 USING THIS BULLETIN

Introduction
The Undergraduate Bulletin is Penn State’s comprehensive source for undergraduate academic information and program requirements.

Use this section and navigation tools throughout the site to become familiar with general Bulletin information and discover new ways to explore academic opportunities across Pennsylvania and the world.

Students should follow the edition of the Bulletin that is active on their first day of class at the University. Past versions can be found on the Archive (https://bulletins.psu.edu/undergraduate/archive/) page.

New Features
Program Page Layout
- Consistent layout of program information organized within the following tabs:
  - Overview
  - How to Get In
  - Program Requirements (University Degree, Bachelor of Arts Degree, General Education, and Major requirements)
  - Integrated Undergrad-Grad Program
  - Learning Outcomes
  - Academic Advising
  - Suggested Academic Plan
  - Career Paths
  - Contact

Begin and End Campus
At the top each program page, you will find a box that indicates where you can begin and end a program. Programs may have different begin and end campuses, so it is important to use this information to determine program availability at each campus.

How to Get In
This section describes requirements on how to enter your major. Common examples include, but are not limited to, minimum GPA and/or successful completion of a skills test, coursework, or preparation programs.

Suggested Academic Plan
The course series provided in the Suggested Academic Plan provides only one of many possible ways to move through the curriculum. To create a personalized academic plan, begin by taking the following steps:

- Consult with a Penn State academic adviser on a regular basis to develop and refine your academic plan.
- Use the Suggested Academic Plan in conjunction with your degree audit (accessible in LionPATH as either an Academic Requirements or What If report).
- Familiarize yourself with information available in this Bulletin to learn about academic opportunities.
- Explore resources available on your college and campus websites.

Please note that the University may make changes in policies, procedures, educational offerings, and requirements.

Changes Page
- Real-time amendments to information in the Bulletin will be tracked on the Changes page.
- Currently or previously enrolled students should consult the Bulletin Archive (https://bulletins.psu.edu/undergraduate/archive/), their adviser, and degree audit reports for specific requirements.

Course Bubble
When a course link is clicked, a course bubble will appear with important course information including, but not limited to:

- course title, description, and credits;
- prerequisites;
- course attributes and General Education learning objectives;
- if the course is repeatable;
- if the course is cross-listed;
- if the course can be counted towards General Education requirements.

Statement of Nondiscrimination
The University is committed to equal access to programs, facilities, admission, and employment for all persons. It is the policy of the University to maintain an environment free of harassment and free of discrimination against any person because of age, race, color, ancestry, national origin, religion, creed, service in the uniformed services (as defined in state and federal law), veteran status, sex, sexual orientation, marital or family status, pregnancy, pregnancy-related conditions, physical or mental disability, gender, perceived gender, gender identity, genetic information, or political ideas. Discriminatory conduct and harassment, as well as sexual misconduct and relationship violence, violates the dignity of individuals, impedes the realization of the University's educational mission, and will not be tolerated. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Office, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901; Email: kfl2@psu.edu; Tel 814-863-0471.

Penn State encourages qualified persons with disabilities to participate in its programs and activities. If you anticipate needing any type of accommodation or have questions about the physical access provided, please contact the Office for Disability Services, 814-863-1807, in advance of your participation or visit.

Start Exploring
The Undergraduate Bulletin is Penn State’s comprehensive source for undergraduate academic information and program requirements. Using the search features, explore options to design your own, unique academic path at one of the world’s leading research institutions. Discover new opportunities as you pursue your academic passion. Search boxes are located on the Undergraduate Bulletin landing page and throughout the website.

Narrow your search by using the following fields:

Degree Type
Choose the degree type to begin your search. Information on the following degrees are included in the Undergraduate Bulletin:

  Associate Degree
  Two-year majors that, with few exceptions, provide concentrated instruction to prepare graduates for specialized occupational assignments.
Baccalaureate Degree
Baccalaureate programs of study consist of no less than 120 credits and typically take four years to complete.

Minor
An academic program of at least 18 credits that supplements a major. A minor program may consist of course work in a single area or from several disciplines.

Undergraduate Certificate
Undergraduate certificates can reflect emerging academic areas, necessary professional development requirements, or groups of courses that do not constitute a degree program.

Learn more in the Definitions and Abbreviations (p. 2) section.

Campus
Penn State has over 20 campuses across Pennsylvania. Visit the Campus (https://bulletins.psu.edu/undergraduate/campuses/) page to see the full listing and a brief description of each campus.

Interest
Search broad topics to discover programs associated with your interests. From helping people, to science, or business, select an area to help narrow down your academic choices.

College
Academic colleges at Penn State grant degrees and are generally organized around a subject matter. All Penn State majors are divided among academic colleges, which are the units from which students receive their degrees. Visit the College (https://bulletins.psu.edu/undergraduate/colleges/) page to see the full listing.

Academic Authority
The University Faculty Senate has responsibility for, and authority over, all academic information contained in the Undergraduate Bulletin.

Each step of the educational process, from admission through graduation, requires continual review and approval by University officials. The University, therefore, reserves the right to change the requirements and regulations contained in this Bulletin and to determine whether a student has satisfactorily met its requirements for admission or graduation, and to reject any applicant for any reason the University determines to be material to the applicant's qualifications to pursue higher education.

MORE INFORMATION ABOUT ACADEMIC AUTHORITY (http://undergrad.psu.edu/aappm/P-8-program-descriptions-catalog.html)

Understanding Course Description Information
The course description data that appears in the University Bulletins is directly imported from LionPATH, the student information system. At several times within an academic year, new or updated course description information is approved by the Faculty Senate and entered into LionPATH. This updated information subsequently appears in the University Bulletins on the date(s) it takes effect.

What course description data is currently showing in the University Bulletins?
There are three course effective dates within an academic year. These effective dates correspond to the first day of the summer, fall, and spring semesters. The University Bulletins shows course description data that is active as of the current semester. On the date a new semester begins, the course description information is updated on the same day to match that course data.

Course Description Update Calendar
January 2, 2022: University Bulletins begins showing course description information that is active for the Spring 2022 semester
May 9, 2022: University Bulletins begins showing course description information that is active for the Summer 2022 semester
August 15, 2022: University Bulletins begins showing course description information that is active for the Fall 2022 semester

Previous Versions of Course Description Information
If a course description is updated after the beginning of an academic year, the previous course description information for that course can be found on the Changes to the UG Bulletin page (p. 6). Course description information from past years can be found in the appropriate archived Bulletin edition (https://bulletins.psu.edu/undergraduate/archive/).

Definitions and Abbreviations
Described below are definitions referring to degrees, majors, options, minors, concurrent or sequential majors programs, and integrated undergraduate-graduate degree programs:

Associate Degree
Two-year majors that, with few exceptions, provide concentrated instruction to prepare graduates for specialized occupational assignments.

Baccalaureate Degree
Penn State offers more than 160 majors with four-year baccalaureate degrees. A baccalaureate program of study shall consist of no less than 120 credits. Students may elect to take courses beyond the minimum requirements of a degree program. Particular types of baccalaureate degrees identify educational programs having common objectives and requirements. Degree programs may provide academic, pre-professional, or professional experiences and preparation. Majors lead to a baccalaureate degree. Each student must select a major within a baccalaureate degree type. If options are offered within a major, a student selects one. The student may also elect to enroll in a minor to supplement the major. Alternatively, the student may seek to enroll in multiple majors within the same type of baccalaureate degree or to enroll in a simultaneous degree program.

Undergraduate majors offered at Penn State lead to one or more of the following baccalaureate degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Architectural Engineering (five-year program), Bachelor of Architecture (five-year program), Bachelor of Design, Bachelor of Fine Arts, Bachelor of Humanities, Bachelor of Landscape Architecture (five-year program), Bachelor of Music, Bachelor of Musical Arts, and Bachelor of Philosophy.

Not all degrees are offered at every location. Baccalaureate degrees offered at Penn State include both those that are designed to provide
an academic (including pre-professional) experience and those that are specifically designed to provide professional preparation.

To ensure excellence, all professionally oriented degree majors provide a strong academic base. The Bachelor of Arts degree (with a given major) is an academic degree; the Bachelor of Science degree (with a given major) and the bachelor’s degree in any subject area (e.g., Bachelor of Architecture) are professional degrees. The Bachelor of Philosophy degree, described in the Intercollege Undergraduate Programs section of this Bulletin, is planned individually and may be designed to serve either academic or professional purposes.

**Major**

A major is a plan of study in a field of concentration within a type of baccalaureate degree. Colleges and other degree-granting units may have common requirements for all of their majors. Each major may have requirements identified in prescribed, additional, and supporting courses and related areas categories. Elective credits are not considered part of the major.

[MORE INFORMATION ABOUT MAJORS (http://senate.psu.edu/curriculum/guide-to-curricular-procedures/baccalaureate-degree-curriculum/)]

**Option**

An option is a specialization within a major that should involve at least one-third of the course work credits required for the major, but need not be more than 18 credits. All options within a major must have in common at least one-fourth of the required course work credits in the major. A student can only be enrolled in an option within their own major.

**Minor**

A minor is defined as an academic program of at least 18 credits that supplements a major. A minor program may consist of course work in a single area or from several disciplines, with at least 6 but ordinarily not more than half of the credits at the 400-course level. The minor requirements are to be specified and generally limited to 18 to 21 credits. Entrance to some minors may require the completion of a number of prerequisites, including courses, portfolios, auditions, or other forms of documentation that are not included in the total requirements for the minor. All courses for a minor require a grade of C or above.

**Concurrent and Sequential Majors Programs**

At the baccalaureate or associate degree level, students may be approved for admission to more than one major under the Concurrent Majors Program. A Concurrent Majors Program is one in which students take courses to concurrently meet the requirements of at least two majors, with graduation for all majors in the program occurring during the same semester. Concurrent majors must all be at the baccalaureate or associate degree level. Under the Sequential Majors Program, upon graduation from an associate or baccalaureate degree program, a student may apply for re-enrollment in another undergraduate degree program.

**Integrated Undergraduate-Graduate (IUG) Degree Program**

An Integrated Undergraduate-Graduate (IUG) degree program combines a Penn State baccalaureate degree with a master’s degree as a continuous program of study. An IUG program allows qualifying students to:

- create a cohesive plan for baccalaureate and master's degree studies, with advising informed by requirements for both degree programs;
- complete the combined degree program in less time than it would take to complete each program separately;
- become familiar with the expectations of graduate studies in their programs;
- access the resources of the Graduate School;
- learn from current graduate students who share academic interests.

**Abbreviations, Acronyms, and Codes**

Described below are common codes, abbreviations, acronyms, and other types of academic shorthand used at Penn State, along with a brief explanation of each.

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<thead>
<tr>
<th>Code</th>
<th>Explanation</th>
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<td>Special topics (course suffix; indicates different versions of the same course, e.g., CAS 100A, CAS 100B, CAS 100C)</td>
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<tr>
<td>A &amp; A</td>
<td>Arts and Architecture (college abbreviation)</td>
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<tr>
<td>AA</td>
<td>Arts and Architecture (college code)</td>
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<tr>
<td>AAPPM</td>
<td>Academic Administrative Policies and Procedures Manual</td>
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<td>AB</td>
<td>Abington (campus code)</td>
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<td>AB</td>
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<td>ACUE</td>
<td>Administrative Council on Undergraduate Education</td>
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<td>AG</td>
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<td>AL</td>
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<td>AL</td>
<td>Altoona (college code)</td>
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<tr>
<td>AP</td>
<td>Advanced Placement Program</td>
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<td>APPL</td>
<td>Course requires an application with the School of Music (course characteristic)</td>
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<td>APPT</td>
<td>By appointment (class meeting time)</td>
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<td>AU</td>
<td>Audit, attended regularly (grade reporting symbol)</td>
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<tr>
<td>AUDN</td>
<td>Course requires an audition (course characteristic)</td>
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<tr>
<td>AUU</td>
<td>Audit, did not attend regularly (grade reporting symbol)</td>
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<tr>
<td>B</td>
<td>Special topics (course suffix; indicates different versions of the same course, e.g., CAS 100A, CAS 100B, CAS 100C)</td>
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<td>BA</td>
<td>Business, Smeal College of (college code)</td>
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<td>BC</td>
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<td>BK</td>
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<td>BK</td>
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<td>BR</td>
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<td>BW</td>
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<td>C</td>
<td>Special topics (course suffix; indicates different versions of the same course, e.g., CAS 100A, CAS 100B, CAS 100C)</td>
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<tr>
<td>CA</td>
<td>Capital (college code)</td>
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<td>Abbreviation</td>
<td>Description</td>
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<td>CALC</td>
<td>Course requires a calculator (course characteristic)</td>
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<td>CAMP</td>
<td>College Assistance Migrant Program</td>
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<td>CAT</td>
<td>Online catalog, University Libraries</td>
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<td>CC</td>
<td>Commonwealth Campuses</td>
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<tr>
<td>CCP</td>
<td>College Contact Person</td>
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<tr>
<td>CCRR</td>
<td>College Contact and Referral Representative</td>
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<td>CCGS</td>
<td>Council of Commonwealth Student Governments</td>
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<tr>
<td>CE</td>
<td>Continuing Education</td>
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<tr>
<td>CGPA</td>
<td>Cumulative grade-point average</td>
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<tr>
<td>CIC</td>
<td>Committee on Institutional Cooperation</td>
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<td>CLEP</td>
<td>College-Level Examination Program</td>
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<td>CM</td>
<td>Communications (college code)</td>
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<tr>
<td>CNCR</td>
<td>Course is scheduled concurrently with another course (course characteristic)</td>
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<tr>
<td>CNTL</td>
<td>Course is controlled (course characteristic)</td>
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<tr>
<td>COMM</td>
<td>Communications (college abbreviation)</td>
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<tr>
<td>CORD</td>
<td>Course is coordinated with other course(s) (course characteristic)</td>
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<tr>
<td>COST</td>
<td>Course requires an additional fee (course characteristic)</td>
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<td>D</td>
<td>Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297D, HIST 297E)</td>
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<td>DAA</td>
<td>Dean/Director of Academic Affairs</td>
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<tr>
<td>DF</td>
<td>Deferred grade (grade reporting symbol)</td>
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<td>DN</td>
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<td>DS</td>
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<td>DU</td>
<td>Division of Undergraduate Studies (college code)</td>
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<td>DUS</td>
<td>Division of Undergraduate Studies (college abbreviation)</td>
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<td>E</td>
<td>Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297D, HIST 297E)</td>
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<td>ECoS</td>
<td>Eberly College of Science</td>
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<td>ED</td>
<td>Education (college code)</td>
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<td>EM</td>
<td>Earth and Mineral Sciences (college code)</td>
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<td>EM SC</td>
<td>Earth and Mineral Sciences (college abbreviation)</td>
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<td>ENGR</td>
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<td>EOP</td>
<td>Educational Opportunity Program</td>
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<td>EPR</td>
<td>Early Progress Report</td>
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<td>EPS</td>
<td>Educational Planning Survey</td>
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<td>ER</td>
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<td>ESL</td>
<td>English as a Second Language</td>
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<td>EVEX</td>
<td>Course has evening exams (course characteristic)</td>
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<td>F</td>
<td>Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297F, HIST 297G)</td>
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<td>FE</td>
<td>Fayette (campus code)</td>
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<td>FINL</td>
<td>Course has a final exam (course characteristic)</td>
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<td>FL</td>
<td>Failure under pass/fail option (grade reporting symbol)</td>
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<td>FYS</td>
<td>First-Year Seminar</td>
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<td>G</td>
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<td>GA</td>
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<td>GHW</td>
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<td>GN</td>
<td>Graduate non-degree (college code)</td>
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<td>GN</td>
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<td>GPA</td>
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<td>GQ</td>
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<td>GR</td>
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<td>GR ND</td>
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<td>GV</td>
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<td>GWS</td>
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<td>H</td>
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<td>HB</td>
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<td>HHD</td>
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<td>I</td>
<td>Incomplete (grade reporting symbol)</td>
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<td>I</td>
<td>Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297I, HIST 297K)</td>
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<tr>
<td>Code</td>
<td>Description</td>
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<td>I COL</td>
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<td>IB</td>
<td>International Baccalaureate Program</td>
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<td>Intercollege programs (college code)</td>
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<td>INCP</td>
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<td>INTG</td>
<td>Course is integrated with other courses (course characteristic)</td>
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<td>IVID</td>
<td>Course uses interactive video (course characteristic)</td>
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<td>J</td>
<td>Individualized instruction (course suffix)</td>
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<td>Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297I, HIST 297K)</td>
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<td>Medicine (college abbreviation)</td>
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<td>No grade (grade reporting symbol)</td>
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<td>NR</td>
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<td>NSO</td>
<td>New Student Orientation</td>
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<td>OCLC</td>
<td>Course meets at an off-campus location (course characteristic)</td>
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<td>P</td>
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<td>P</td>
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<td>PC</td>
<td>Penn College (Pennsylvania College of Technology; campus code)</td>
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<td>Course has prerequisites (course characteristic)</td>
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<td>Reserve Officers' Training Corps</td>
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<tr>
<td>S</td>
<td>First-Year Seminar (course suffix)</td>
</tr>
<tr>
<td>SA</td>
<td>Satisfactory achievement (grade reporting symbol)</td>
</tr>
<tr>
<td>SATL</td>
<td>Course is offered at multiple locations via satellite uplink (course characteristic)</td>
</tr>
<tr>
<td>SC</td>
<td>Science, Eberly College of (college code)</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>Science, Eberly College of (college abbreviation)</td>
</tr>
<tr>
<td>SEGM</td>
<td>Course is segmented (course characteristic)</td>
</tr>
<tr>
<td>SGPA</td>
<td>Semester grade-point average</td>
</tr>
<tr>
<td>SH</td>
<td>Shenango (campus code)</td>
</tr>
<tr>
<td>SI</td>
<td>Supplemental Instruction</td>
</tr>
<tr>
<td>SITE</td>
<td>Schreyer Institute for Teaching Excellence</td>
</tr>
<tr>
<td>SL</td>
<td>Schuylkill (campus code)</td>
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<tr>
<td>SLO</td>
<td>Special Living Options</td>
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<tr>
<td>SOTP</td>
<td>Student Orientation and Transition Programs</td>
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<tr>
<td>SRTE</td>
<td>Student Ratings of Teacher Effectiveness</td>
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<tr>
<td>SSSP</td>
<td>Student Support Services Program</td>
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<tr>
<td>T</td>
<td>First-Year Seminar and Honors (course suffix)</td>
</tr>
<tr>
<td>TMĐT</td>
<td>Course has additional meeting times/dates (course characteristic)</td>
</tr>
<tr>
<td>U</td>
<td>United States Cultures/International Cultures and Honors (course suffix)</td>
</tr>
<tr>
<td>UAO</td>
<td>Undergraduate Admissions Office</td>
</tr>
<tr>
<td>UC</td>
<td>University College (college code)</td>
</tr>
<tr>
<td>UE</td>
<td>Undergraduate Education</td>
</tr>
</tbody>
</table>
Using this Bulletin

UFO University Fellowships Office
UG Undergraduate (level code)
UG ND Undergraduate non-degree (college code)
UN Undergraduate nondegree (college code)
UN Unsatisfactory achievement (grade reporting symbol)
UP University Park (campus code)
UPUA University Park Undergraduate Association
US United States Cultures (General Education code)
W Official withdrawal (grade reporting symbol)
W Writing Across the Curriculum (course suffix)
WB Wilkes-Barre (campus code)
WC World Campus
WEB Web course; offered entirely through the Internet (course characteristic)
WEP Women in Engineering Program
WF Withdrew failing (grade reporting symbol)
WISE Women in the Sciences and Engineering
WN Withdrew no grade (grade reporting symbol)
WP Withdrew passing (grade reporting symbol)
WS Worthington Scranton (campus code)
X Writing Across the Curriculum and First-Year Seminar (course suffix)
XC State College Continuing Education (campus code)
XF Failure, academic dishonesty (course grade)
XS Foreign studies program (campus code)
Y Writing Across the Curriculum course and United States Cultures/International Cultures (course suffix)
YK York (campus code)

Common abbreviations for course attributes and suffixes can be found in the University Course Descriptions (https://bulletins.psu.edu/university-course-descriptions/) section.

