study
- enrollment status
- dates of attendance
- degree(s) and/or awards received
- photograph
- previous educational institution attended
- participation in officially recognized University activities
- eSports Statistics

Students wishing to have their directory information withheld can do so but must notify Records and Registration in writing or by the completion of a FERPA Disclosure of Directory Information form located on MyHU. A request to withhold directory information will preclude HU from providing a student's directory information to prospective employers, professional organizations, the media, and others with whom you may wish HU to share such information. However, this information will still be available to school officials with a legitimate education interest.

A student may opt out from sharing directory information at any time, but it will be effective prospectively only.

HU Privacy Notice

HU is committed to safeguarding the privacy of individuals who share personal data with it and in addition to the protections afforded under FERPA, HU has adopted a Privacy Notice that outlines HU's collection, use, and disclosure of information provided by prospective students, students, or third parties. A copy of HU's Privacy Notice is available on its webpage at: https://www.harrisburgu.edu/privacy/.

The Right to File a FERPA Complaint

Students have the right to file a complaint with the U.S. Department of Education concerning alleged failures by HU to comply with the requirements of FERPA. The name and address of the office that administers FERPA is:

Family Policy Compliance Office
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202-4605

For additional information on FERPA: https://www2.ed.gov/policy/gen/reg/ferpa/index.html

Campus Crime and Security Disclosure

The Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act (Clery Act) requires the distribution of an annual security report and an annual fire safety report on or before October 1 to all current faculty, staff, and students and notice of its availability to prospective students, faculty, and staff. The annual security report includes statistics for the previous three years concerning reported crimes as identified by the Clery Act that occurred on campus or property owned or controlled by the University, and on public property immediately adjacent to and accessible from the campus. The report also includes institutional policies concerning campus security, such as: crime prevention, the reporting of crimes, sexual harassment and assault, domestic violence, timely warnings, and other safety and security matters including public, private, and University resources that are available to the University community.

The University's current Clery Report is available on its website at https://harrisburgu.edu/disclosures/.

The Timothy J. Piazza Antihazing Disclosure

Harrisburg University does not tolerate hazing, whether occurring on or off campus. Students who engage in this behavior may face disciplinary action from HU, and may also face criminal charges under state law, including The Timothy J. Piazza Antihazing Law. This law requires Pennsylvania institutions to adopt a written policy against hazing and "adopt rules prohibiting students or other persons associated with an organization operating under the sanction of, or recognized as an organization by, a University from engaging in hazing or other identifiable offenses. It also requires the publishing of five years worth of hazing offenses on a bi-annual basis. The University's current antihazing report is available on its website at https://harrisburgu.edu/disclosures/.

Equity in Athletics Disclosure Act (EADA)

The Equity in Athletics Disclosure Act Survey (EADA) was designed to make current and prospective students and current and prospective student athletes aware of an institution of higher education's commitment to providing equitable athletic opportunities for its men and women students. The EADA requires the disclosure of information about varsity teams and the financial resources and personnel that the school dedicates to those teams. The EADA requires any coeducational institution of higher education that participates in Title IV, the federal student aid program, and has an intercollegiate athletics program, to comply with the EADA by preparing an annual report, officially called The Report on Athletic Program Participation Rates and Financial Support Data; more commonly known as the EADA Report. The report is published annually for public inspection, no later than October 15th. As required by law, this report was electronically circulated to each HU student and is maintained at HU's publicly accessible webpage for current and prospective students at https://harrisburgu.edu/disclosures/.

Electronic Mail Communication Policy

Policy Statement - Unless otherwise prohibited by law, the University may send official communications to faculty, staff and students by e-mail to an account assigned by the University with the full expectation that such e-mails will be read by the recipient on a frequent and consistent basis and in a timely fashion.

Reason for Policy - The University must be able to communicate quickly and efficiently with faculty, staff, and enrolled students in order to conduct official University business. E-mail is an available and appropriate medium for such communication. Official communications may include policy announcements, registration and billing information, regulatory compliance disclosures, emergency notifications, and other information of a critical or timely nature. Faculty, staff and students may not opt out from receiving official University e-mail communications.

Assignment of E-mail Accounts - Students and employees are assigned an account in the HarrisbugU.edu domain. The account is designated as the "[FiLastname@HarrisburgU.edu]" or "[Student FiMiLastname]@My.HarrisburgU.edu" e-mail account. [The addressee protocol may vary slightly in the event of Initials/Name duplication]. The e-mail account is generated by Information Technology Services and may not be changed without University approval. University communications that are sent by e-mail will be sent to the University-supported e-mail account.