Courses Added: Effective Summer 2021
• ACCTG 423: Accounting Data Analytics
• AGBM 430: U.S. Food and Agricultural Policy
• ANTH 150N: Human Nature: The Science of Extreme Altruism and Violence
• ANTH 150Q: Human Nature: The Science of Extreme Altruism and Violence
• ANTH 219N: Spillover: The Anthropology of Emerging Infectious Diseases
• ART 170N: Plant and Microbial Art
• BE 463: Design Principles of Mechatronics for Biosystem
• BIOL 128: Investigations in Anatomy with Cadavers
• BIOL 477: Biology Cadaver Dissection
• CMLIT 7: Introduction to Middle Eastern Literatures
• DS 420: Network Analytics
• DS 440W: Data Science Capstone
• EARTH 10: Energy and Earth's Climate
• EDSGN 367: Design Thinking and Making
• EGEE 405: Renewable Energy in Electricity Markets
• ETI 99: Foreign Studies
• ETI 199: Foreign Studies
• ETI 294: Research Project
• ETI 296: Independent Studies
• ETI 297: Special Topics
• ETI 299: Foreign Studies
• ETI 399: Foreign Studies
• ETI 494: Research Project
• ETI 496: Independent Studies
• ETI 497: Special Topics
• ETI 499: Foreign Studies
• FIN 480: Alternative Investments
• FRNSC 490: Traceology & Event Reconstruction
• HDFS 200: Quantitative Skills for Human Services
• HIST 260: The Middle East in Film
• HIST 305Y: Middle East Studies Research Workshop
• HIST 400: Global History of Food and Famine
• HIST 425: History of the Incas
• HLS 495: Homeland security internship
• IST 144N: Invasion of Technology from a 21st Century Perspective
• KINES 449: Sport in African History
• KINES 470: Genetics and Human Physical Performance
• KOR 423: Korean Media and Communication
• ME 435: Mechanical Engineering Systems Lab
• MIS 344: Introduction to Cybersecurity
• MIS 417: Programming for Data Analytics
• MUSIC 127: Introduction to Music Technology
• OLEAD 201: Organizational Theory and Functions for Leaders
• PHIL 139: Latino/a Philosophy
• RHS 93: WorkLink Seminar I
• RHS 193: WorkLink Seminar II
• RHS 295: Internship
• RHS 295A: WorkLink Internship

Changes to the Undergraduate Bulletin
Changes to the Undergraduate Bulletin will be tracked in real-time and listed below. At the end of every semester, these updates are incorporated into the Bulletin.
Courses Added: Effective Fall 2021
- AFR 205: Development and Sustainability in Africa
- ART 160N: STEAM: Connecting Art to Science, Technology, Engineering and Mathematics
- BIOL 475: Human Pathophysiology
- BMB 491: Undergraduate Research in Cellular Dynamics II: Communicating Scientific Findings
- CAS 251: Communication, Advocacy, and Entrepreneurship
- CAS 255: Communicating Gender
- CAS 408: Interpersonal Influence
- CHEM 468: Molecular Spectroscopy
- CHEM 480: Chemistry and Properties of Polymers
- CSD 418: American Sign Language III
- EARTH 303: Analysis of Earth Future Scenarios
- FDSC 417: Food Laws and Regulations
- FDSC 450: Food Innovation and Product Design
- GEOSC 210: Geoscience Data Analytics
- HIST 245: Middle Eastern Cities
- HIST 252: Revolutions in the Middle East
- HIST 255N: History of the Book
- HIST 455: The History of Epidemics
- HPA 100: Research Careers in Health Policy and Administration
- HPA 301: Health Services Policy Issues
- HPA 390: Professional Development in Health Policy & Administration
- KINES 136: Introduction to Careers in the Health Professions
- METEO 491: Professional Development
- MATH 452: Deep Learning Algorithms and Analysis
- MGMT 481: Global Strategic Management
- MTHED 481: Building Relationships and Resources to Address Inequities in Mathematics Teaching and Learning
- MTHED 482: Using Content in Context to Address Inequities While Teaching Mathematics
- PLSC 421: Analysis of International Political Economy
- PLSC 449: Psychology of Terrorism
- PLSC 478: China and the World
- SC 290: Renewable Energy in Costa Rica
- SCM 448: Building Sustainable Supply Chains
- SOC 478: Men and Masculinities

Courses Added: Effective Spring 2022
- APLNG 260: Language and Technology
- EDSGN 467: Prototyping to Launch
- GEOSC 301: Plate Tectonics
- HIST 190: The Middle East Today
- LLED 227: Understanding Childhood Through Children’s Literature: Books, Media, Toys
- MGMT 457W: Strategic Management of Innovation and Technologies
- SSED 100N: Foundations of History and Social Studies Concepts for K-8 Teachers

Courses Dropped: Effective Spring 2022
- CHEM 427W: Forensic Chemistry
- MATSE 443: Introduction to the Materials Science of Polymers
- MATSE 448: Polymer Processing Technology
- STAT 301: Statistical Analysis I

Course Changes: Effective Spring 2022
AA 401: International Arts Minor Final Project (1-3 Credits) (BA)
Old Listing Effective Through Fall 2021:
The final project required for the International Arts Minor. A&A 401 & A&A 401 International Arts Minor Final Project (1-3) The requirements for the International Arts Minor specify that the course applied toward the minor reflect a coherent course of study constructed around a geographic, chronological, or thematic concentration. Also required for the minor is a culminating project that relates to the chosen concentration. The final project is intended to capitalize on the knowledge and experience gained from the prerequisite components of the minor. The topic of the project will be chosen by the student in consultation with the person in charge of the minor. Work toward completion of the project will be overseen by the person in charge of the minor with advice or assistance from other member(s) of the faculty as appropriate. For the purpose of the minor, the arts are very broadly defined to include topics such as the visual arts, architecture, design environments, theatre, music, and literature so most any creative endeavor may be considered for the subject of the final project. The project may result in formats such as a written paper, a work of art, an exhibition, a recital, or a musical composition as long as it conforms to the intent of the requirement for the minor. It is anticipated that the subject of most projects will be cross-cultural or multicultural in nature. For example, a research paper might be thematic such as an intercultural comparison of adaptations of a Greek myth. A studio project might be technical, such as the wood firing techniques employed by Japanese ceramicists. The requirements for the International Arts Minor specifies a project of at least one (1) credit. A&A 401 International Arts Minor Final Project will be offered for one (1) to three (3) credits to accommodate students who may be more than one (1) credit to complete the minor and for those who may propose a project worth more than one (1) credit. A&A 401 may not be repeated.

Pre-Requirement: A&A 100 and completion of at least 12 credits toward the International Arts Minor

Changes Effective Spring 2022:
- Prerequisites

ADTED 480: Teaching Math and Numeracy to Adults (3 Credits)
Old Listing Effective Through Fall 2021:
Examines issues of learning math as an adult and explores effective strategies for teaching math and numeracy to adults. ADTED 480 Teaching Math and Numeracy to Adults (3) Many international assessments show that the numeracy skills of U.S. adults are lower than those of adults in many other countries and that their numeracy skills are even weaker than their literacy skills. This online course is designed for teachers, administrators, and others concerned with helping adults develop the math skills and abilities they need to function successfully in workplace, educational, and community settings. This course will focus on (1) how adults develop math skills in informal and work contexts and in classes or programs for students who wish to obtain a high school credential; (2) considerations for teaching math to immigrant adults and those with learning disabilities; and (3) the identification and implementation of instructional strategies for helping adults acquire the numeracy skills they need. Using current research from the U.S. and other countries, course participants will consider the benefits and limitations of various instructional and programmatic approaches to helping adults learn. Through this course, students will (1) identify the implications of adult learners’ prior experiences with math and numeracy for the their reengagement with math in a non-formal learning setting; (2) differentiate between numeracy and math and consider the relevance of the distinction to teaching adult learners; (3) identify adult processes for learning math and compare and contrast them with those of children; (4) gain current knowledge about math standards that guide instruction and policy for adults; and (5) develop and evaluate instructional strategies and initiatives to teach math to adults, including accommodating immigrant learners and those with learning disabilities. Further, students will consider the knowledge and skills needed to help adults acquire functional numeracy skills.

PreRequisite: Associate degree or 60 undergraduate credits

Changes Effective Spring 2022:

- Description
- Prerequisites

AED 212: Interpreting Art Experience: Educational Implications (1 Credit)
Old Listing Effective Through Fall 2021:

In-depth study of the educational implications of the information on art making and response introduced in A ED 211. A ED 212 Interpreting Art Experience: Educational Implications (1) A special discussion section attached to A ED 211 and required of students majoring in art education. A ED 212 focuses on the educational implications of the perspectives on art experience presented in A ED 211. This segment of the course will attend specifically to issues related to learners and learning in the visual arts, including characteristics of learners at various stages of development and the ways in which curriculum and instruction can and should be shaped by these considerations.

PreRequisite: A ED 101S , A ED 201W; Concurrent A ED 211

Changes Effective Spring 2022:

- Remove Prerequisites

AED 401: Curricula, Pedagogy, and Assessment in Art Education (3 Credits)
Old Listing Effective Through Fall 2021:

Preparation of curricula, pedagogical, and assessment strategies for elementary/secondary school and museum art education programs.

PreRequisite: A ED 101S , A ED 201W , A ED 211 , A ED 212 , A ED 225 , A ED 322 , A ED 323

Changes Effective Spring 2022:

- Abbreviated Title
- Description
- Prerequisites

AED 488: Cultural Institutions Practicum (1-3 Credits: Maximum of 3 Credits)
Old Listing Effective Through Fall 2021:

Supervised field experience in a museum or other cultural institution, including planning, implementation, and evaluation of an educational project.

Prerequisites: ANTH 100 or 3 credits of art history courses from department list; A ED 401; Concurrent: A ED 490

Changes Effective Spring 2022:

- Travel Component
- Prerequisites

AED 494: Schools and Museums (3 Credits)
Old Listing Effective Through Fall 2021:

Museum education: issues, theories of aesthetic education and practices in schools, museums, and community art centers.

Prerequisites: 12 credits in art education, art, art history, or education

Changes Effective Spring 2022:

- Remove Prerequisites

AED 494H: Schools and Museums (3 Credits) (H)
Old Listing Effective Through Fall 2021:

Museum education: issues, theories of aesthetic education and practices in schools, museums, and community art centers.

Prerequisites: 12 credits in art education, art, art history, or education

Changes Effective Spring 2022:

- Remove Prerequisites

AED 495: Internship in Art Experiences (15 Credits)
Old Listing Effective Through Fall 2021:

Comprehensive instruction in craft, health, cultural, museum, studio, gallery or social agency. Students supervised by University personnel and arts personnel.

Prerequisites: AED 440 ; seventh- or eighth-semester standing

Changes Effective Spring 2022:

- Travel Component
- Prerequisites
AED 495A: Art Education Student Teaching Practicum (7 Credits)
Old Listing Effective Through Fall 2021:

A ED 495A A ED 495A Art Education Student Teaching Practicum (7) The Pittsburgh-based elementary or middle-level field experience fulfills the student teaching requirement for Pennsylvania certification to teach art in elementary and secondary schools. It is offered each semester, and student teachers are placed through the School District University Collaborative in Pittsburgh Public Schools. An on-site Art Education faculty Supervisor supervises students. Assignments, required seminars, and professional development activities meet the teaching prerequisites outlined by NCATE (National Council for Accreditation of Teacher Education) and the Standards for Pre-Service Teachers in Urban Education. Experiences and assignments provide evidence in each of the four domains for teacher preparation: Domain A – Planning and Preparing for Student Learning, Domain B – Teaching, Domain C – Analyzing Student Learning and Inquiring into Teaching, and Domain D – Fulfilling Professional Responsibilities. The work completed in this course (a digital and/or paper-based portfolio, and documented performance-based assessment of teaching as assessed by the university supervisor and mentor teachers/clinical instructors) will demonstrate fulfillment of the teaching/domain standards. The outcome of this work is to produce multiple experiences that support professional and personal development while preparing students for upcoming positions teaching art in multiple public and private contexts at both elementary and secondary levels. At the culmination of the student teaching semester, students will have both practical and theoretical understandings in addition to materials for application within the classroom.

Prerequisites: AED 489; eighth- or ninth-semester standing;

Concurrent: AED 495B

Changes Effective Spring 2022:
- Travel Component
- Remove Concurrent
- Prerequisites
- Corequisites

AED 495B: Art Education Student Teaching Practicum (8 Credits)
Old Listing Effective Through Fall 2021:

A ED 495B A ED 495B Art Education Student Teaching Practicum (8) The Pittsburgh-based middle-level or secondary field experience fulfills the student teaching requirement for Pennsylvania certification to teach art in elementary and secondary schools. It is offered each semester, and student teachers are placed through the School District University Collaborative in Pittsburgh Public Schools. An on-site Art Education faculty Supervisor supervises students. Assignments, required seminars, and professional development activities meet the teaching prerequisites outlined by NCATE (National Council for Accreditation of Teacher Education) and the Standards for Pre-Service Teachers in Urban Education. Experiences and assignments provide evidence in each of the four domains for teacher preparation: Domain A – Planning and Preparing for Student Learning, Domain B – Teaching, Domain C – Analyzing Student Learning and Inquiring into Teaching, and Domain D – Fulfilling Professional Responsibilities. The work complete in this course (a digital and/or paper-based portfolio, and documented performance-based assessment of teaching as assessed by the university supervisor and mentor teachers/clinical instructors) will demonstrate fulfillment of the teaching/domain standards. The outcome of this work is to produce multiple experiences that support professional and personal development while preparing students for upcoming positions teaching art in multiple public and private contexts at both elementary and secondary levels. At the culmination of the student teaching semester, students will have both practical and theoretical understandings in addition to materials for application within the classroom.

Prerequisites: AED 489; eighth- or ninth-semester standing;

Concurrent: AED 495D

Changes Effective Spring 2022:
- Travel Component
- Prerequisites

AED 495C: Art Education Student Teaching Practicum (7 Credits)
Old Listing Effective Through Fall 2021:

A ED 495C A ED 495C Art Education Student Teaching Practicum (7) The Centre Region-based elementary or middle-level field experience fulfills the student teaching requirement for Pennsylvania certification to teach art in elementary and secondary schools. It is offered each semester, and student teachers are placed through the School of Visual Arts at Penn State in cooperation with public schools in the Centre Region. An Art Education faculty Supervisor supervises students. Assignment, required seminars, and professional development activities meet the teaching prerequisites outlined by NCATE (National Council for Accreditation of Teacher Education) and the Standards for Pre-Service Teachers in Urban Education. Experiences and assignments provide evidence in each of the four domains for teacher preparation: Domain A – Planning and Preparing for Student Learning, Domain B – Teaching, Domain C – Analyzing Student Learning and Inquiring into Teaching, and Domain D – Fulfilling Professional Responsibilities. The work completed in this course (a digital and/or paper-based portfolio, and documented performance-based assessment of teaching as assessed by the university supervisor and mentor teachers/clinical instructors) will demonstrate fulfillment of the teaching/domain standards. The outcome of this work is to produce multiple experiences that support professional and personal development while preparing students for upcoming positions teaching art in multiple public and private contexts at both elementary and secondary levels. At the culmination of the student teaching semester, students will have both practical and theoretical understandings in addition to materials for application within the classroom.

Prerequisites: AED 489; eighth- or ninth-semester standing;

Concurrent: AED 495D

Changes Effective Spring 2022:
- Travel Component
- Prerequisites

AED 495D: Art Education Student Teaching Practicum (8 Credits)
Old Listing Effective Through Fall 2021:

A ED 495D A ED 495D Art Education Student Teaching Practicum (8) The Centre Region-based middle-level or secondary field experience fulfills the student teaching requirement for Pennsylvania certification to teach art in elementary and secondary schools. It is offered each semester, and student teachers are placed through the School of Visual Arts at Penn State in cooperation with public schools in the Centre Region. An Art Education faculty Supervisor supervises students. Assignments, required seminars, and professional development activities meet the teaching prerequisites outlined by NCATE (National Council for Accreditation of Teacher Education) and the Standards for Pre-Service Teachers in Urban Education. Experiences and assignments provide evidence in each of the four domains for teacher preparation: Domain A – Planning and Preparing for Student Learning, Domain B – Teaching, Domain C – Analyzing Student Learning and Inquiring into Teaching, and Domain D – Fulfilling Professional Responsibilities. The work complete in this course (a digital and/or paper-based portfolio, and documented performance-based assessment of teaching as assessed by the university supervisor and mentor teachers/clinical instructors) will demonstrate fulfillment of the teaching/domain standards. The outcome of this work is to produce multiple experiences that support professional and personal development while preparing students for upcoming positions teaching art in multiple public and private contexts at both elementary and secondary levels. At the culmination of the student teaching semester, students will have both practical and theoretical understandings in addition to materials for application within the classroom.

Prerequisites: AED 489; eighth- or ninth-semester standing;

Concurrent: AED 495D

Changes Effective Spring 2022:
- Travel Component
- Prerequisites
Region. An on-site Art Education faculty Supervisor supervises students. Assignments, required seminars, and professional development activities meet the teaching prerequisites outlined by NCATE (National Council for Accreditation of Teacher Education) and the Standards for Pre-Service Teachers in Urban Education. Experiences and assignments provide evidence in each of the four domains for teacher preparation: Domain A – Planning and Preparing for Student Learning, Domain B – Teaching, Domain C – Analyzing Student Learning and Inquiring into Teaching, and Domain D – Fulfilling Professional Responsibilities. The work complete in this course (a digital and/or paper-based portfolio, and documented performance-based assessment of teaching as assessed by the university supervisor and mentor teachers/clinical instructors) will demonstrate fulfillment of the teaching/domain standards. The outcome of this work is to produce multiple experiences that support professional and personal development while preparing students for upcoming positions teaching art in multiple public and private contexts at both elementary and secondary levels. At the culmination of the student teaching semester, students will have both practical and theoretical understandings in addition to materials for application within the classroom.

Prerequisites: A ED 489; eighth- or ninth-semester standing.

Concurrent: A ED 495A

Changes Effective Spring 2022:

- Travel Component
- Prerequisites
- Concurrents

AED 495E: Internship in Museums and Cultural Institutions (15 Credits)

Old Listing Effective Through Fall 2021:

S ED 495E A ED 495E Internship in Museums and Cultural Institutions (15) The internship at a museum or other cultural institution completes the requirements for the Museums and Cultural Institutions option for the BS in Art Education. It is generally scheduled fulltime for a period of 12 consecutive weeks during a double summer session, although it may also be taken during the fall or spring semester. The internship enables interns to reenact their professional and personal development while preparing students for upcoming positions teaching art in multiple public and private contexts at both elementary and secondary levels. At the culmination of the student teaching semester, students will have both practical and theoretical understandings in addition to materials for application within the classroom.

Prerequisites: A ED 440; seventh- or eighth-semester standing.

Changes Effective Spring 2022:

- Prerequisites

AMST 104: Women and the American Experience (3 Credits) (US)

Old Listing Effective Through Fall 2021:

Selected aspects of the role of women in United States history and culture from colonial to modern times. AMST 104 / WMNST 104 Women and the American Experience (3) (GH;US)(BA) This course meets the Bachelor of Arts degree requirements. AMST 104 / WMNST 104 is a broad-ranging introduction to women in American culture. While specific topics may vary from class to class, the course examines the history and literature of American women, paying particular attention to issues of race and diversity. Students will be evaluated on essay tests, papers, journal entries, and attendance. The course offers students valuable experience in critical thinking, analysis, and writing. The course offers students a broad introduction to American women's issues, and so serves as preparation for more advanced courses in American studies, American literature, American women's history, and Women's studies. AMST 104 / WMNST 104 counts towards the American Studies major and minor and the Women's Studies major and minor. NonAmerican Studies majors and minors may use this course to fulfill a general education humanities (GH) or Bachelor of Arts humanities credit requirements.

Cross-Listed Courses: WMNST 104

Changes Effective Spring 2022:

- General Education Recertification
- Description

ANTH 375Q: Anthropology of Food Honors

Old Listing Effective Through Fall 2021:

This course is an anthropological approach to understanding temporal and spatial variation in human food consumption and nutrition: why do we eat what we eat? To answer this question, we approach it from multiple perspectives: biological, evolutionary, ecological and social. In this course, students will investigate how food tastes, preferences, and diets of different individuals and societies both in the past and present are affected by genetic variation, by processes of individual and cultural learning, by evolutionary and ecological forces and histories of ecological and social interaction, by existing social contexts and structures, and by global political and economic forces. Topics include a broad survey of human and nonhuman primate diets and their physiological and behavioral correlates; theories of optimal diet breadth and prey choice; fossil and archaeological evidence for early human diets; genetic
adaptaions to diet; metabolic syndrome; food security; food taboos; the origins and cross cultural uses of spices; ecological impacts of hunting, gathering, and agropastoralism especially relative to food webs, biodiversity and sustainability; cultural diversity in the social uses and meanings of food and the sharing of food and how sociopolitical contexts have shaped the overexploitation of certain resources throughout history. Students will come away from this course with an understanding of the diversity of human foodways through time and space: how biology, culture, and ecology interact to shape the food we eat, and how the food we eat shapes us.

Recommended Preparations: ANTH 21; ANTH 45

Changes Effective Spring 2022:
- Remove Recommended Preparations

APLNG 210: The Ecology of Global English (3 Credits) (IL)
Old Listing Effective Through Fall 2021:

Having developed since the fifth century in the British Isles, English has now become a global language used by millions of native and non-native speakers around the world. This course examines the historical roots of English and the factors that explain its spread as the lingua franca of globalization, adopting the metaphor of 'ecology' to illustrate how English has adapted INTERNALLY in response to, and in conjunction with, EXTERNAL circumstances. Readings and activities will explore how English language has been instrumental to globalization and how globalization has changed English. After studying the historical and geopolitical bases for the rise of English, we explore the implications of decolonization, diaspora communities, the Internet, and the new economy for diversifying the structure, norms, and usage of the English language. We will place particular emphasis on exploring new modes of literacy and discourse practices, the fluid relationships between English and other languages and cultures, and the continuing reconceptualization of language standards, linguistic identities, and literacy practices.

Changes Effective Spring 2022:
- Title

APLNG 220N: Multilingual Lives: Stories of Language and Culture Learning (3 Credits) (IL)
Old Listing Effective Through Fall 2021:

In recent years, Applied Linguistics has witnessed a narrative turn, with growing interest in complementing its logico-scientific core with analysis of stories about multilingual experiences. This course will explore how the intersection of knowledge domains from the social sciences and the humanities can enrich our understanding and appreciation of multilingualism, including its challenges and its intellectual benefits. The class will first read and analyze stories about growing up in bi- or multilingual families, immigration in childhood or adulthood, and voluntary learning of languages at home or abroad. Along the way, we will encounter questions about the relationship between language, culture and personal identity as well as questions about the ways in which gender, power, and social class influence our pathways in pursuit of a satisfying sense of self. The stories we read will be interspersed with formal inquiry in second language acquisition, bi- and multilingualism, and language education, such as: How can we understand the processes of language acquisition and attrition? How do individual differences such as age or motivation influence learning? What are the documented cognitive benefits of bilingualism? The class will then conduct a community outreach project, collecting and analyzing stories from multilinguals who may be members of their own families, recent or longer-term immigrants, international students, scholars or retirees, foreign language learners, heritage learners, or parents of bilingual children. This project will encourage students to interrogate lived experiences as objects of study. Presentation of findings may take various forms, e.g., public poster sessions, digital narratives, or contributions to oral history archives (e.g., welisten@psu.edu)

Changes Effective Spring 2022:
- Description

ART 220: Figure Drawing (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Drawing from life. Emphasis on developing the ability to comprehend and record the human figure. ART 220 Figure Drawing (3) This course is intended to further investigate the art of figure drawing for art majors. As a studio offering, emphasis is placed on hands-on studio activities, which promote visual literacy and sensitivity to the various conventions used in figure drawing. Students will be given the opportunity to explore many of the traditional materials of drawing, including pencil, charcoal, conte, ink and ink wash, pastel, as well as experimental tools. As well, slide presentations, studio visits and museum critiques will augment studio exercises to facilitate a greater awareness of the cultural context in which figure drawing functions. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

Prerequisites: ART 110S, ART 111, and enrollment in the School of Visual Arts or successful completion of an admissions portfolio review

Changes Effective Spring 2022:
- Prerequisites
- Concurrences

ART 223: Drawing: Techniques, Materials, and Tools (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Drawing with an emphasis on organization and the development of drawing skills through a variety of techniques, materials, and tools. ART 223 Drawing: Techniques, Materials, and Tools (3) This course is intended to further investigate the art of drawing for art majors. As a studio offering, emphasis is placed on hands-on studio activities, which promote visual literacy and sensitivity to the various conventions used in drawing. Students will be given the opportunity to explore many of the traditional materials of drawing, including pencil, charcoal, conte, ink and ink wash, pastel, as well as experimental tools. As well, slide presentations, studio visits and museum critiques will augment studio exercises to facilitate a greater awareness of the cultural context in which drawing functions. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

Prerequisites: ART 110S, ART 111, and enrollment in the School of Visual Arts or successful completion of an admissions portfolio review

Changes Effective Spring 2022:
ART 230: Beginning Sculpture (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

An introduction to sculpture consisting of lectures, demonstrations, and basic studio work to cover a broad range of processes. ART 230 Beginning Sculpture (3) This course is intended to investigate the art of sculpture for art majors. As a studio offering, emphasis is placed on hands-on studio activities, which promote visual literacy and sensitivity to the various conventions used in sculpture. Students will be given the opportunity to explore many of the traditional materials and processes of sculpture, including additive and subtractive processes, plaster-working, wood fabrication, metal fabrication, and mixed-media usage, as well as experimental tools and processes. Slide presentations, studio visits and museum critiques will augment studio exercises to facilitate a greater awareness of the cultural context in which sculpture functions. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

Prerequisites: ART 110S, ART 111, and enrollment in the School of Visual Arts or successful completion of an admissions portfolio review

Changes Effective Spring 2022:

• Prerequisites
• Concurrents

ART 240: Beginning Printmaking (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

An introduction to printmaking consisting of lectures, demonstrations, and studio work to cover a broad range of processes. ART 240 Beginning Printmaking (3) This course will consist of lectures, demonstrations, and studio practice in a broad range of printmaking processes. Critiques will be directed toward technical, aesthetic, and historical issues in black and white and color print. Various print collections within the University will be employed to acquaint the students with the work of the professional in the field. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

Prerequisites: ART 110S, ART 111, and enrollment in the School of Visual Arts or successful completion of an admissions portfolio review

Changes Effective Spring 2022:

• Prerequisites
• Concurrents

ART 250: Beginning Oil Painting (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

The materials and techniques of painting in oil and their uses in creative painting on panels and canvas. ART 250 Beginning Oil Painting (3) This course is designed to teach beginning students the basic fundamentals of painting and introduce them to the visual arts as a vehicle for personal expression. It is divided into technical categories for organizational purposes. The unique process of each discipline structures the course and allows for individual expression from a diversity of students with different skills and interests. The basic skills are introduced and studied through the creative process, from conception of an idea, preliminary sketches, variations, and final painting. Emphasis is placed on understanding the goals for each student and focusing on his or her shortcomings and strengths. While a basic mastery of mimetic painting is aimed at, a diverse range of aesthetic styles is presented. Thus the purpose of this course is to increase the appreciation of the visual arts through studio processes and the development of meaningful critical facility. We hope to educate students who will understand the fundamentals of painting and who will become part of an educated audience for the arts. Hopefully, they will be more imaginative and creative people. The studio emphasis on individual growth allows for flexibility in course structure to accommodate the general education objectives as well as for future painting majors. Creative and visual thinking are innately part of all students and these basic studio courses encourage and nurture them.

Prerequisites: ART 110S, ART 111, and enrollment in the School of Visual Arts or successful completion of an admissions portfolio review

Changes Effective Spring 2022:

• Prerequisites
• Concurrents

ART 280: Beginning Ceramics (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

The fundamentals of ceramics, throwing, hand-building, and glazing; acquainting the student with ceramic materials, techniques, and philosophy. ART 280 Beginning Ceramics (3) This course is intended to further investigate the art of ceramics for art majors. As a studio offering, emphasis is placed on hands-on studio activities, which promote visual literacy and sensitivity to the various conventions used in ceramics. Students will be given the opportunity to explore many of the traditional materials of ceramics, including functional and nonfunctional applications, stoneware, and high fire glazes. As well, slide presentations, studio visits and museum critiques will augment studio exercises to facilitate a greater awareness of the cultural context in which the field of ceramics functions. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

Prerequisites: ART 110S, ART 111, and enrollment in the School of Visual Arts or successful completion of an admissions portfolio review

Changes Effective Spring 2022:

• Prerequisites
• Concurrents

ART 320: Advanced Drawing (4 Credits: Maximum of 8 Credits) (BA)
Old Listing Effective Through Fall 2021:

Drawing for art majors; emphasis on sustained individual approaches based on figurative and nonfigurative sources. ART 320 Advanced Drawing (4 per semester/maximum of 8) This course is for students who have a firm commitment in the arts, who have adequate background in the use of techniques and materials, and who have experimented with a variety of approaches to subject matter. This course is designed to focus
and develop personal approaches to subject matter and to encourage a sustained interest in work. Portfolios will be graded and midterm and at the end of the semester. In addition to the portfolio requirements, each student will give a presentation on a contemporary artist whose work has in some way influenced your own current body of work. Critiques will be regularly scheduled. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

PreRequisite: ART 220, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

• Prerequisites

ART 330: Intermediate Sculpture: Metal Fabrication and Mixed-media (4-4 Credits: Maximum of 8 Credits) (BA)

Old Listing Effective Through Fall 2021:

Development of technical and conceptual skills through metal fabrication, welding, and mixed-media processes. ART 330 Intermediate Sculpture: Metal Fabrication and Mixed-media (4 per semester/maximum of 8) This course is for students who have a firm commitment in the arts, who have adequate background in the use of techniques and materials, and who have experimented with a variety of approaches to subject matter. This course is designed to focus and develop personal approaches to subject matter and to encourage a sustained interest in work. Readings, lectures, movies, and demonstrations will introduce students to the materials and techniques used in the various sculpture processes. Projects will be assigned throughout the semester and group critiques will be scheduled at regular intervals. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

PreRequisite: ART 230, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

• Prerequisites

ART 331: Intermediate Sculpture: Metal Casting and Mold-Making (4 Credits: Maximum of 8 Credits) (BA)

Old Listing Effective Through Fall 2021:

Development of technical and conceptual skills through metal casting and mold-making processes. ART 331 Intermediate Sculpture: Metal Casting and Mold-Making (4 per semester/maximum of 12) This course is for students who have a firm commitment in the arts, who have adequate background in the use of techniques and materials, and who have experimented with a variety of approaches to subject matter. This course is designed to focus and develop personal approaches to subject matter and to encourage a sustained interest in work through the development of technical and conceptual skills through metal casting and mold-making. Students will learn both traditional and non-traditional ways of making sculptural objects that use these skills as primary means of artistic communication. Readings, lectures, movies, and demonstrations will introduce students to the materials and techniques used in the various sculpture processes. Projects will be assigned throughout the semester and group critiques will be scheduled at regular intervals. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

PreRequisites: ART 230, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

• Prerequisites

ART 338: The Body: Issues and Objects (4 Credits: Maximum of 8 Credits) (BA)

Old Listing Effective Through Fall 2021:

Creating representations of the human body and related objects as a means of sculptural expression. ART 338 The Body: Issues and Objects (4 per semester/maximum of 8) This course is for students who have a firm commitment in the arts, who have adequate background in the use of techniques and materials, and who have experimented with a variety of approaches to subject matter. This course is designed to focus and develop personal approaches to subject matter and to encourage a sustained interest in work through the exploration of both historical and contemporary artmaking practice concerning the representation of the human body and objects related to the body. Students will learn both traditional and non-traditional ways of making sculptural objects that use the body as a primary means of artistic communication. Readings, lectures, movies, and demonstrations will introduce students to the materials and techniques used in the various sculpture processes. Projects will be assigned throughout the semester and group critiques will be scheduled at regular intervals. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

PreRequisites: ART 230, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

• Prerequisites

ART 340: Printmaking (4 Credits: Maximum of 8 Credits) (BA)

Old Listing Effective Through Fall 2021:

Development of technical and expressive skills through selected problems in one or more of the print processes. ART 340 Printmaking (4 per semester/maximum of 8) This course is for students who have a firm commitment in the arts, who have adequate background in the use of techniques and materials, and who have experimented with a variety of approaches to subject matter. This course is designed to focus and develop personal approaches to subject matter and to encourage a sustained interest in work. Readings, lectures, movies, and demonstrations will introduce students to the materials and techniques used in the various printmaking processes. Projects will be assigned throughout the semester and group critiques will be scheduled at regular intervals. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

PreRequisites: ART 230, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

• Prerequisites
in creating visually compelling concepts is essential to the success of completed artworks.