Responsibilities - Faculty, staff, and students are expected to review messages received through the University-supported e-mail account on a frequent and consistent basis. Communications may be time-critical. Individuals shall use the e-mail account for all University-related e-mail communications. Faculty shall use the University-supported account for e-mail communication with a student and, conversely, the student shall respond to faculty communications or requests using the University-supported e-mail account, and no other email address will be used for official HU business.

Forwarding of E-mail - An individual who chooses to forward e-mail received on a Harrisburg University e-mail account to a different e-mail address risks loss of data integrity. The University is not responsible for e-mail, including attachments, forwarded to any e-mail address not supported by the University.

Third-Party, Web-Based [Cloud] Computer Records Policy

Policy Statement - It is the policy of Harrisburg University of Science and Technology that any and all user-generated content developed during the use of third-party, web-based (referred to as "cloud-based") technologies used in the classroom or coursework, which could include cloud-based instructional tools, cloud-based teaching and learning environments, and cloud-based server storage, is the property of the individual faculty, student, or staff who developed the content and that the University is not responsible, and shall be held harmless, for any theft, damage, manipulation or loss that may be incurred as a result of the failure by the third party to properly maintain or safeguard that content.

Reason for Policy - The University encourages and supports the use of new instructional tools and emerging technologies in open, digital teaching and learning environments. The use of web-based applications and cloud-based storage also bring new concerns about intellectual property and privacy. The Family Educational Rights and Privacy Act of 1974 (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is the federal law that protects the privacy of a student's education records. Generally, any work related to a course or program of study created by the individual is considered a part of the "student's education record." Accordingly, any work related to a course or program of study should not include personally identifiable information of the individual. Examples of "personally identifiable information" are: an individual's full name (if not common), Social Security number, date of birth, birthplace, face or fingerprints, credit card numbers, driver's license number, vehicle registration plate number, digital identity, or grades. Any of these data, when combined with other personal information, may identify an individual. Users of third-party, web-based technologies are strongly cautioned to avoid posting personally identifiable information in any computerized application.

A license agreement permits the University to provide access through its servers for the student to utilize the Microsoft OneDrive cloud-based computer server storage utility to store the student's ePortfolio during the period of enrollment in a program of study. The University requires that each degree-seeking undergraduate student develop an ePortfolio. An ePortfolio is defined as: *An organized, media-rich collection of documents, videos, and other exhibits that allows the student to demonstrate competence to a multitude of audiences.* Additionally, faculty, students, or staff are provided access to and use other web-based technologies and social media where user-generated content is stored.

The individual user of a third-party, web-based technology application, when establishing an account, is required to agree to the conditions of a Terms of Service or End-User Agreement, whereby the individual user accepts full responsibility for all content maintained in the application. Furthermore, the user agrees to a condition that, in no event will the software manufacturer be liable for any damages, whether direct, indirect, special, incidental, economic, compensatory, or consequential, arising out of the use of or inability to use the software or user documentation. Accordingly, the user is solely and exclusively responsible for any and all content.

Action Subsequent to Completion of a Program of Study or Termination of a Period of Employment - Any and all documents, videos, and other exhibits accumulated in an ePortfolio or other file, folder or collection by an individual who utilizes a third-party, cloud-based application or storage utility during a program of study or period of employment will no longer be accessible through the University's servers following the completion of the program of study or termination of a period of employment. Direct access to the materials held by the provider is conditional upon the Terms of Service or End-User Agreement accepted by the individual when the account was established.

Equal Opportunity

The University is committed to assuring equal opportunity to all persons and does not discriminate on the basis of race, creed, color, gender, age, religion, national origin, veteran or handicap status, or sexual orientation in its educational programs, activities, admissions, or employment practices as dictated by University policy and as required by federal statutes (Title IX of the Educational Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, Titles VI and VII of the Civil Rights Act of 1964, the Americans with Disabilities Act of 1990 (ADA) and any other applicable anti-discrimination statutes, including those of the Commonwealth of Pennsylvania (Pennsylvania Human Relations Act of 1955 (PHRA) and the Pennsylvania Fair Educational Opportunities Act of 1961 (PFEOA)).

Student inquiries concerning compliance and information regarding Title IX, Title VI, Title VII, PFEOA, Section 504, campus accessibility, or ADA accommodations should contact the Office of Student Services.