PreRequisite: ART 240, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

- Prerequisites

**ART 341: Intermediate Printmaking: Intaglio/Relief (4 Credits) (BA)**

Old Listing Effective Through Fall 2021:

Instruction and practice in the fundamentals of intaglio and relief printmaking processes in their relation to the fine arts. ART 341 Intermediate Printmaking: Intaglio/Relief (4) This course is designed for the student who is interested in expanding her/his image making vocabulary through intaglio and relief printmaking processes. It will expose students to the history and practice of these processes, and will prepare students to competently produce original works. Readings, lectures, and demonstrations will introduce students to the materials and techniques used in the various intaglio and relief processes. Projects will be assigned throughout the semester and group critiques will be scheduled at regular intervals. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

Prerequisites: ART 240, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

- Prerequisites

**ART 342: Intermediate Printmaking: Lithography/Serigraphy (4 Credits) (BA)**

Old Listing Effective Through Fall 2021:

Instruction and practice in the fundamentals of the lithographic and serigraphic processes and their relationship to the meaning of the print. ART 342 Intermediate Printmaking: Lithography/Serigraphy (4) This course is designed for the student who is interested in expanding her/his image making vocabulary through lithographic and serigraphic printmaking processes. It will expose students to the history and practice of these processes, and will prepare students to competently produce original works. Readings, lectures, and demonstrations will introduce students to the materials and techniques used in the various lithographic and serigraphic processes. Projects will be assigned throughout the semester and group critiques will be scheduled at regular intervals. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

PreRequisite: ART; 240, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

- Prerequisites

**ART 343: New Media Printmaking (4 Credits: Maximum of 8 Credits) (BA)**

Old Listing Effective Through Fall 2021:

A studio course concentrating on the integration of new media and traditional printmaking processes. ART 343 New Media Printmaking (4 per semester/maximum of 8) ART 343 is a studio art class that focuses on creating and critically evaluating printed media. Problem solving with new and traditional print technologies will allow the student to use both the computer and the printing press as a means to a creative end. Students will acquire the skills to critically participate in our technology driven culture, while at the same time they will develop an appreciation for the aesthetics of the handmade. This course will explore the nature and potential of printed media through lectures, readings, demonstrations, studio practice, and critiques. Various conceptually driven assignments will cover a range of graphic computer programs (Adobe Photoshop and Adobe Illustrator) and specific print outputs (digital, photo litho, photo etching and serigraphy) These assignments will engage students in research methods to advance their skills in printed media and help them to develop an understanding of the critical evaluation and assessment of Art.

PreRequisite: ART 201 or ART 240, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

- Prerequisites

**ART 350: Intermediate Painting (4 Credits: Maximum of 8 Credits) (BA)**

Old Listing Effective Through Fall 2021:

A variable offering in painting; course conditions defined on a rotating basis according to needs of individuals and groups. ART 350 Intermediate Painting (4 per semester/maximum of 8) This course is will further develop painting techniques, using the genres of landscape, still life, and painting from the model, collage, abstraction, and some digital applications. Examples from past and contemporary painting practice will be presented and discussed. Particular emphasis will be placed upon the development of a critical awareness concerning processes and content. Readings and discussions will focus on contemporary cultural and political issues. Projects will be assigned throughout the semester and group critiques will be scheduled at regular intervals. This labor-intensive studio relies upon cumulative learning experience through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their creative use and application is essential to the success of completed artworks.

PreRequisite: ART 250, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

- Prerequisites

**ART 380: Intermediate Throwing (4 Credits: Maximum of 12 Credits) (BA)**

Old Listing Effective Through Fall 2021:

Intermediate ceramics course with focus on using wheel and throwing skills leading to personal expression in form, glazing, and firing. ART 380 Intermediate Throwing (4 per semester/maximum of 12) The purpose of this course is to explore the use of the wheel. Various types of forms
will be addressed such as bowls, covered jars, and vases. Technical skills will be learned with the goal to use them to create a personal means of expression via the wheel. Both traditional and nontraditional vessels will be created. Forming, trimming and glazing techniques will be covered. There will be both group and individual critiques along with slide presentations and demonstrations. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

Prerequisites: ART 280, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

• Prerequisites

ART 381: Intermediate Handbuilding (4 Credits: Maximum of 12 Credits) (BA)

Old Listing Effective Through Fall 2021:

An intermediate ceramics course with a focus on handbuilding techniques, leading to personal expression in forming, glazing, and firing. ART 381 Intermediate Handbuilding (4 per semester/maximum of 12) The purpose of this course is to explore different means of expression with the techniques of handbuilding. Clay is unlike any other material in that it can be transformed into virtually anything. Some of the forming methods which be addressed are coil, slab, carving, modeling and slump/press molds. The course will have assignments that are technically challenging, but will call on creative and artistic abilities. Slide presentations and group and individual critiques will be part of the curriculum. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

Prerequisites: ART 280, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

• Prerequisites

ART 409: Museum Studies (3 Credits) (BA)

Old Listing Effective Through Fall 2021:

An introduction to the professional activities that occur in art museums. ART 409 / ARTH 409 Museum Studies (3)(BA) This course meets the Bachelor of Arts degree requirements. This course introduces students to the broad field of art museum work, specifically museum management, administration, education, curatorial work, registration, and exhibition design. Readings by authors in each field provide current theoretical and philosophical frameworks for all areas, which are then followed by discussions and practical experiences with professional museum practitioners, including the staff of a museum, for example, the Palmer Museum of Art, and invited guests. Museum Studies is open to students who have complete six credits in art, art education, or art history. This course is especially beneficial for majors in art, education, and art history who are considering a career in an art museum or who want to become more aware about how an art museum functions. In addition to providing an in-depth introduction to art museum work, the course encourages students to build the critical thinking and response skills that are crucial to success in the real-world environment of a museum. The readings provide a solid foundation for later reference or further study in the student's chosen field. Offered every spring, this course will have a maximum enrollment of 20 students. Grades are based on class participation, four out-of-class projects, and a final project. Extra credit is offered for an off-campus visit to a museum, among other options.

Cross-Listed Courses: ARTH 409

Prerequisites: 6 credits of ART H, ART and/or A ED

ART 411: Seminar in Contemporary Art (3 Credits: Maximum of 6 Credits) (US) (BA)

Old Listing Effective Through Fall 2021:

Trends in contemporary art investigated within the framework of studio visitations, museum tours, and through other related avenues of encounter. ART 411 Seminar in Contemporary Art (3) This seminar on contemporary art exposes students to artistic practices and to the advanced-level critical discourses accompanying them. It is relevant to all students interested in expanding their knowledge of contemporary art and essential to BFA students who are encouraged to take the course more than once. The only prerequisite for this course is ART 122

The seminar’s intimate format allows for discussions and a convivial examination of the pluralistic expressions of contemporary art while articulating it with theory and criticism. From an international perspective, this seminar focuses on art since the 1960s. Besides more traditional artistic expressions such as painting, sculpture, photography, installation, performance and video, the course examines networked collaborations before and after the Internet, art and social activism, and a range of new media and new genre artistic practices. The conceptual issues these works raise include among others the dematerialization of the art object, issues of site-specificity and public art, and institutional critique. The course approaches these developments through artists’ writings and essays in contemporary theory and criticism. Works of art are presented through videos, power points, films, performances, gallery visits, field trips, and discussions of related essays. Critical “reading” includes an extensive introduction to the work’s historical contexts, readings from primary source materials, and the exploration of critical methods of analysis. From a cross-disciplinary perspective – including historical, esthetic and philosophical approaches – this course examines principles, assumptions, and tensions inherent in artist’s works as well as in our responses to them. Student evaluation is based on short written papers such as an exhibition review or an interview, participation in class discussions, and a creative project (ranging from a web site to an installation, artist’s book, or a performance), which must reflect a general understanding of the issues addressed in the course. The course is offered at least once a year with the enrollment of 15 students.

PreRequisite: ART 122Y, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:

• Prerequisites

ART 413: Performance Art (3 Credits) (BA)

Old Listing Effective Through Fall 2021:

The development, production, and presentation of performance art works, and the study of performance art theory and history. ART 413 Performance Art (3)(BA) This course meets the Bachelor of Arts
degree requirements. This course will consist of lectures, readings, demonstrations, critiques, and studio practices in performance art. The course will begin with introductory exercises aimed toward the use and understanding of objects, images, materials, and actions of the body as performance elements. Performance assignments will range from autobiographical works to those which will address political issues effecting art and the body today such as sexuality, ethnicity, health, ecology, the art market, government intervention, and others. Reading and discussion assignments will cover the theory and history of performance art in the twentieth-century. Performance Art Paper: One week after the second performance project, students will be required to submit a paper that defines performance art. The paper should be typewritten, double-spaced, and three pages in length. In addition, it should contain a page for references that indicates at least five sources that have been used from the course reading list to support arguments.

Prerequisites: 4 credits of 300-level art, or graduate level status, or permission of instructor

Changes Effective Spring 2022:
- Description
- Remove Prerequisites

ART 422: Advanced Figure Drawing (4 Credits: Maximum of 8 Credits) (BA)
Old Listing Effective Through Fall 2021:
Concentrated work in recording and understanding the human figure.
PreRequisite: ART 220, 8 credits of 300-level art courses

Changes Effective Spring 2022:
- Prerequisites

ART 430: Advanced Sculpture (4 Credits: Maximum of 12 Credits) (BA)
Old Listing Effective Through Fall 2021:
Advanced work in sculpture, with an emphasis on individual development.
Prerequisites: ART 330, ART 331, 12 credits of 300-level sculpture

Changes Effective Spring 2022:
- Description
- Prerequisites

ART 431: Installation Art (4 Credits) (BA)
Old Listing Effective Through Fall 2021:
Study and production of original visual statements through installation work as an art form.
Prerequisites: 4 credits of 300-level art, or graduate level status

Changes Effective Spring 2022:
- Remove Prerequisites

ART 438: The Body: Issues and Objects (4 Credits: Maximum of 8 Credits) (BA)
Old Listing Effective Through Fall 2021:
Creating representations of the human body and related objects as a means of sculptural expression. ART 338 The Body: Issues and Objects (4 per semester/maximum of 8) This course is for students who have a firm commitment in the arts, who have adequate background in the use of techniques and materials, and who have experimented with a variety of approaches to subject matter. This course is designed to focus and develop personal approaches to subject matter and to encourage a sustained interest in work through the exploration of both historical and contemporary artmaking practice concerning the representation of the human body and objects related to the body. Students will learn both traditional and non-traditional ways of making sculptural objects that use the body as a primary means of artistic communication. Readings, lectures, movies, and demonstrations will introduce students to the materials and techniques used in the various sculpture processes. Projects will be assigned throughout the semester and group critiques will be scheduled at regular intervals. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

Prerequisites: ART 230, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:
- Description
- Prerequisites

ART 440: Advanced Printmaking (4 Credits: Maximum of 12 Credits) (BA)
Old Listing Effective Through Fall 2021:
Individual projects in one or more of the printmaking processes. Emphasis is on developing a portfolio of prints.
PreRequisite: 4 credits of 300-level printmaking courses, 8 credits total of 300-level art courses

Changes Effective Spring 2022:
- Prerequisites

ART 446: Artists Books (4 Credits) (BA)
Old Listing Effective Through Fall 2021:
Study and production of original visual statements through the book as an art form. ART 446 ART 446 Artists Books (4) This course will consist of lectures, demonstrations, and studio practice in production of artists books. Lectures and demonstrations will include hand papermaking, signature binding, book design, new and alternative book forms, and container construction. Each student will produce six either unique or editioned books during the semester; each book will have a mock up, title, colophon page, and will be signed. This labor-intensive studio relies upon cumulative learning experiences through increasingly demanding projects. Competency is expected in numerous new skills and techniques, and their application in creating visually compelling concepts is essential to the success of completed artworks.

PreRequisite: ART 110S, ART 111, ART H111, ART H112, and enrollment in the ART BA, ART BFA, Art Education, or Integrative Arts degree program

Changes Effective Spring 2022:
- Prerequisites
ART 455: Advanced Painting Critique (4 Credits: Maximum of 8 Credits) (BA)
Old Listing Effective Through Fall 2021:
The painter in relation to his peers and his profession.
PreRequisite: senior or graduate standing

Changes Effective Spring 2022:

• Prerequisites

ART 467: Matter, Materiality and Mediums: An Interdisciplinary Approach to Artistic Stuff (3 Credits)
Old Listing Effective Through Fall 2021:
Considers the physical challenges and long traditions of use of artistic media from both studio and historical points of view. ART (ART H) 467 Matter, Materiality and Mediums: An Interdisciplinary Approach to Artistic (3) Art and Art History are disciplines famously preoccupied with stuff: its malleability and its endurance, its sensuous properties and formal possibilities, its economic value and its mythic or even supernatural power. As an introduction to art through its materiality, this class will focus its attention upon a different material every week. With two class meetings per week, classes will alternate between ‘practicum’ sections (demonstrations of selected materials with visits to metal foundries, studios and laboratories) and ‘historical’ sections (lectures and discussions of those materials as they have worked in different historical and cultural contexts). The class will also introduce students to humanistic discussions of ‘matter’ as well as attend to the cultural work involved in western art history’s preoccupation with the differences between ‘matter’ and artistic ‘medium.’

Prerequisites: 3 credits in ART or 3 credits in ART H

Changes Effective Spring 2022:

• Remove Prerequisites

ART 480: Advanced Ceramic Arts (4 Credits: Maximum of 12 Credits) (BA)
Old Listing Effective Through Fall 2021:
Individual exploration of ceramic materials and construction leading to graduate study or career development as a professional potter.
PreRequisite: ART 380

Changes Effective Spring 2022:

• Prerequisites

ART 495: Internship (1-18 Credits: Maximum of 18 Credits) (BA)
Old Listing Effective Through Fall 2021:
Supervised off-campus, nongroup instruction including field experiences, practica, or internships. Written and oral critique of activity required.
PreRequisite: prior approval of proposed assignment by instructor

Changes Effective Spring 2022:

• Prerequisites

ASM 424: Selection and Management of Agricultural Machinery
Old Listing Effective Through Fall 2021:
ASM 424 covers the many aspects of mobile agricultural machinery, precision agriculture, and fleet management. Integration of economic analysis and functional performance topics are the focus. Types of agricultural machinery available, optimization, precision agriculture technology, machine sizing criteria and cycle diagrams, repair and maintenance, and reliability of machinery are major topics covered. Global positioning and geographic information systems hardware and software will be used to demonstrate the use of these technologies within precision agriculture from planting through harvest. Laboratory exercises will involve full-scale equipment with instrumentation used to measure performance. While ASM 424 is not a prerequisite for any other course, it complements engineering and technology courses related to machinery and provides precision agriculture familiarity. It complements other courses for anyone interested in the off-road machinery industries.
Prerequisite: BE 306; ASM 310; ME 360

Changes Effective Spring 2022:

• General Education Recertification
• Description

BBH 101: Introduction to Biobehavioral Health (3 Credits)
Old Listing Effective Through Fall 2021:
Introduction to an interdisciplinary study of health, examining the interaction of biological processes and behavior on health.

Changes Effective Spring 2022:

• General Education Recertification
• Description

BBH 311: Interdisciplinary Integration in Biobehavioral Health (3 Credits)
Old Listing Effective Through Fall 2021:
A review of literature relevant to the concepts and findings of different scientific domains as they apply to biobehavioral health.
Prerequisites: Enforced Prerequisite at Enrollment: BBH 101 and BIOL 110 and PSYCH 100

Changes Effective Spring 2022:

• Enforced Prerequisites

BE 487: Simulation Modeling for Water Resources Management (3 Credits)
Old Listing Effective Through Fall 2021:
This course will provide hands-on experience of several commonly available simulation models for natural resources engineers for investigating water resources related issues. The models will serve as a base from which students can investigate the effects of different management design scenarios on watershed system responses. The course introduces general modeling concepts of data processing, model development, model calibration/validation and uncertainty analysis. Model development concepts will be introduced with data driven regression
models for rainfall-runoff simulation. Then, students will work with a range of simulation models commonly used by industry or government agencies. One model might be used as an initial exploration of modeling for an entire watershed and to show the hydrologic responses for various subwatersheds (agriculturally dominated vs. urban dominated). A second model might be used to explore more in-depth modeling for an urban watershed. A third model might be used to introduce modeling concepts of demand driven closed conduit water systems in drinking water distribution systems. Students will select one of the three models to study in detail for a project where they evaluate a water management structure design or investigate a water resources related issue.

Prerequisites: PreRequisite: B E 307 or C E 461

Changes Effective Spring 2022:

- Title
- Abbreviated Title
- Description

**BIOL 133: Genetics and Evolution of the Human Species (3 Credits) (BA)**

**Old Listing Effective Through Fall 2021:**

Human heredity and evolution, individual and social implications. The course is for non-majors; students who have passed BIOL 222, 230W, B M B 251 or any upper-division biology course may not schedule this course. BIOL 133 BIOL 133 Genetics and Evolution of the Human Species (3) (GN) BIOL 133 is a 3 credit non-majors course designed as an overview of our current knowledge of human genetics and genetic issues, with special attention to issues that are relevant to non-scientists. We discuss background information that is necessary for understanding these issues, including the structure and function of DNA and chromosomes, Mendelian inheritance, gene expression, gene mutations and chromosomal aberrations, population genetics, evolution, cancer, and genetic and reproductive technologies. This course includes multimedia presentations, textbook readings, classroom activities and problem solving. The goal for this course is to provide students with sufficient scientific knowledge to make informed decisions about genetic issues and the ability to discuss these issues intelligently.

Changes Effective Spring 2022:

- General Education Recertification

**BIOL 230M: Honors Biology: Molecules and Cells (4 Credits) (H) (WF) (BA)**

**Old Listing Effective Through Fall 2021:**

This four credit course with lecture and laboratory components provides an understanding of the major unifying principles of life as they apply to the study of the molecular mechanisms underpinning the function of living organisms. Through the lab, students are expected to become proficient in the interpretation and presentation of experimental results through written and oral reports. Taken together with the other honors core courses in the biology curriculum (BIOL 110H, BIOL 220M, BIOL 240M), BIOL 230M will help students to integrate concepts ranging from molecular and cellular events through principles governing entire populations and ecosystems. Further, BIOL 230M provides the foundation on which students further their study of molecular genetics – a discipline integral to a number of the biological sciences. Through this class, and the other core course, students will develop a number of the skills outlined in the General Education mission. BIOL 230M serves a number of majors and colleges. The laboratory portion of the course requires a fully equipped laboratory room, as well as a classroom for recitation meetings. The Honor’s version of the course will differ in a number of ways from the parent BIOL 230W course. First, there are more opportunities to discuss current applications of the information. In addition, a unique project (either in lab and/or in lecture) will allow students to explore a specific area of the course in more detail (e.g., take a paper from the primary literature and present the data, and its significance, to the class). Where appropriate, students will be exposed to current research in specific areas. In addition, the laboratory component will have opportunities for students to do more in depth exercises where, to some degree, they could pose their own questions.