Faculty and staff inquiries concerning compliance and information regarding Title IX, Title VII, PHRA, Section 504, campus accessibility, or ADA accommodations should contact the Office of Human Resources.

Title IX/Sex Discrimination Policy and Grievance Resolution Process

To ensure compliance with Title IX and other federal and state civil rights laws, HU has developed a Title IX/Sexual Misconduct Policy (harrisburgu.edu/wp-content/uploads/Sexual-Misconduct-Policy-August-2020.pdf) that prohibits discrimination and sexual misconduct on the basis of sex, or gender expression. Title IX requires HU to respond and take action to address sex-based discrimination and harassment complaints. This includes sexual misconduct complaints related to sexual harassment, sexual assault, domestic violence, dating violence and stalking. Therefore, upon receiving a complaint, HU will, without bias or conflict:

- Investigate what happened;
- Implement interim measures when appropriate during the investigation to prevent the potential of any further discrimination or harassment; and
- Take appropriate steps to resolve the matter in an effort to eliminate the discrimination/harassment, prevent its recurrence, and remedy its effects.

The procedures in HU's Title IX/Sex Discrimination Policy and Grievance Resolution Process outline HU's ability to receive, investigate, and resolve complaints of discrimination on the basis of sex, sexual orientation, gender identity, or sex characteristics. These procedures are designed to provide a supportive process for individuals who report discrimination and to ensure a fair process for individuals who are accused of discriminatory conduct. Internal investigation of allegations of discriminatory treatment or systemic discriminatory practices is intended to ensure that HU meets its commitment to an open and inclusive educational and employment environment. These procedures also describe HU efforts to conduct a timely, thorough, and fair investigation, as required by law.

HU's staff who participates in this process are trained (Student Conduct and Policies at Harrisburg University) concerning the obligations of their roles as outlined within Title IX.

HU's policy also complies with the federal Violence Against Women Act Amendments to the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act (www.law.cornell.edu/uscode/text/20/1092), and the accompanying regulations (collectively referred to as VAWA).

Lastly, Title IX prohibits retaliation for asserting or otherwise participating in claims of sex discrimination. VAWA imposes additional duties on universities and colleges to investigate and respond to reports of sexual assault, stalking, dating or domestic violence, and to publish policies and procedures related to the way these reports are handled. HU has designated the Title IX Coordinator to coordinate HU's compliance with Title IX and VAWA, and to respond to reports of violations.

For information on the University's Title IX/Sexual Misconduct policy, or to file a report, please see the Title IX/Sexual Misconduct website at https://harrisburgu.edu/title-ix-sexual-misconduct-policy-reporting/.

Non-Discrimination Statute - Commonwealth of Pennsylvania

The Pennsylvania Fair Educational Opportunities Act of 1961 provides student access to benefits and services of the University and prohibits discrimination without regard to race, color, gender, religious creed, ancestry, national origin, sexual orientation, age, civil union, marital status, veteran status, handicap or disability, perceived handicap or disability, relationship or association with an individual with a handicap or disability, use of a guide or support animal, and/or handling or training of support or guide animals. This statutory obligation includes, but is not limited to, admissions, course offerings, transfer of credit, financial aid, scholarships, student employment, internships, educational and social programs, and student advisement and counseling.

Any complaint of an alleged act of discrimination can be filed by contacting the Pennsylvania Human Relations Commission (PHRC), 1101-1125 Front Street, 5th Floor, Harrisburg, PA 17110-2123 or by calling (717) 787-4410.

Complaints must be filed within 180 days of the incident. Complaint forms can also be obtained at the PHRC's website: https://www.phrc.pa.gov/Complaints/Pages/How-to-File-a-Complaint.aspx

Emergency Notification System

When HU becomes aware of criminal incidents that, in the judgment of HU's senior leadership, constitute an ongoing threat to the campus community, a Crime Alert will be issued to notify the HU community. Depending on the circumstances, a timely warning will be issued without delay and the information may be further disseminated by using one or a combination of the following: e-mail distribution, HU website, campus publications, and postings and/or activation of the externally hosted emergency notification Omnilert alert system to advise the community of the situation. HU withholds as confidential the names of victims. The same notification system will be used for other campus-wide emergencies/disasters such as fire, weather, or restricted access to buildings.