Prerequisites: Enforced Prerequisite at Enrollment: BIOL 110H

Changes Effective Spring 2022:

- Prerequisites

**BRS 411: Biobased Fiber Science**

**Old Listing Effective Through Fall 2021:**

Theoretical and practical aspects of structure-property relationships for biobased industrial fibers, including fiber biological and chemical constitution and fiber-water relationships. BRS 411 Biobased Fiber Science (4) This course investigates fundamental aspects of biobased industrial fibers (also known as biofibers), and ties their underlying biological and chemical structure to macroscale properties. Bioproducts are defined as products created from biologically derived, renewable industrial feedstocks (wood, cotton, grasses, and bast fibers including jute, hemp, kenaf, etc.). The course begins with a look at the worldwide production of biofibers, and considers implications relating to sustainability. Elements of underlying biological and chemical structure are then investigated, including an introduction to relevant aspects of polymer science. The interaction of biofibers with water is a practical issue that bears great significance; this is the focus of the last third of the course. Students will learn principles of psychrometrics (water-temperaturereenvironmentrelationships) including measurement of relative humidity and fiber moisture content. Final course subjects include industrial techniques for drying fibers, energy implications of these processes, and troubleshooting of biofiber industry issues relating to moisture.

Prerequisite: CHEM 110, BRS 300

Changes Effective Spring 2022:

- Title
- Abbreviated Title
- Description
- Credits

**BRS 417: Processing and Manufacturing Systems for Bioproducts**

**Old Listing Effective Through Fall 2021:**
Prerequisites: 6 credits in any undergraduate CAMS courses

The course complements other existing courses in areas such as Ancient Near Eastern studies, biblical studies, Classics, Ancient History, and Linguistics. Moreover, this is one of the several history courses that will be evaluated on the basis of class participation (including a class presentation), as well as on writing assignments. The writing assignments will include take-home examinations. This course complements other existing courses in areas such as Ancient Near Eastern studies, biblical studies, Classics, Ancient History, and Linguistics. Moreover, this is one of the several history and culture courses in CAMS that provide detailed overviews of major civilizations of the Mediterranean and Near Eastern regions.

Prerequisites: BRS 221 and BRS 300

Changes Effective Spring 2022:
- Abbreviated Title
- Description
- Credits

CAMS 405: Law & Economy in the Ancient Near East (3 Credits) (IL) (BA)
Old Listing Effective Through Fall 2021:

This course is an overview of the legal and economic texts and institutions of the Ancient Near East. CAMS 405 Law & Economy in the Ancient Near East (3) (IL) (BA) This course meets the Bachelor of Arts degree requirements. This course will introduce the students to the legal and economic institutions of the Ancient Near East, as well as to the many theoretical issues raised by their study, such as: the matter of land tenure; the role played by the temple and the palace in the economic structure; the nature of law within political theology and kingship; and the legal and economic status of specific social groups (women, the elderly, slaves, children). Since most of the topics to be examined are widely debated, the course will provide the students with a broad overview of scholarly theories and intellectual schools. In order to accomplish such an objective, the readings for the class will include both introductory works (taken, for instance, from Sasson, Civilizations of the Ancient Near East) and more advanced and specific articles and works (e.g., R. Westbrook, A History of Ancient Near Eastern Law). Students will be asked to prepare these readings, which will be available in the library or in electronic format, so they will be ready to take part in class discussions. The source book for the basic legal texts will be M.T. Roth's edition of law collections. Moreover, students will be expected to give a presentation based on some of the optional readings listed in the syllabus. Thus, every class will consist of lecture on the topic and a critical and open discussion of the assigned readings. Every lecture will take into account the assigned readings and will be accomplished by some handouts. Students will be evaluated on the basis of class participation (including a class presentation), as well as on writing assignments. The writing assignments will include take-home examinations. This course complements other existing courses in areas such as Ancient Near Eastern studies, biblical studies, Classics, Ancient History, and Linguistics. Moreover, this is one of the several history and culture courses in CAMS that provide detailed overviews of major civilizations of the Mediterranean and Near Eastern regions.

Prerequisites: 6 credits in any undergraduate CAMS courses

Changes Effective Spring 2022:
- Prerequisites

CAMS 420: Introductory Targumic Aramaic (3 Credits)
Old Listing Effective Through Fall 2021:

Fundamentals of Aramaic grammar, syntax, and vocabulary. CAMS 420 Introductory Targumic Aramaic (3) The aim of CAMS 420 is to introduce students to the fundamentals of Targumic Aramaic as quickly and thoroughly as possible. Targumic Aramaic, is the dialect used by Jews in the last few centuries BCE in their translations of the Bible into Aramaic. Targumic Aramaic texts remain vital within Judaism and Biblical study. This course focuses primarily on the morphology and syntax of Aramaic. Drills on each point of grammar, as well as translation of sentences from Aramaic to English and English to Aramaic, and brief passages taken from the native texts are the basis of the student's homework throughout the semester. By the end of the semester, the students will be prepared to read short, unmodified passages of actual Aramaic. The course will focus primarily on reading and writing, though students will read aloud in class regularly in order to ensure correct pronunciation and understanding. CAMS will prepare students to work with Aramaic in related courses in CAMS, in particular those dealing with other Aramaic dialects, the Bible, and other related ancient languages. The course goals, in addition to providing the students a basic understanding of the history of the Aramaic literary tradition. The primary focus will be on mastering paradigms and syntax, but the students will also be introduced to real Targumic Aramaic texts, which are of great importance to understanding the history of Biblical textual transmission.

Changes Effective Spring 2022:
- Prerequisites

CAMS 430: Archaeology of the Near East (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Culture of the Near East and India from Paleolithic times through the Bronze Age.

Cross-Listed Courses: ANTH 420 JST 420

Prerequisites: 3 credits of ANTH

Changes Effective Spring 2022:
- Prerequisites

CAMS 442: Sport in Ancient Greece and Rome (3 Credits) (IL) (BA)
Old Listing Effective Through Fall 2021:

An examination of the continuity of sport in Greek and Roman societies. CAMS 442 / KINES 442 Sport in Ancient Greece and Rome (3) (IL) This course examines the continuity of sport in ancient Greek and Roman societies. It investigates the role of athletic festivals in both cultures as well as the value placed on physical activity as part of the educational process. The objectives of the course are to enable students to gain an appreciation for the continuous involvement of the ancient Greeks in the areas of competitive athletics and gymnastics (Kinesiology) as an important part of their value system. Moreover, the course will provide a comparison of Greek and Roman attitudes of athletics and gymnastics. Typical topics include athletics during the Minoan/Mycenaean Bronze Age, Athenian and Spartan philosophies regarding education, the importance of spectator sports in Roman society and their link to politics.
Cross-Listed Courses: KINES 442

Prerequisites: Enforced Prerequisite at Enrollment: KINES 100 or KINES 341 or COMM 170 or RPTM 120 or HIST 113 or ENGL 234 or AFAM 114 or ASIA 101N or CAMS 25 or CAMS 33 or CAMS 100 or CAMS 101 or CAMS 142 or CAMS 180

Changes Effective Spring 2022:

- Prerequisites

**CAMS 470: Languages and Cultures of the Ancient Near East (3 Credits) (IL)**

Old Listing Effective Through Fall 2021:

This course is an overview of the languages and cultures that populated the Ancient Near East. CAMS 470 Languages and Cultures of the Ancient Near East (3) (IL) (BA) This course meets the Bachelor of Arts degree requirements. This course aims to provide students with a wide overview of the languages spoken in the Ancient Near East. The goal is to go beyond the merely linguistic sketches of the main grammatical features of these languages. In fact, the focus will be placed on historical, literary, social, anthropological, and ethnic matters: language contact settings; relations between language and ethnicity; sociolinguistic aspects of language evolution, language variation, bilingualism, and diglossia; relations between historical and social patterns and the literary, bureaucratic, and popular uses of Language; etc. In order to address this ample variety of issues, the students will be introduced first to the essential set of facts needed to comprehend the sociolinguistic history of each region, i.e., basic overviews of the languages in question, their linguistic affiliation, the main periods of their history as evolving linguistic realities, and their different writing systems. These overviews will immediately open the door to the discussion of a tapestry of topics concerning the realities behind these languages, especially their speakers and their ethnic, historical, and political identity. This inquiry into the facets of language as an inherently human reality will lead to a miscellaneous constellation of problems, such as, for instance, the construction of a national identity through the use, revival, or vindication of a concrete language or dialect. Students will be required to do a number of readings before each class. These readings will include basic historical sketches of the languages and linguistic traditions with which the course will deal. Moreover, students will be expected to give a presentation based on some of the optional readings listed on the syllabus. Thus, every class will consist of a lecture on the topic and a critical and open discussion of the assigned readings. Every lecture will take into account the assigned readings and will be accompanied by some handouts. Students will be evaluated on the basis of class participation (including a class presentation), as well as on writing assignments. The writing assignments will include take-home examinations. This course complements other existing courses in areas such as Ancient Near Eastern studies, biblical studies, Classics, Ancient History, and Linguistics. Moreover, this is one of the several history and culture courses in CAMS that provide overviews of major civilizations of the Mediterranean and Near Eastern regions.

Prerequisites: 6 credits in any undergraduate CAMS courses

Changes Effective Spring 2022:

- Prerequisites

**CAMS 471: Sumerian (3 Credits) (BA)**

Old Listing Effective Through Fall 2021:

Introduction to the Sumerian language and the cuneiform writing system. CAMS 471 Sumerian (3)(BA) This course meets the Bachelor of Arts degree requirements. Sumerian was the language originally spoken in the south of Ancient Mesopotamia (modern Iraq) during the third millennium b.c.e. After it died out as a spoken language, Sumerian became the essential cultural vehicle for a wide variety of literary, scholarly, and religious genres, and it was preserved in writing until the practical disappearance of the Mesopotamian civilization by the second century of our era. This course aims to familiarize students with the basics of Sumerian grammar and enable them to read royal inscriptions from the Early Dynastic and Ur III periods (3rd millennium b.c.e.) as well as provide them with a preliminary introduction to some literary and non-literary texts. Students will be introduced to a variety of genres: royal inscriptions, administrative documents, letters, incantations, and literary texts. Because of the specific nature of the writing system and the fact that most Sumerian texts are available only in copies, students will also be introduced to the cuneiform script, its basic structure, and a basic repertoire of signs. Students will be required to do all the assigned exercises in advance, and participate in class. Special emphasis will be put on class participation: every student will be asked to read and translate in class. Furthermore, occasional quizzes are by no means a remote possibility. In addition, there will be a mid-term and a final examination. This course complements other existing courses in areas such as Ancient Near Eastern studies, biblical studies, Classics, Ancient History, and Linguistics. Moreover, this is one of the courses in CAMS that provide an introduction to as essential language of the Mediterranean and Near Eastern regions.

Prerequisites: 6 credits in any undergraduate CAMS courses

Changes Effective Spring 2022:

- Prerequisites

**CAMS 472: Akkadian (3 Credits) (BA)**

Old Listing Effective Through Fall 2021:

Introduction to the Akkadian language (Babylonian & Assyrian) and the cuneiform writing system. CAMS 472 Akkadian (3)(BA) This course meets the Bachelor of Arts degree requirements. Akkadian is the cover term for the East Semitic dialects spoken and written in Mesopotamia (modern Iraq) from the mid-third millennium b.c.e. to about the first century c.e. These dialects (Babylonian and Assyria) are all quite similar. As is customary, the course will focus on Old Babylonian, as this is the ‘classical’ variety of the language, and served as the basis for the dialect of the vast majority of later Akkadian texts (Standard Babylonian). This course aims to familiarize students with the basics of Akkadian grammar and enable them to read a wide variety of genres: legal texts, letters, omens, royal inscriptions, and literary compositions. Because of the specific nature of the writing system and the fact that many texts are available only in copies, students will also be introduced to the cuneiform script, its basic structure, and a basic repertoire of signs. Every meeting will follow a similar structure: the first part will be devoted to the exercises corresponding to the lesson in the textbook that was explained the previous day; and the second part will be an explanation of the next lesson, the exercises of which will have to be prepared for the next meeting. Students will be required to do all the assigned exercises in advance, and participate in class. Special emphasis will be put on class participation: every student will be asked to read and translate in class. Furthermore, occasional quizzes are by no means a remote possibility. In addition, there will be a mid-term and a final examination. This course complements other existing courses in areas such as Ancient Near Eastern studies, biblical studies. Classics, Ancient History,
and Linguistics. Moreover, this is one of the courses in CAMS that provide an introduction to an essential language of the Mediterranean and Near Eastern regions.

Changes Effective Spring 2022:

• Prerequisites

CAMS 480: Greeks and Persians (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Development and achievements of the Achaemenid kingdom; relationships between Persians and Greeks.

Cross-Listed Courses: JST 480
Prerequisites: CAMS 010, CAMS 025, or CAMS 100

Changes Effective Spring 2022:

• Prerequisites

CAMS 481: Introduction to Middle Egyptian & Hieroglyphics (3 Credits) (IL) (BA)
Old Listing Effective Through Fall 2021:

An introduction to the language and script of Ancient Egypt, familiarizing the student with grammar, syntax and lexicon. CAMS 481 Introduction to Middle Egyptian & Hieroglyphics (3) This course is offered as a basic introduction to that stage in the evolution of the Egyptian language known as ‘Middle Egyptian’ (used as a vernacular c. 2300-1700BC, and as a ‘literary’ dialect c. 2200-1950BC). First encountered in caption texts and snippets of conversation of the workers and peasants in late Old Kingdom mastaba depictions, Middle Egyptian originally was the vernacular of the ‘street’ during the outgoing Old Kingdom. In the upheaval that swept away the monarchy and elite of the Old Kingdom the language which characterized the Pharaonic court (Old Egyptian) was swept away as well. In the subsequent First Intermediate Period, the language that everyone speaks is a lower class register. Middle Egyptian was given a filip shortly after the turn of the millennium when the new regime of the 12th Dynasty (c. 1991-1786 BC) established a writing school and adopted this dialect as the accepted literary medium. The scribes of this institution produced a number of literary pieces, hymns and poetry which although created in writing, were intended for oral dissemination parlando. They rapidly became classics and were copied and learned by heart for centuries into the future. Middle Egyptian was used in every walk of life from monumental inscriptions, religious, and mortuary texts to letters, business documents and accounts, and the output from Dyn. 12 through 18 was prodigious. Even beyond the 14th Century BC learned scribes would continue to make the attempt at composing in Middle Egyptian, even though the language was no longer spoken, and as a quasi-ecclesiastical speech it continued down to Greco-Roman times. By that time its restriction to temple texts gave the false impression that both language and script had always had the purpose of conveying religious concepts, hence the Greek misnomer ‘hieroglyphs’, i.e. holy script.

Prerequisites: 6 credits of any CAMS course

Changes Effective Spring 2022:

• Prerequisites
• Add Recommended Preparations

CAMS 490: Ancient Mediterranean Languages (3-6 Credits: Maximum of 6 Credits) (BA)
Old Listing Effective Through Fall 2021:

Variable topic study of an ancient language of the Mediterranean basin and related areas, other than Greek, Latin, or Hebrew. CAMS 490 CAMS 490 Ancient Mediterranean Languages (3-6)(BA) This course meets the Bachelor of Arts degree requirements. CAMS 490 is a variable topic course in ancient languages, other than Greek, Latin, and Hebrew, that are offered by the Department of Classics and Ancient Mediterranean Studies. The course expands the range of ancient languages of areas in the Mediterranean region which students may study at Penn State. The course permits students of Latin, Greek, or Hebrew to learn the basics of other ancient Mediterranean languages, thereby extending their understanding of the structural similarities and differences of the region’s writing systems. The languages taught at present include Egyptian and Sanskrit. Other languages, such as Akkadian, Hittite, Ugaritic, or Aramaic may be offered in future years. The course consists of three major components: The course begins with an overview of the language of study with respect to the language systems of the ancient Mediterranean world in a historical context. Next students learn the essential features of the language of study including its forms, grammar, and lexicon. In the second part of the semester, students read selected texts of various genres as appropriate, including literary and historical texts and inscriptions. The known features of the oral language will also be discussed. The course complements advanced courses such as LATIN 450W, The History of the Latin Language, and other advanced language offerings in Greek, Latin, and Hebrew. It also complements offerings in historical-comparative and Indo-European linguistics such as LING 102(GH).

PreRequisite: LATIN003

Changes Effective Spring 2022:

• Description
• Prerequisites

CAS 450W: Group Communication Theory and Research (3 Credits) (WF) (BA)
Old Listing Effective Through Fall 2021:

Selected theories of problem solving through group discussion emphasizing participation and leadership. CAS 450W Group Communication Theory and Research (3) This course meets the Bachelor of Arts degree requirements. CAS 450W: Group Communication Theory and Research is a writing-intensive course in which students study a broad range of theories and perspectives concerning the role of communication in decision-making and problem-solving groups through a variety of writings by leading scholars in the area of Group Communication. The objectives of CAS 450W are: (1) to expose students to various facets of group life and theories that account for their performance; (2) to provide a summary knowledge of representative findings from research on group interaction; (3) to develop critical skill in the assessment of theoretical arguments and the adequacy of the evidence on which they are based; and (4) to enhance students’ capacities for addressing, both orally and in writing, substantive issues posed by the subject matter. Theoretical material is examined with a view toward determining how to improve the performance of decision-making and problem-solving groups. Hence, the course has a strong concern with the identification of communication practices on which students can draw in making choices concerning how to participate in such groups. The course incorporates a discussion, rather than
Changes Effective Spring 2022:

Concurrent Courses: DART 203
Prerequisites: DART 100, DART 202

in studio-based inquiry and production. and expand digital proficiencies, and reflect upon their creative research understandings of digital media processes and creative research with a studio-based exploration of critical, theoretical, and historical perspectives. This course provides digital artists and designers with a studio-based exploration that investigates more advanced issues and problems in the digital arts and design from a variety of disciplinary understandings, resulting in a portfolio of completed and fully realized studio based projects. A primary purpose of the course is to bring together students engaged in a range of studio explorations and create a synergistic group dynamic that will inform and advance the work of all participants; hence, personal initiative and strong self-learning skills are a given expectation.