Members of HU's community may subscribe to receive emergency notifications text alerts regarding HU closures or emergency/disaster situations that may impact the HU community. You can subscribe to the system, "Omnilert," through the MyHU portal of HU's webpage. Enrollees will need to reregister on an annual basis. For additional information on any matters, you will be directed to, or you should go to HU's website or social media accounts. Subscribers are subject to text message costs assessed by their cell phone provider.

Peer-to-Peer ("P2P") File Sharing Information Technology Disclosure

Introduction

The Higher Education Act of 1965, as amended, under Title IV, Section 285(a)(1)(P) and Section 487(a)(29), effective August 14, 2008, requires the disclosure to users of information technology resources that Harrisburg University of Science and Technology has developed a plan to combat the unauthorized distribution of copyrighted material (including the use of technology-based deterrents) and will, to the extent practicable, offer alternatives to illegal downloading. The illegal distribution of copyrighted material is prohibited and may subject an individual to criminal or civil penalties.

The "Digital Millennium Copyright Act of 1998" (DMCA) states that copyrighted information is protected and that it is illegal to download, upload, or distribute that information in any fashion. The provisions of this law specify a process to deal with any claimed infringement.

Plans to "Effectively Combat" Unauthorized Distribution of Copyrighted Material

P2P traffic is identified via the Intrusion Prevention System (IPS) that is integrated within the University's Cisco ASA 5500 security appliance. In most cases, a client's connection to the network will be dropped when typical P2P traffic is sensed.

This intrusion system covers the known protocols that popular P2P clients - such as Torrents, Limewire, Bearshare, Kazaa, etc. - utilize to establish connections to potentially transfer files containing copyrighted material. Additionally, the ability for the student to pass files over the Wireless LAN between laptops has been shut down.

Compliance

Harrisburg University reserves the right to capture, preserve, and/or inspect any information transmitted through, stored on, or used on any IT resource.

Copyright Infringement and Penalties

Copyright infringement is the act of exercising, without permission or legal authority, one or more of the exclusive rights granted to the copyright owner under § 106 of the Copyright Act of 1976. These rights include, but are not limited to, the right to reproduce or distribute a copyrighted work. In the file-sharing context, downloading or uploading substantial parts of a copyrighted work without authority constitutes an infringement.

Penalties for copyright infringement include civil and criminal penalties. In general, anyone found liable for civil copyright infringement may be ordered to pay either actual damages or "statutory" damages affixed at not less than $750 and not more than $30,000 per work infringed. For "willful" infringement, a court may award up to $150,000 per work infringed. A court can, in its discretion, also assess costs and attorneys' fees, impound the infringing work, and grant temporary and permanent injunctions.

Willful copyright infringement can also result in criminal penalties, including imprisonment and fines.

For more information, please see the Web site of the U.S. Copyright Office at: www.copyright.gov, especially the Frequently Asked Questions at www.copyright.gov/help/faq.

Infringement of Digitally Copyrighted Material

The Digital Millennium Copyright Act of 1998 (DMCA) is federal law that criminalizes production and dissemination of technology, devices, or services intended to circumvent measures that control access to copyrighted works (commonly known as digital rights management or DRM). In addition, the DMCA heightens the penalties for copyright infringement on the Internet.

The designated agent to receive notification of a claimed infringement, in accordance with the provisions of the Digital Millennium Copyright Act, is:

Matthew Point
Director of Compliance
326 Market Street
Harrisburg, PA 17101
Compliance@harrisburgu.edu

If an infringement claim is submitted to the University by a complainant, appropriate action will be taken to identify the student, faculty, or staff member involved in the complaint.

Written notice to the involved individual by email requires the removal of the copyrighted files or documents from the computer containing the material within 72 hours of the formal notice. A reply confirmation is required when corrective action has been taken to remove the illegal files, documents, or other material.

Upon receipt of the material removal confirmation, the designated agent notifies the complainant of the University's resolution.

If an individual involved in the complaint fails to take the requested corrective action within 72 hours, access to the University's network will be deactivated. Reactivation to the network can only occur at such time that it is confirmed that corrective action was taken.

Copyright violations may also fall under other University policies and subject to discipline.

Campus ID Card Policy

The Campus ID Card serves as the University's student/faculty/staff ID card, provides access to campus buildings and events, and serves as the Library card.

While on campus, the Campus ID Card must be visible at all times and presented upon request to any faculty member, staff, security personnel, or contracted security personnel.

The Campus ID Card is the property of Harrisburg University of Science and Technology and all policies and procedures must be observed to retain the privilege of use. The card is not transferable and is only to be used by faculty, staff, a currently-registered student, and other authorized persons.