Prerequisites: DART 200 Concurrent Courses: DART 205 ART 211Y

Changes Effective Spring 2022:

• Remove Concurrents

DART 201: Focused Realization Studio (3 Credits)
Old Listing Effective Through Fall 2021:

DART 201: Focused Realization Studio (3) Provides students with the opportunity for the realization of more focused studio explorations in digital arts and design disciplines. This course provides digital arts and media design students the opportunity for the realization of more focused digital media explorations, creative research and studio production while building upon material introduced in previous courses. Students will create individual and team-based studio work that investigates more advanced issues and problems in the digital arts and design from a variety of disciplinary understandings, resulting in a portfolio of completed and fully realized studio based projects. A primary purpose of the course is to bring together students engaged in a range of studio explorations and create a synergistic group dynamic that will inform and advance the work of all participants; hence, personal initiative and strong self-learning skills are a given expectation.

Prerequisites: DART 200 Concurrent Courses: DART 205 ART 211Y

Changes Effective Spring 2022:

• Concurrents

DART 300: Digital Portfolio Elements (3 Credits)
Old Listing Effective Through Fall 2021:

DART 300: Digital Portfolio Elements (3) An intermediate level studio course in which students develop digital art and design work that promotes creative thinking and problem-based learning in producing digital media projects to be included in their digital portfolio. Students also gain increased ability and independence in the application of relevant digital tools and technologies. The structure of the assignments and overall course will prepare and guide the students towards increased critical awareness and professionalism through the creation of a body of work, greater understanding of the languages of art and design, and an increased ability to analyze and critique the work of others. This course relies on the active and collective participation of each student.

Prerequisites: DART 202; DART 206

Changes Effective Spring 2022:

• Prerequisites

DART 305: Mobile and Touch Studio (4 Credits)
Old Listing Effective Through Fall 2021:

DART 305 Mobile and Touch Studio (4) A studio course focusing on designing and developing interactive stories, games and expressive applications targeting mobile and touch screen devices. This course teaches students how to design and develop interactive applications for mobile and touch screen devices. Through lectures, discussions and exercises, students are exposed to the latest methods of gestural interface design. They produce through an iterative design process a series of short projects and learn to integrate interface elements, interactive storytelling techniques, and implement design patterns using a scripting language.

Prerequisites: DART 202, DART 205, and enrollment in the Art BA, Art BFA, Art Education BS, Digital Arts and Media Design BDes or Photo BDes degree program
Changes Effective Spring 2022:

- Prerequisites

EDMTH 302: Mathematics in Elementary Education II (3 Credits)
Old Listing Effective Through Fall 2021:

Survey of content, pedagogy, and psychology of mathematics instruction relating to rational numbers, algebraic thinking and functions, geometry, measurement, data analysis, and probability for fourth through eighth grades. The course will provide candidates with the opportunity to explore and develop research-based practices needed to teach elementary mathematics in alignment with national and state content standards. This course will focus on the big ideas and learning trajectories associated with the mathematical content strands of rational numbers, algebraic thinking and functions, geometry, measurement, data analysis, and probability across grades fourth through eight. Course content will also focus on curriculum materials and considerations, planning effective lessons, pedagogical practices, and assessment of students’ knowledge related to these mathematical content areas. The course will also emphasize the use of manipulatives and technology to represent the essential understandings needed to help students make sense of mathematical operations and make mathematical connections. Throughout the course, teacher candidates will engage in mathematical tasks and mathematical discussions, and observe videos of elementary mathematics classes to explore the focus, coherence, and rigor needed across 4-8 grade levels relative to the above content strands. They will also learn about various formative and summative assessments strategies to identify students’ lack of knowledge or misconceptions and learn various intervention strategies to clarify students’ understanding. The course will also emphasize instructional approaches designed to help students develop the mathematical behaviors associated with the Common Core Mathematical Practices across grade levels.

Changes Effective Spring 2022:

- Prerequisites

EDTHP 115A: Competing Rights: Issues in American Education (3 Credits) (US) (BA)
Old Listing Effective Through Fall 2021:

An examination of educational issues relevant to democratic citizenship; emphasis is on understanding the relationship among politics, schools, and society. EDTHP 115A Competing Rights: Issues in American Education (3) (GS;US)(BA) This course meets the Bachelor of Arts degree requirements. This course offers students a chance to practice solving skills necessary for active and responsible citizenship. Because the course requires students to engage in detailed analysis of contested issues, students will acquire information about the history and governance of public schools; develop an understanding of ideologies underlying existing schools and proposed reforms, and, as a result, be better equipped to make informed choices as voters. Major topics include curriculum design; school accountability; education of minority populations; the conflict between students’ rights and the need of a school to maintain order, and the teaching of values. The course will require extensive reading, discussion (in-class and/or on-line), writing, and field research, to include such activities as interviewing teachers and politicians, or attending a school board meeting. Readings may include editorials, proposed legislation, court decisions, chapters from texts, essays and scholarly articles, and material from web sites of interested organizations (such as the National Education Association, the Christian Coalition, or the American Civil Liberties Union). After readings, analysis and discussion, students will prepare and defend a position on each issue, either individually or in groups, formally or informally, in speech or in writing. Students will be graded on their ability to support a particular stance with credible evidence, and on their ability to articulate the ideology underpinning a stance. Therefore, the ability to identify credibility of sources is inherent to success in the course. In general, this course draws upon concepts and information from history, political science, economics and philosophy as well as from education. As a General Education course, it seeks to help students broaden their perspective on social issues; to offer them practice in informed decision-making; and to understand and accept the responsibilities of active citizenship. The course might be particularly useful to social science majors because it will reveal interdisciplinary connections, while it will also be useful to the wider student body as a form of civic education.

Changes Effective Spring 2022:

- General Education Recertification

EDUC 305: Creative Arts (3 Credits)
Old Listing Effective Through Fall 2021:

Experiences in self-expression through a variety of visual and performing arts. Techniques for guiding school children in artistic expression. EDUC 305 Creative Arts (3) This is an arts education course for elementary education majors. The course is designed to provide pre-service teachers with knowledge of the elements of the performing arts and the visual arts. Today’s public school population is diverse, and teachers encounter heterogeneous groups of students with unique interests, distinctive strengths, special needs, and varied languages. The arts provide a beneficial bridge to assist teachers in connecting with all persons. Not only do the arts enhance the quality and depth of lesson content, each of the arts contains the possibility of reaching students of all levels and backgrounds no matter what their cognitive ability, learning style, or native language. The purpose of this course is to equip students with the necessary tools to implement meaningful and effective arts education into the regular education curriculum.

PreRequisite: admission into Elementary Education Major

Changes Effective Spring 2022:

- Prerequisites

EDUC 454: Modern Elementary Science Education (3 Credits)
Old Listing Effective Through Fall 2021:

This course exposes candidates to content, knowledge and teaching pedagogy as they relate to science and science education. The science content knowledge is primarily focused on Biological Sciences, Physical Sciences and Earth and Space Sciences at the K-5 level. Current research is sued to ensure that the best practices in teaching and learning K-5 Sciences are explored. At the conclusion of this course, all candidates should have a strong understanding of the best practices in teaching and learning K-5 science. Candidates should have an awareness of the Physical Sciences, Biological Sciences, and Earth Space Sciences taught at the K-5 level. They should be able to utilize best practices in the teaching of these sciences.

Prerequisites: admission to Elementary Education Major

Changes Effective Spring 2022:

- Prerequisites
EDUC 466N: Foundations of Teaching English as a Second Language (3 Credits)
Old Listing Effective Through Fall 2021:

Overview of various legal, historical, and socio-cultural implications of teaching and learning English as a Second Language. This course is the first course in a five-course sequence designed to meet the Pennsylvania Department of Education’s (PDE) requirements for the ESL Program Specialist endorsement. EDUC 466 addresses the legal, historical, and socio-cultural issues related to nonnative speakers of English, and the implications for ESL curriculum, instruction, and assessment within the K-12 school setting. The course is designed: (1) to encourage understanding and appreciation for language diversity and culture, and (2) to enhance the knowledge and skills of teachers working with culturally and linguistically diverse learners, their families, and their communities. The course specifically addresses two of the PDE competencies necessary for a teacher to acquire in order to be endorsed as an ESL Program Specialist: PDE Competency IV-Developing cultural awareness/sensitivity. The four areas of emphasis within EDUC 466 are: a) The legal, historical, and cultural implications of English as a Second Language, which explores the legal and historical bases of ESL and analyzes the differences among home and school cultures, especially as they relate to language; b) Fundamentals of developing English language skills, which provides an introduction to the structure of the English language, grammar, and pronunciation, including lexical, morphological, syntactical, and phonological components; c) An overview of second language acquisition, which introduces the topics of linguistic skill development, and first and second language acquisition; and d) Multicultural education, which focuses on helping teachers acquire knowledge, develop cultural sensitivity, and identify educational strategies that address the needs of multilingual and multicultural learners and their families.

Prerequisites: EDPSY 10 or EDSPY 14 or EDTHP 115

Changes Effective Spring 2022:

- Prerequisites

EDUC 467: English Language Structure for English as a Second Language Teachers (3 Credits)
Old Listing Effective Through Fall 2021:

An in-depth study and review of general linguistic concepts and their application to ESL pedagogy. EDUC 467 English Language Structure for ESL Teachers (3) EDUC 467 is the second course in a four-course, 12-credit sequence designed to meet the Pennsylvania Department of Education’s (PDE) requirements for an ESL Program Specialist Certificate. The 12-credit sequence which has previously been approved by PDE has been offered as ‘Special Topics’ courses. The 12-credit sequence is consistent with other approved ESL certificate programs. EDUC 467 introduces students to general linguistic concepts and their application to ESL pedagogy and practice. The course provides an intensive study and review of major linguistic concepts and issues, including but not limited to: phonetics, phonology, morphology, syntax, semantics, pragmatics and discourse analysis, sociolinguistics and dialectology, historical linguistics and world languages, and writing systems. The course specifically addresses two of the PDE competencies necessary for a teacher to acquire to meet the minimum requirements as an ESL Program Specialist: PDE Competency I-English usage and developing linguistic awareness; and PDE Competency III-English language learners (ELLs) language and language services knowledge. The three areas of emphasis within EDUC 467 are:a) Language and communication, which explores the use of dictionaries, English use and usage, social conventions and English usage, American English variations, meaning and significance. b) Grammar, pronunciation, literacy development for second language learners, which focuses on the significance of these areas for ESL learners; and c) Evaluative classroom instruments to measure student progress in grammar, pronunciation and English language structure, which highlights the incorporation of linguistic tools in the assessment of ESL learners’ language skills and needs.

Prerequisites: EDUC 466 or permission of program

Changes Effective Spring 2022:

- Prerequisites
EDUC 469: Teaching Methods and Assessment of English as a Second Language (3 Credits)
Old Listing Effective Through Fall 2021:

Integration of theory, research, and practice about ESL curriculum, instructional methods, assessment, and literacy development. EDUC 469 Teaching Methods and Assessment of English as a Second Language (3) EDUC 469 is the fourth and final course in a four course sequence designed to meet the Pennsylvania Department of Education's (PDE) requirements for an ESL Program Specialist Certificate. The 12-credit sequence has previously been approved by PDE. The 12-credit sequence is consistent with what other PDE approved ESL certificate programs offer. The emphasis in EDUC 469 is to learn and integrate curricular, instructional, and assessment theories and practices into the K-12 classroom setting to promote language and literacy development. The course specifically addresses three of the PDE competencies necessary for a teacher to acquire to meet the minimum requirements as an ESL Program Specialist: PDE Competency I-English usage and developing linguistic awareness; PDE Competency II-English as a Second Language - instructional materials/development; and PDE Competency III-English language learners (ELLs) language and language services knowledge. The three areas of emphasis within EDUC 469 are: a. English as a Second Language methods and collaboration with academic content areas, which focuses on: the preparation for ESL teaching by exploring trends, major theories, methodologies, and assessment in second language learning; the study of second language teaching approaches applicable to elementary and secondary students; materials development and evaluation; and the development of a broad base of knowledge and skills that will enhance teacher effectiveness in meeting the needs of diverse learners through appropriate instructional, curricular, and behavioral strategies; b. Assessment and evaluation of English Language Learners (ELLs), which explores: the use of multiple measures of assessment to evaluate academic achievement; the development and implementation of authentic assessment tools; and various approaches and challenges to classroom assessment; and c. Literacy development, which focuses on elementary and secondary ESL students by exploring ways in which to enhance English language learning in elementary students and to enrich content-area instruction for secondary ESL students.

Prerequisites: EDUC 466, EDUC 467, EDUC 468, or permission of program

Changes Effective Spring 2022:

• Prerequisites

EE 210: Circuits and Devices
Old Listing Effective Through Fall 2021:

Introduction to electrical circuit analysis, electronic devices, amplifiers, and time-domain transient analysis.

Prerequisite: PHYS 212. Prerequisite or concurrent: MATH 250

Changes Effective Spring 2022:

• Description
• Prerequisites
• Concurrency

EE 310: Electronic Circuit Design I
Old Listing Effective Through Fall 2021:

Properties of fundamental electronic devices, analysis of DC, AC small-signal and nonlinear behavior, analog and digital circuit design applications.

Prerequisite: E E 210 or E E 315

Changes Effective Spring 2022:

• Prerequisites

EE 311: Electronic Circuit Design II
Old Listing Effective Through Fall 2021:

Electronic circuit design with consideration to single and multi-device subcircuits, frequency response characteristics, feedback, stability, efficiency, and IC techniques. E E 311 Electronic Circuit Design II (3) E E 311 is intended to provide competency in the application of basic electronic principles to design with operational amplifiers and integrated circuits. The course will include passive and active filter design, and feedback principles and non-ideal aspects of operational amplifiers (op-amps) including compensation, stability, and sensitivity needed for advanced design with op-amps, as well as some nonlinear op-amp circuits including comparators, Schmitt triggers, pulse width modulators, and waveform generators.

Prerequisite: E E 310 ; E E 350 or E E 352

Changes Effective Spring 2022:

• Prerequisites

EE 330: Engineering Electromagnetics
Old Listing Effective Through Fall 2021:

Static electric and magnetic fields; solutions to static field problems, Maxwell's equations; electromagnetic waves; boundary conditions; engineering applications.

Prerequisite: E E 210 or E E 315 ; MATH 230

Changes Effective Spring 2022:

• Prerequisites

EE 360: Communications Systems I
Old Listing Effective Through Fall 2021:

Generic communication system; signal transmission; digital communication systems; amplitude modulation; angle modulation. E E 360 Communications Systems (3) E E 360 is a junior-level elective course in the electrical engineering curriculum that provides a detailed foundation of communications systems, expanding on the topics covered in a standard linear systems class. The first part of the course deals with analog communications. First, analog amplitude modulation (AM) is presented, covering double-sideband suppressed carrier, double-sideband large carrier, single sideband, and vestigial sideband modulation formats. Detection techniques for these modulation schemes are also covered. The phase-locked loop for coherent carrier tracking is also presented. Second, analog angle modulation is presented in the forms of frequency modulation (FM) and phase modulation (PM). Estimating the bandwidth of the angle modulated carrier is covered, as well as various generation and detection methods. After analog communications are covered, the basics of digital modulation are presented. Sampling theory and analog-to-digital conversion are covered. Particular attention is paid to the signal-to-noise ratio and the aggregate bit rate at the output of the digital modulator. The principles of Nyquist pulse shaping are presented.
Particular topics include intersymbol interference, line coding, and power spectral density. A presentation of emerging digital communications technologies concludes the course. Topics may include mobile radio, high definition television, broadband services, video compression, and high-speed local area networks.

**Prerequisite:** E E 350 or E E 352

**Changes Effective Spring 2022:**

- **Prerequisites**

**EE 380: Introduction to Linear Control Systems**

*Old Listing Effective Through Fall 2021:*

State variables; time-domain and frequency-domain design and analysis; design of feedback control systems; Root Locus.

**Prerequisite:** MATH 220 ; E E 350 or E E 312

**Changes Effective Spring 2022:**

- **Prerequisites**

**EE 413: Power Electronics**

*Old Listing Effective Through Fall 2021:*

Switch-mode electrical power converters. Electrical characteristics and thermal limits of semiconductor switches. E E 413 Power Electronics (3) E E 413 is an elective course taken by undergraduate and graduate electrical engineering students. The objective of E E 413 is to introduce techniques for the analysis, design, and application of the switch-mode power converters that are used in power supplies, motor and actuator drives, and the interface between power distribution systems and emerging energy sources such as fuel cells, photovoltaics, and superconducting magnetic energy storage systems. Several laboratory experiments provide an opportunity to characterize the switching behavior of semiconductor devices, build and test various dc/ dc and ac/dc converters, and consider alternatives for gate/base drive and feedback isolation circuits required to build practical converters. This course draws upon the students’ background in time-domain circuit analysis, electronic devices and circuits, Fourier analysis, and use of software such as PSPICE and MATLAB. It does not require a background in power or electric machinery, although students with such a background will be able to appreciate many of the applications more fully. The course is divided into four major areas: rectifiers and phase-controlled converters, dc-to-dc converters, inverters, and design considerations for practical converters. The focus in each of the first three areas is to determine the relationship between the magnitude of the fundamental frequency component and/or average value of the voltages and currents at the two ports of the particular converter. Additional harmonic or ripple components are then considered and design guidelines for the switching and reactive components are derived. The fourth area encompasses the study of power device characteristics, the design of gate drive and feedback circuits, and the analysis/design of elementary controllers. As the name implies, students interested in either electronics or power will find this course worthwhile. Electronics students will gain a new perspective on the operation and analysis of electronic circuits as well as an opportunity to discover what has powered the circuits that they have studied up until this course. Power students will see how and why power electronics are revolutionizing motor control and power distribution as well as the power quality issues associated with electronic power conversion.