The Campus ID Card must be surrendered to the University upon deactivation. A fee may be assessed for any Campus ID Card that is not returned at the end of the expected period of use.

Campus Card Types

There are two versions of the Campus ID Card:

- Campus ID Card: an ID card containing photo identification and the student/employee's ID number.
- Access-Only Campus ID Card: an ID card without photo identification (typically for the short-term student or visitor).

Campus Card Usage

The primary purpose of the Campus ID Card is to provide easy identification of the cardholder and to permit access to permitted areas of the University campus. The Campus ID Card also serves as a library card. It is the responsibility of the cardholder to immediately report suspected lost or stolen cards to HU Security at HUSecurity@HarrisburgU.edu or by phone at 717-901-5180.

Campus Card Activation

The Campus ID Card is activated for faculty and staff following formal contractual employment or position appointment.

The Campus ID Card is activated for a student following admission to the University, payment of the required tuition deposit, and completion of course registration for the semester or other term.

Campus Card Deactivation

The Campus ID Card is deactivated for faculty and staff following formal cancellation of contractual employment or resignation or termination from the position appointment.

The Campus ID Card is deactivated for a student following a determination of withdrawal, dismissal, graduation or other completion of a scheduled period of enrollment.

Student Grievance Policy

A situation, circumstance, or incident may occur where a student concludes that they have incurred egregious harm as the direct result of an action caused by a member of the faculty or staff. A student in this circumstance may file a formal grievance against a faculty or staff member of the University to seek administrative redress. Examples of adverse behaviors include but are not limited to: violation of confidentiality; offensive remarks as a deliberate insult individually, in the company of others, or in the classroom; or, inappropriate relationships with the student which cause conflict of interest for either the student or faculty or staff.

A student who is compelled to submit a grievance must obtain a Student Grievance Form from Records and Registration. The form must be completed with an explanation of the facts of the allegation, and attach to it any and all documents, testimonies or petitions supporting the student's position as evidence. The completed grievance form should be submitted promptly to the Provost Designee.

A grievance cannot be filed on behalf of another person. Grievances may not be used to challenge academic or other policies or procedures of general applicability.

Additional information may be requested from the student while the grievance is being considered. The alleged faculty or staff person is interviewed and asked to sign an affidavit stating facts relative to the alleged incident. Following consultation with the Office of the Provost, a decision shall be rendered by the Provost Designee within five (5) business days of the grievance submission. The student then receives a determination letter.

If the student does not receive a satisfactory remedy relative to the grievance, the student may request a review by a Grievance Committee which consists of: the Provost Designee, who shall act as the Committee Chair, an administrator designated by the Provost, the Chair of the Faculty of the Whole, a member of the Office of Student Services, and a student representative that has no previous knowledge of the matter to be considered. The request for review by the Grievance Committee must be submitted in writing to the Provost Designee. Formal rules of evidence will not apply, and the panel may consider any evidence considered relevant and reliable. A student is permitted to have a representative to assist them during the proceeding; however, the representative may not be an attorney.

The student will be advised of the date and time of the Grievance Committee meeting so that the student may participate. The Committee shall deliberate and reach a decision on the grievance in closed session and render its resolution regarding the grievance within ten (10) days of its meeting. The student will be notified promptly of the Committee's resolution in writing.

Acceptable Use of Information Technology Policy

Introduction

Harrisburg University offers comprehensive academic programs that emphasize science and technology. Access to information technology is essential to the pursuit and achievement of the University's instructional, research, administrative and service missions. As such, the use of information technology is a privilege and all members of the University community are expected to be responsible and ethical users of information technology. This policy applies to all technology acquired by or on behalf of Harrisburg University (wherever used) and all technology (however acquired) used on any Harrisburg University resources[1].

Purpose

This policy:

1. Promotes the responsible and ethical use of computing, information resources, and/or communication systems, collectively known as "information technology" but hereafter known as "IT," administered by the Office of Information Services (OIS).
2. Defines the rights, responsibilities, and standards of conduct for its faculty, administrators, staff, students, and other authorized users with regard to the use of IT.
3. Explains the appropriate procedures for enforcing any and all misuse of the University's IT resources and outlines appropriate disciplinary procedures for violating these rules.

[1]Computers, computer systems, networks, electronic communications systems, institutional or third-party cloud data storage media, facilities, peripherals, servers, routers, switches, equipment, software, files, or accounts.

Responsibilities

4. It is the responsibility of the University faculty, administrators, staff, or student workers to communicate this policy and its contents to any and all users of IT at, or in affiliation with, Harrisburg University. Not being aware of any part of this policy does not excuse the individual from being responsible for its contents.
5. The Harrisburg University OIS is responsible for the following:

    1. Maintaining user accountability requirements including user identification and authentication, account administration, and password integrity.
    2. Making every effort to protect the privacy of users and confidentiality of data[2].
    3. Ensuring fair access to IT.
    4. Developing and implementing security policies and standards.
6. All Harrisburg University IT users are responsible for the following:
    1. Acting in a responsible, ethical, and legal manner in the use of IT. As such, this use of IT implies consent with any and all applicable university policies and regulations.
    2. Using IT for authorized university business only. Excessive use of any IT resource for personal use is prohibited.
    3. Safeguarding data including personal information and passwords.
    4. Recognizing the limitations to privacy afforded by electronic services.
    5. Respecting other users and their expectation of privacy, confidentiality, and freedom of expression.
    6. Taking precautions to prevent the initial occurrence and/or spread of computer viruses. Therefore, network connected resources must utilize university-approved anti-virus software.
    7. Avoiding any unauthorized or illegal use of IT. This includes but is not limited to the transmission of abusive or threatening material, spam, or communications prohibited by state or federal laws.
    8. Using IT in compliance with applicable license and purchasing agreements. Each user is individually responsible for reading, understanding, and adhering to all licenses, notices, and agreements in connection with IT which the person uses.

Compliance

7. Harrisburg University reserves the right to capture, preserve, and/or inspect any information transmitted through, stored on, or used on any IT resource without notice but especially when:
    1. There is reasonable cause a user has violated this policy.
    2. A user or an account appears to be engaged in unusual activity.
    3. It is necessary to protect the integrity, security, or functionality of IT resources.
    4. It is necessary to protect the University from liability.
    5. It is permitted or required by law.

Enforcement and Disciplinary Procedures

8. Any user who violates any part of this policy may be subject to the following:
    1. Suspension or revocation of the user's computer account and/or suspension or revocation of access to the University's IT resources.
    2. Disciplinary action as described in Harrisburg University's Student Handbook which may include suspension, dismissal, or expulsion from the University.
    3. Disciplinary procedures outlined in Harrisburg University's Faculty Handbook or any other documents outlining conduct for faculty, staff, administration, or student employees which may include termination of employment or other disciplinary action.
    4. Civil or criminal prosecution under federal and/or state law. Noncompliance with certain provisions of this policy may incur penalties under such laws which may include fines, orders of restitution, and imprisonment.
    5. Re-instatement of computer privileges shall be examined on a case-by-case basis.

[2] While Harrisburg University recognizes the importance of (and makes every attempt to achieve) privacy, the University cannot promise privacy of information stored on, or sent through, university-owned systems or resources except for certain information pertaining to student records, research, or other proprietary or patentable materials.

Procedure to Update and/or Amend

Harrisburg University reserves the right to update and/or amend this document to reflect university policy changes and/or state or federal law.

Credit Card Policy

On July 15, 2004, the Commonwealth of Pennsylvania legislature enacted Act 82 of 2004 requiring universities to adopt a policy that regulates credit card marketing.

The Board of Trustees of the University adopted the following statement related to credit card solicitation on October 13, 2004:

"Harrisburg University prohibits the marketing of all forms of credit cards on university property and prohibiting credit card marketers from offering gifts to a student in exchange for completing a credit card application."

Americans with Disabilities Act of 1990

The Americans with Disabilities Act of 1990 (ADA) is a federal anti-discrimination statute which provides civil rights protection to individuals with disabilities in the areas of employment, public accommodations, State and local government services, and telecommunications. The ADA was designed to remove barriers which prevent qualified individuals with disabilities from enjoying the same opportunities that are available to persons without disabilities. Similar protections are provided by Section 504 of the Rehabilitation Act of 1973 (Section 504).

An applicant or student that requires an accommodation under the Americans with Disabilities Act (ADA) should submit any required documentation in person or by mailing to: Office of Disability Services, Harrisburg University of Science and Technology, 326 Market Street Harrisburg, PA 17101. All submitted documentation is confidential. See the Student Handbook for additional details regarding accommodations. If you have questions regarding the documentation policy and guidelines, email ada@HarrisburgU.edu.