**Prerequisite:** E E 310 ; E E 350 or E E 352

**Changes Effective Spring 2022:**

- **Prerequisites**

**EE 421: Optical Fiber Communications**

*Old Listing Effective Through Fall 2021:*

Operational principles of optical components, including sources, fibers and detectors, and the whole systems in optical fiber communications. E E 421 Optical Fiber Communications (3) E E 421 is an introduction course to fiber optic communications. This course is designed as an elective course for both the E E senior undergraduate students and E E graduate students. Students are expected to have a general knowledge on fiber optic communications after taking this course. The content of this course focuses on the engineering aspects of fiber optic communications. This course is offered once a year. This course basically consists of four major parts: The first part introduces the motivations of using fiber optic communication systems, which include the huge bandwidth, low attenuation, immune from the electromagnetic field interference, et al. (1 week) The second part of this course deals with light propagation in the optical waveguides. Both the simple geometrical approach and wave optics approach are used to calculate the light propagation in the optical fiber. The geometrical approach (i.e., total internal reflection) provides an intuitive feeling about light propagation in the fiber while the wave optics approach (i.e., Maxwell’s equations) provides more accurate solutions. In particular, it can explain important concepts such as the conditions for single mode fiber and intramodal dispersions in single mode optical fiber. With the help of popular calculation software (e.g., Matlab, Mathcad), students are required to solve waveguide equations for single shape optical fibers (such as step index fiber). (5 weeks) The third part of this course introduces some critical components that are needed in fiber optic communication systems. This includes the optical transmitter (laser diode), optical receiver (i.e., photodetector), modulators and demodulators (such as driving current approach and optical waveguide modulators), optical coupler (how to connect more than two fibers together), optical amplifier (including the basic principle of erbium doped fiber optic amplifiers), fiber optic gratings (a critical component for the multiple wavelengths fiber optic network systems), dispersion compensation device (such as chirped fiber optic grating based device) et al. (6 weeks) The fourth part of this course talks about fiber optic networks. The major contents include fiber optic network architectures (such as star connect), multiplexing techniques in fiber optic networks (such as wavelength division multiplexing and time division multiplexing), connection fiber optic networks with non-fiber optic networks (such as copper wire based networks), current trends in fiber optic networks, et al. (2 weeks).

**Prerequisite:** E E 320 ; E E 350 ; E E 340 or E E 341 or E SC 314

**Changes Effective Spring 2022:**

- **Prerequisites**

**EE 432: RF and Microwave Engineering**

*Old Listing Effective Through Fall 2021:*

Transmission line and waveguide characteristics and components; design of RF and microwave amplifiers, oscillators, and filters; measurement techniques; design projects.

**Prerequisite:** E E 310 , E E 330
EE 441: Semiconductor Integrated Circuit Technology
Old Listing Effective Through Fall 2021:

An overview of fundamentals of processes involved in silicon integrated circuit fabrication through class lectures and hands-on laboratory. E E 441 Semiconductor Integrated Circuit Technology (3) E E 441 is an elective electrical engineering course typically taken by seniors and graduate students from various majors including electrical engineering, materials engineering, engineering science, physics, and chemistry. Its objective is to introduce students to the processes and procedures involved in the manufacture of advanced silicon integrated circuits (IC) using tools and methods of semiconductor nanotechnology. In the sequence corresponding to the order of IC fabrication steps, the lecture portion of the course covers fundamentals of the formation of single-crystal silicon wafers, epitaxial deposition of thin silicon layers, fundamentals of thin film semiconductors, dielectric and metal deposition techniques, patterning by photolithography and etching, dopant introduction, and finally, contact and interconnect metallization. In selected cases theoretical considerations regarding manufacturing steps discussed are supported by process simulation using dedicated software. Besides the specific objectives listed above this course has a more general goal. Manufacturing methods and tools used to process nanochips represent the most advanced technology across a broad range of engineering domains. Experiences gained in this course advance student’s knowledge and understanding of state-of-the-art manufacturing technology that is applicable in several other domains such as nanomaterials, including nanowires, nanotubes, and nanodots, MEMS fabrication as well as in bioelectronics, molecular electronics, spintronics and others. In addition to lectures, EE 441 has a laboratory portion that gives students an opportunity to gain hands-on experience with key processes used to manufacture advanced silicon integrated circuits. The laboratory experience helps students appreciate the intricacies of the integrated circuit fabrication procedures as well as establish connection between theoretical concepts and the outcome of the real-life manufacturing process. In the course of ten laboratory sessions students first process from scratch a simple MOS integrated circuit and then test its performance by carrying out a set of electrical tests.

Prerequisite: E E 310 ; E E 340 or E E 341 or E SC 314

Changes Effective Spring 2022:

- Prerequisites

EE 442: Solid State Devices
Old Listing Effective Through Fall 2021:

The physics of semiconductors as related to the characteristics and design of solid state electronic devices. E E 442 Solid State Devices (3) The objective of E E 442, an electrical engineering elective course taken by seniors and graduate students, is to develop a rigorous introduction to the relevant concepts in quantum mechanics and statistical mechanics pertaining to understanding the key physical mechanisms that govern the electrical, optical and even mechanical behavior of semiconductor materials and devices. This course explicitly deals with the physics of operation of electronic and optoelectronic devices, and expounds on the practical aspects of device design given the inherently non-ideal nature of semiconductor devices in real life. The course typically features a couple of invited guest lectures from leading experts involved in the state-of-the-art research on semiconductor materials and devices so that seniors and first year graduate students learn about the recent advances in electronic and optoelectronic devices which reside outside the scope of the recent textbooks. Nanoelectronics today is a very broad discipline that extends the traditional solid-state devices such as transistors, diodes, resistors, capacitors, photodetectors, laser diodes commonly found in electronic and optoelectronic integrated circuits to a variety of emerging technologies such as large area flexible electronics, energy conversion devices, chemical and biological sensors, microelectromechanical devices. A continuous trend of fundamental breakthroughs at the materials and device architecture level keeps this field exciting and opens up new application space hitherto unexplored. The opportunity exists for the students taking this course to get introduced at a broad level to each of these areas. This course will serve as a cornerstone of the students’ electronics education should they join the 275 billion dollar global semiconductor industry or should they decide to pursue graduate education in the area of advanced materials and devices.

Prerequisite: E E 310 ; E E 340 or E E 341 or E SC 314

Changes Effective Spring 2022:

- Prerequisites

EE 456: Introduction to Neural Networks
Old Listing Effective Through Fall 2021:

Artificial Neural Networks as a solving tool for difficult problems for which conventional methods are not applicable. E E (E SC/EGEE) 456 Introduction to Neural Networks (3) This course is in response to students needs to learn Artificial Neural Networks (ANN) as a solving tool for difficult problems for which conventional methods are not available. The objective of this course is to give students hands-on experiences in identifying the best types of ANN, plus developing and applying ANN to solve difficult problems. Students will be introduced to a variety of ANN and will use their training skills to solve their own applications. During this course the students will develop a final project, in which they will apply ANN to widely varied problems. Examples: I) students from E E may be interested in applying ANN to solve control problems; II) students from Material Sciences may be interested in applying ANN to predict the pitting corrosion of components; III) students from Petroleum Engineering may be interested in applying ANN to characterize the life of a reservoir; IV) students from Agricultural Engineering may be interested in applying ANN to sort apples automatically, etc.

Cross-Listed Courses: EGEE 456 ESC 456

Prerequisite: CMPSC201 or CMPSC202 ; MATH 220

Changes Effective Spring 2022:

- Prerequisites

EE 460: Communication Systems II
Old Listing Effective Through Fall 2021:

Probability fundamentals, digital/analog modulation/demodulation, system noise analysis, SNR and BER calculations, optimal receiver design concepts, introductory information theory. E E 460 Communication Systems Performance Analysis (3) E E 460 is an elective course in the electrical engineering curricula that provides detailed performance analysis of communications systems studied in E E 360. First a review of axiomatic approach to probability theory is presented, including review of random variables, their statistics, central limit theorem and correlation function. This is followed by a review of the theory of random
processes including power spectral density, multiple random processes, their transmission through linear systems and band-pass random processes. Then, behavior of analog systems in the presence of additive white Gaussian noise (AWGN) is analyzed. As a benchmark, signal-to-noise ratio is derived for a base band system. This is followed by a performance assessment of amplitude modulated and frequency modulated systems and comparison is made to the base band system performance. Concepts of optimum pre-and de-emphasis systems are explained. Behavior of digital communication systems in AWGN is studied. This includes optimum threshold detection and general analysis of optimum binary receivers. Performance of carrier modulation systems ASK, FSK, PSK and DPSK is derived in terms of average bit error rate (BER) as a function of bit-energy-to-noise density height. M-ary communications systems are analyzed. Synchronization issues are discussed. This is followed by the theory of optimum signal detection; geometrical representation of signals and signal spaces, Gaussian processes, optimum receiver and equivalent signal sets are illustrated by several examples. BER performance analysis of complex digital modulated systems is demonstrated, using the developed signal space concepts.

Prerequisite: E E 360

Changes Effective Spring 2022:
- Description
- Prerequisites

EET 461: Power Electronics
Old Listing Effective Through Fall 2021:

Fundamentals of power electronic circuits, semiconductor power devices, power conversion equipment. Circuit topologies, closed-loop control strategies, equipment design consideration. EET 461 Power Electronics (3) Power electronics is a technical elective for senior level students in the Electrical and Computer Engineering Technology (ECET) baccalaureate degree program. The course introduces students to the different topologies used to convert electrical power via the use of solid state switching. Specifically, the course presents ac-dc, ac-ac, dc-dc and dc-ac converters. The different switching devices used (diodes, SCRs, MOSFETs, etc.) are discussed. Laboratory exercises complement the lecture material. Relevant topics such as power quality, EMI and applications of power electronics are presented.

Prerequisite: EET 212W, EET 214, EET 315

Changes Effective Spring 2022:
- Prerequisites

EET 475: Intermediate Programmable Logic Controllers
Old Listing Effective Through Fall 2021:

Application of programmable logic controllers (PLCs) to data acquisition, automation and process control. EET 475 Intermediate Programmable Logic Controllers (3) Programmable logic controllers (PLCs) are the workhorse of the automation and process control industry. Their rugged design and ease of programming enables PLCs to operate in almost any manufacturing environment. PLCs are employed wherever measurement equipment and computers are needed to control large electrical equipment such as motors and actuators. In this course, students apply their knowledge of basic PLC programming to see how the PLC can be used to communicate with other equipment, sense and react to external stimuli, and provide both open loop and closed loop system control.

Prerequisite: EET 220 or EET 275 and EET 315

Changes Effective Spring 2022:
- Prerequisites

EGEE 101: Energy and the Environment (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Energy utilization and technological development, energy resources, conversion and consequences on the local and global environment, and future energy alternatives. EGEE (MATSC) 101 Energy and the Environment (3) (GN)(BA) This course meets the Bachelor of Arts degree requirements. Energy is the life-blood of any society. The information and principles learnt in this course will allow the students to make sound judgments in the area of ‘personal energy choices’. There is increasing concern about the influence of human activities, particularly energy use, on global climate change. This has an impact on global business aspects. Students in all walks of life need to be exposed to the basic concepts to appreciate the positions of policymakers, scientists, and industry over the interconnected relationship between greenhouse gas emissions and global climate change. The students will acquire knowledge, which will enable them to critically evaluate any energy-related concerns of the society. This is important for any college graduate for responsible citizenship and stewardship. The main objectives of this course are to provide basic understanding and appreciation of energy and environmental concepts and interconnectedness; analyze energy consumption patterns; discuss various energy resources that power the modern society; examine the energy conversion processes; explore interrelationships between energy use and industrial progress and environmental consequences; discuss future energy alternatives. Student performance will be evaluated continuously through homework assignments, exams, group activities, class participation and a final examination. Position papers or term papers may be used in lieu of homework assignments in some sections. This course is a standalone General Education course. The course is currently offered in four sections every semester (Spring and Fall) with a total target enrollment of approximately 200-250 students per semester.

Cross-Listed Courses: MATSE 101

Changes Effective Spring 2022:
- General Education Recertification
- Description

EMCH 403: Strength Design in Materials and Structures (4 Credits)
Old Listing Effective Through Fall 2021:

Determination, interpretation, significance, and application of mechanical properties such as plastic flow, fatigue strength, creep resistance, and dynamic properties.

Prerequisites: EMCH315 AND EMCH316

Changes Effective Spring 2022:
- Prerequisites

ENGL 2: The Great Traditions in English Literature (3 Credits) (BA)
Old Listing Effective Through Fall 2021:
Major works of fiction, drama, and poetry from the Middle Ages to the twentieth century expressing enduring issues and values. ENGL 2 The Great Traditions in English Literature (3) (GH) (BA) This course meets the Bachelor of Arts degree requirements. Students are expected to learn fundamental skills of close textual analysis in the context of established literary texts of English and Irish fiction, drama, and poetry from the Middle Ages to the twentieth century that address large questions of ethical and social value. They are also expected to learn to talk and write clearly about the issues and ideas generated by the texts that they are directed to read. ENGL 2 will require all students to confront the major interpretive problems found in their assigned readings and to participate actively in the various forms of critical thinking required to comprehend and resolve those problems. ENGL 2 will require all students to participate in an assessment of the social behavior and other values, both communal and scholarly, relevant to the texts being read and discussed in the course. This course fulfills a General Education humanities requirement or a Bachelor of Arts humanities requirement.

Changes Effective Spring 2022:
- Add IL Designation
- Description

ENGL 2H: The Great Traditions in English Literature Honors (3 Credits) (H) (BA)
Old Listing Effective Through Fall 2021:

ENGL 2 is a lecture/discussion course that addresses major works of English and Irish fiction, drama, and poetry from the Middle Ages to the twentieth century. The course is designed to give students an introductory appreciation of a wide range of established works of literature written in English. The goal of this course is not only to give students a sense of literary history, but also to encourage students to question how such texts express larger concerns about issues and values central to human experience. ENGL 2 is designed to prepare students for additional college-level literature courses and to help students learn the fundamental skills of close textual analysis vital to all humanistic study. This Honors section is enriched by more rigorous requirements (longer papers, and a research component to each paper where the student is required to cite and engage critical sources and conversations). Participation requirements are also enhanced, making for a richer honors experience.

Changes Effective Spring 2022:
- Add IL Designation
- Description

ENGL 104: The Bible as Literature (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Study of the English Bible as a literary and cultural document. ENGL 104 The Bible as Literature (3) (GH) (BA) This course meets the Bachelor of Arts degree requirements. The purpose of this course is to acquaint students with the literature of the Bible. Throughout this course, students will examine the language, thought, images, and structures of the book that has arguably proved the central text of Western literature. Students will also actively explore the ways in which the Bible has shaped the literature of English-speaking cultures. Students will read substantial portions of the Old and New Testaments, learning to read critically and to interpret the Bible as they would any other literary text. They will also learn about the historical construction of the Bible and contemplate the competing versions of existing Biblical texts. Students will be asked to complete at least three writing assignments.

Cross-Listed Courses: JST 104

Changes Effective Spring 2022:
- Description

ENGL 129: Shakespeare (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

ENGL 129 constitutes a broad introduction to Shakespeare’s dramatic works from a variety of thematic, historical, formal, and/or generic vantages. Students will practice close reading Shakespeare’s language while also learning how his plays reflect upon the social and theatrical conventions of the historical period in which they were written and performed. Approaches taken to the plays will vary from class to class, but may include a chronological introduction to the development of Shakespeare’s plays, a consideration of a principal Shakespearean theme or themes through a number of plays from across Shakespeare’s career, a consideration of Shakespeare’s protagonists through a number of plays from across Shakespeare’s career, or a consideration of a number of Shakespeare’s plays in historical context. The class will attend to issues such as gender, social class, politics, sexuality, and race, and students will learn how Renaissance perspectives on these issues differed from their own. In order to analyze how Shakespeare’s plays continue to be adapted and transformed, the class may also involve the study of modern stage and film performances of Shakespeare. Time allotted for the discussion of each play will vary, but students should expect to read, on average, one play every 1-2 weeks. This class will prepare students for advanced courses in early modern literatures as well as other academic courses that engage in the verbal and written analysis of complex written texts.

Changes Effective Spring 2022:
- Description

ENGL 129H: Shakespeare (3 Credits) (H) (BA)
Old Listing Effective Through Fall 2021:

ENGL 129H constitutes a broad introduction to Shakespeare’s dramatic works from a variety of thematic, historical, formal, and/or generic vantages. Students will practice close reading Shakespeare’s language while also learning how his plays reflect upon the social and theatrical conventions of the historical period in which they were written and performed. Approaches taken to the plays will vary from class to class, but may include a chronological introduction to the development of Shakespeare’s plays, a consideration of a principal Shakespearean theme or themes through a number of plays from across Shakespeare’s career, a consideration of Shakespeare’s protagonists through a number of plays from across Shakespeare’s career, or a consideration of a number of Shakespeare’s plays in historical context. The class will attend to issues such as gender, social class, politics, sexuality, and race, and students will learn how Renaissance perspectives on these issues differed from their own. In order to analyze how Shakespeare’s plays continue to be adapted and transformed, the class may also involve the study of modern stage and film performances of Shakespeare. Time allotted for the discussion of each play will vary, but students should expect to read, on average, one play every 1-2 weeks. This class will prepare students for advanced courses in early modern literatures as well as other academic courses that engage in the verbal and written analysis of complex written texts.
Prerequisite: ENGL 137H or CAS 137H

Cross-Listed Courses: CAS 138T

ENGL 134: American Comedy (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

ENGL 134 serves as a survey of and introduction to strands of American comedy and satire from its eighteenth- and nineteenth-century roots through its many directions in the twentieth century. Students will read works from multiple literary genres—poetry, novel, short story, drama, and essay, for instance. The course will help students to understand how both formal and contextual considerations shape American comedy through the centuries. Authors under consideration will vary from class to class, but selected texts will represent many variations of comedy embodied in American literature and present across an evolving media landscape. ENGL 134 is a General Education course in the General Humanities domain. ENGL 134 can also be used as a requirement for the English major and minor.

Changes Effective Spring 2022:

• Add US Designation

ENGL 138T: Rhetoric and Civic Life II
Old Listing Effective Through Fall 2021:

This course builds rhetorical skills in oral, written, visual, and digital contexts and introduces deliberation and advocacy in civic and disciplinary spheres. CAS (ENGL) 138T Rhetoric and Civic Life II (3) (GWS) ENGL/CAS 138T, Rhetoric and Civic Life II, expands knowledge and aptitudes built in ENGL/CAS 137H by asking students to use rhetorical skills and principles to develop strategies for persuasion and advocacy in the context of civic issues. The course continues the multimodal emphasis—the focus on oral, written, visual, and digital communication—used in 137H and adds new components as well. Students will develop a repertoire of communication skills through hands-on practice at composing and delivering speeches and essays, and they will work with digital media to create multimedia texts, podcasts, and websites. Students will reflect on these different modes as themselves rhetorical choices. The course's civic and ethical components take center stage as students learn how to deliberate important public issues thoughtfully and with civility and respect. They will learn the difference between persuasion and advocacy and develop strategies for both in the context of pertinent local, national, and global issues. They will participate in a public deliberation forum on topics they generate and vote on. The forum will be organized to allow small deliberative action groups as well as large forum-style meetings. The course focuses on ethics in many contexts, e.g., community action and public deliberation; ethics of persuasion; ethical controversies in the disciplines. Students will be encouraged to explore percolating disciplinary interests and to share knowledge in online disciplinary communities. Students will work throughout the semester to design and build a final electronic portfolio that represents their academic work with an eye to their imagined professional futures. The portfolio assignment is designed to permit assessment and student reflection of learning outcomes.

Cross-Listed Courses: CAS 138T

Prerequisite: ENGL 137H or CAS 137H

Changes Effective Spring 2022:

• Description

ENGL 182: Literature and Empire (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Literature written in English from countries that were once part of European empires, e.g., India, Canada, South Africa, and others.

Changes Effective Spring 2022:

• Add US/IL Designation
• Description

ENGL 192: The Literature of Fantasy (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Perhaps more than any other genre of speculative fiction, fantasy is richly varied. This course examines the development of literary traditions in fantasy literature from their earliest origins in mythology and folklore, through the historical development of classic fantasy works, into the books, movies and other fictions of the modern day. The course also explores different critical and theoretical approaches to the student of fantasy literature and related artistic traditions, as surrealism and magical realism.

Changes Effective Spring 2022:

• Add IL Designation

ENGL 213: Introduction to Poetry Writing (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Written exercises in the components and techniques of poetry writing in conjunction with selected readings.

Changes Effective Spring 2022:

• General Education Recertification
• Remove Prerequisites

ENGL 214: Introduction to Creative Nonfiction Writing
Old Listing Effective Through Fall 2021:

Introduces lyric and narrative forms in memoir writing and the personal essay. ENGL 214 Introduction to Creative Nonfiction Writing (3) Creative nonfiction borrows techniques from fiction and poetry while adhering to but also sometimes questioning notions of truth. It stretches the bounds of literary or narrative journalism by asking the reader to consider it as art, primarily, versus as testimony, fact, or information-delivery. Students taking this course will explore the genre's influences in fiction, research, and poetry; critical analyses will complement this exploration, and formal experimentation will prepare students to imagine novel relationships between form and content. Discussing traditional storytelling technique, the course introduces students to story rudiments including the inciting episode, rising and falling action, climax and denouement and the so-called swerve ending. The course also introduces students to the possibilities of the nonlinear "lyric essay" as outlined in Seneca Review and elsewhere, as well as to the "modular" essay; uses of blank space for communicating the unsayable; and how poetic style can circle elusive meaning. In exploring issues of nuance and implied or glanced-at meaning, the course also discusses the place of truth in nonfiction—differing constructions and conceptions of truth; reader expectations for factuality in a work of nonfiction; and the complications of unreliability
when the fallibility of memory or a multiplicity of perspectives color testimony. Finally, the course examines the role of nontraditional structure in conveying a postmodern understanding of subjectivity, for instance by looking at the use of multiple voices and personae in the works of certain contemporary authors. While ENGL 215 teaches skills for the journalist in developing feature-style journalism and narrative personal essays, ENGL 214, alternatively, will explore and exploit the influence of fiction, poetry, and other lyric forms. Students in this course will produce writing more appropriate to a literary journal than a news magazine; their writing will concern broad, sometimes disjunctive themes, and stray away from the nut-graf, news-hook, or even an obvious narrative focus.

**Changes Effective Spring 2022:**
- Add IL Designation
- BA Designation

**ENGL 221: British Literature to 1798**

**Old Listing Effective Through Fall 2021:**

Introduction to literary history and analysis; Beowulf and writers such as Chaucer, Shakespeare, Donne, Milton, Swift, Pope, and Fielding. ENGL 221 British Literature to 1798 (3) (GH)(BA) This course meets the Bachelor of Arts degree requirements. Focusing on major writers and their cultural contexts, English 221 surveys British literature to 1798. A remarkable amount of important work was produced over this period. Students will read major texts like Beowulf, Romeo and Juliet, and Tom Jones; learn about renowned authors such as Chaucer, Shakespeare, and Fielding; and be introduced to influential literary forms, such as the epic, the revenge tragedy, and the picaresque novel. The tradition of British literature evolved over periods of significant upheaval and change. Students will also learn about the shifting historical and ethical orientations that energized this tradition, from the Heroic Ethos to Christian Humanism to Neoclassicism. As an introductory survey of British literature, English 221 welcomes non majors: no previous course in literature is required. By reading and discussing some of the best-known works in British literature, students will sharpen their skills of interpretation while surveying an important literary tradition.

**Changes Effective Spring 2022:**
- Add IL Designation

**ENGL 240: Exploring Literary Traditions (3 Credits: Maximum of 6 Credits) (BA)**

**Old Listing Effective Through Fall 2021:**

The examination of specific literary traditions in English-language texts and an inquiry into the question of tradition itself. (Section subtitles may appear in the Schedule of Courses.)

**Changes Effective Spring 2022:**
- Add GH Designation
- Description

**ENGL 261: Exploring Literary Forms (3 Credits: Maximum of 6 Credits) (BA)**

**Old Listing Effective Through Fall 2021:**

The examination of specific genres in English-language texts and an inquiry into the question of genre itself. (Section subtitles may appear in the Schedule of Courses.)

**Changes Effective Spring 2022:**
- Add GH Designation
- Description

**ENGL 312H: Globality and Literature (3 Credits) (BA)**

**Old Listing Effective Through Fall 2021:**

Examines relationships between literature and culture, through the study of major texts in English by writers of various cultures.

**Changes Effective Spring 2022:**
- Add IL Designation
- Description

**ENGL 462: Reading Black, Reading Feminist**

**Old Listing Effective Through Fall 2021:**

Female identity and its construction in textual representations of gender, class, color, and cultural difference in English-language literatures. ENGL (WMNST) 462 Reading Black, Reading Feminist (3) (US)(BA) This course meets the Bachelor of Arts degree requirements. ENGL/WMNST 462 provides two important learning opportunities for undergraduate students. The first is to examine the construction of female identity in the textual representations of gender, class, color, and cultural differences by black American women. The second is to identify, explore, and analyze the major issues concerning the discovery and development of a black feminist literary tradition. Authors under consideration will vary from class to class, but may include writers such as Hortense Spillers, Harriet Jacobs, Harriet Wilson, E. Genovese, Hazel Carby, Francis Harper, J. Fauset, Nella Larsen, Zora Neale Hurston, Gwendolyn Brooks, Margaret Walker, Nikki Giovanni, Sonia Sanchez, Maya Angelou, Lorraine Hansberry, Adrienne Kennedy, E. Brown-Guillory, Toni Morrison, S. A. Williams, Alice Walker, Paula Marshall, and Octavia Butler. The course will focus on the complex relationship of slavery and postslavery black experience to the literary imagination of African American women, and of issues of gender in black identity in America. Topics covered will vary, but will include issues of the legacy of slavery, the development of black feminist thought, nineteenth-century conceptions of black womanhood, women’s roles in the Harlem Renaissance, representations of black womanhood by male writers, and self-representation by female writers, women ‘Black Power’ poets, black female playwrights, neo-slave narratives, the aesthetics of contemporary black feminism, and postmodernism and the challenge to understandings of canonicity posed by black women’s writing, and the like. This class will prepare students for advanced courses in African American and feminist literature, as well as other academic courses that engage in the verbal and written analysis of complex written forms. Students will be evaluated by class participation, a group oral presentation, small group problem solving exercises, three out-of-class essays (of 5-8 pages each), and an in-class final examination consisting of essays and short answers. In addition to satisfying requirements for students emphasizing in African American literature within the English major, this course will be important in the offerings of African/African American Studies, American Studies, Women’s Studies, and History. The course may be used as English Major elective credit or as credit towards the English minor, and will be offered once every other year, with 40 seats per offering. The course can be used to complete the major and minor in Women’s Studies Arts and Humanities area and it also satisfies the Women of Color (WOC) sub-requirement.

**Cross-Listed Courses:** WMNST 462
Prerequisite: ENGL 015 or ENGL 030

Changes Effective Spring 2022:

- Description
- Prerequisites

ENGL 463: African American Autobiography (3 Credits) (US) (BA)
Old Listing Effective Through Fall 2021:

The African American literary quest for identity and its adaptation to Euro-American culture and autobiographies. ENGL 463 African American Autobiography (3) (US)(BA) This course meets the Bachelor of Arts degree requirements. Starting with the slave narratives which initiate the literary quest of African Americans for identity, this upper-division course will examine the trope of writing (the “talking” book) as the (w)rite of passage into the dominant Euro-American culture. The course will identify, describe, and analyze how the major elements of the “quest” found in the slave autobiographies have been adapted as textual strategies by many contemporary African American writers of autobiography, semi-autobiography, and fictional autobiography. Authors under consideration will vary from class to class, but may include writers such as Frederick Douglass, Harriet Jacobs, W. E. B. Du Bois, Ida B. Wells, Richard Wright, Zora Neale Hurston, Maya Angelou, Martin Luther King, Alex Haley, Harriet E. Wilson, James Weldon Johnson, and Ernest Gaines. Topics explored will vary from class to class, but will likely consider slave narratives, the role of autobiography in the fashioning of identity and self, gender issues, genre questions, and the historical development of the genre and its shifting preoccupation from slave times through the early twentieth-century, the pre-Civil Rights era, the Civil Rights Movement, the Black Power Movement, and the present. The course will prepare students for other courses that engage in the verbal and written analysis of complex written texts, and will also prepare students to consider the social and cultural issues involved in the role of race in American history. Students will be evaluated by means of essays written out of class, essay and short answer exams, a term-long reading journal reflecting upon issues of the student’s own “autobiography,” an oral class presentation, and class participation. The course may be used as English Major elective credit or as credit towards the English Minor and will be offered once a year, with 40 seats per offering.

Prerequisite: ENGL 15 or ENGL 30

Changes Effective Spring 2022:

- Cross-Listing
- Prerequisites

ENGL 480: Communication Design for Writers
Old Listing Effective Through Fall 2021:

This course explores visual design, non-verbal communication, and software packages used in professional settings to most effectively present written communications. ENGL 480 Communication Design for Writers (3) ENGL 480 is a course designed to familiarize students with an integrated theory of the roles that visual, verbal, and non-verbal communication play in the production of professional documents using the technologies and software applications most widely used in many organizational settings. To this end, the course will focus on employing non-verbal design elements (color, photographs, graphics, page layout, typography, paper) to develop effective communications tailored to a variety of media, audiences, and purposes using software packages such as Quark XPress, Photoshop, Illustrator, InDesign, Excel. Emphasis will be placed on producing clear, insightful, polished, professional documents, both individually and as part of a team. As part of the course, students can expect to:

1. Understand the theories, elements, and principles of visual and non-verbal communication.
2. Appreciate the roles of the audience, purpose, and context in planning and composing documents.
3. Value the role of ethos, pathos, and logos when planning and composing documents.
4. Learn basic skills in a variety of software packages most widely used in the professional world.
5. Design and compose a variety of documents for a variety of audiences that display their writing and design skills.
6. Demonstrate through their documents an understanding of the theories of visual, verbal, and non-verbal communication.
7. Assess their own strengths and weaknesses as writers and designers.
8. Demonstrate the ability to reflect critically on their own and others’ discourse practices.
9. Gain an understanding of the role and scope of other professionals and other disciplines in creating professional communications.

Prerequisite: ENGL 015 or ENGL 030; ENGL 202A, ENGL 202B, ENGL 202C or ENGL 202D ; 7th semester standing or higher

Changes Effective Spring 2022:

- Prerequisites

ENGL 482W: Contemporary Literary and Cultural Theory
Old Listing Effective Through Fall 2021:

Contemporary literary and cultural theories and their implication for critical practice as applies to a variety of texts, e.g. literary, linguistic, visual, multimedia, and/or popular.

Prerequisite: ENGL 015 or ENGL 030H ; ENGL 200

Changes Effective Spring 2022:

- Prerequisites

ENGL 488: Modern Continental Drama
Old Listing Effective Through Fall 2021:

From Ibsen to the drama of today: Strindberg, Chekhov, Hauptmann, Pirandello, Ionesco, Beckett, Genet, and others.

Cross-Listed Courses: CMLIT 488

Prerequisite: ENGL 015 or ENGL 030

Changes Effective Spring 2022:

- Description
- Prerequisites

ENGL 490: Women Writers and Their Worlds
Old Listing Effective Through Fall 2021:

American and British literature written from the perspective of women. ENGL (WMNST) 490 Women Writers and Their Worlds (3) (US;IL)(BA) This course meets the Bachelor of Arts degree requirements. ENGL/WMNST 490 covers particular aspects of American and British literature written from the perspective of women. The course stresses the diversity of women’s authorial worlds, both through time and/or space. The readings and specific focus vary from semester to semester. ENGL/WMNST 490 seeks to make students aware of the extensive body of literature written by women, but, unlike ENGL 194, which is a survey course of women’s literature, ENGL/WMNST 490 can be a more intensive course, focusing on selected themes and topics of particular concern to women as reflected in the poetry and fiction of twentieth-century
American and British women writers. The class can also be taught in relationship to earlier periods, dealing, for instance, with English women novelists from 1775-1865. In such a class, readings would include fiction by Fanny Burney, Mary Wolstencroft, Ann Radcliffe, Jane Austen, Mary Shelly, Emily Bronte, Elizabeth Gaskell, and George Eliot. The course would then place each novel in its historical, social, intellectual, and literary context, and explore the various ways in which some of England’s best writers transformed their female experience of the world into fiction that extended the range and influenced the development of the novel. Regardless of the particular focus, all sections of the course pose the following questions throughout: Do women use the same myths, archetypes, and literary conventions as male writers? Or do they sometimes have to modify the myths, archetypes, and literary conventions originated by their male precursors in order to adapt them to female experience? Is there such a thing as a distinctively female imagination, with a symbolic language of its own? Is there such a thing as a chain of literary influence linking women writers to each other? What are the strategies for coping with the anxieties of authorship? What is the interaction between gender and genre? In what ways are creativity and procreativity modes of defying prevailing ideologies? Does a woman’s psychological development have an effect on the plots a woman novelist conceives? How does women’s literature reflect the realities of women’s lives? As a course in women’s literature, ENGL/WMNST 490 concerns itself with questions of gender. In so far as some of these women writers are black or women of color, it concerns itself with questions of race and ethnicity. In as far as the course looks at women’s literature in the context of men’s literature, it is concerned with the inter-relationship between dominant (male) and nondominant (female) culture in the United States as well as in Britain. In so far as the course covers lesbian writers, it is concerned with sexual orientation. Students should expect to complete a minimum of three written assignments in the course, two course papers, and an essay final exam in class. The papers each will ask students to choose a text to analyze in relationship to one of the thematic modules the course has chosen, for instance, to discuss how Virginia Woolf’s Mrs. Dalloway analyzes the position of upper-middle class women in a particular moment in history when women had achieved the vote, but were still largely constrained by patriarchal social norms. In addition to written assignments, students will be evaluated on class discussion and general participation. The course not only prepares students for taking up literary and cultural analysis in English classes, but also in any other class that engages in the verbal and written analysis of complex written texts, and in other classes in Women’s Studies or in other Penn State departments that address the social, cultural, or ethical issues of gender. The course may be used as English Major elective credit or as credit towards the English Minor; it may also be used in the Women’s Studies major and minor. It will be offered once a year with 40 seats per offering. Cross-Listed Courses: AMST 476 WMNST 491

Prerequisite: 6 credits of ENG

Changes Effective Spring 2022:

- Prerequisites

ENTR 400: Financing Entrepreneurial Ventures (3 Credits)
Old Listing Effective Through Fall 2021:

Overview of alternative forms of financing including seed capital, valuing a company, going public, partnerships, and acquisitions.

Prerequisites: B A 243 or B LAW243 ; ENTR 320 , FIN 301

Changes Effective Spring 2022:

- Prerequisites

ENVSE 427: Pollution Control in the Process Industries (3 Credits)
Old Listing Effective Through Fall 2021:

Development of multimedia pollution control strategies for the mineral, metallurgical processing, and fossil fuel industries.

Enforced Prerequisite at Enrollment: CHEM 110 and CHEM 112 and MATH 141 and MNPR 301

Changes Effective Spring 2022:

- Description
- Prerequisites

ENVST 395: Internship
Old Listing Effective Through Fall 2021:

Supervised off-campus, nongroup instruction including field experiences, practica, or internships. Written and oral critique of activity required.

Prerequisite: prior approval of proposed assignment by instructor
Changes Effective Spring 2022:

- Credits
- Prerequisites

FDSC 400: Food Chemistry (4 Credits)
Old Listing Effective Through Fall 2021:

Chemical properties of food constituents as influenced by processing and storage. FD SC 400 Food Chemistry (4) Students successfully completing this class will be able to describe the properties of food in terms of the underlying chemistry. They will be able to conduct simple laboratory investigations of the major reactions and report the results in an acceptable scientific format. Achievement of these goals requires both an accumulation of facts and the development of an analytical approach to food. In the context of a degree in Food Science this course builds upon core science courses to allow students to apply chemical principles to food. By understanding the important underlying chemistry of foods, students will be able to study food processing in terms of the science as well as technology involved. While the course is primarily designed as a requirement of the Food Science major, it is also expected to be useful for non-food science students as a practical application of chemical principles. The course prerequisites are B M B 211 and B M B 212 and students are expected to be familiar with the structures of the key biomolecules (i.e., proteins, lipids, carbohydrates).

Prerequisites: CHEM 202. Prerequisite or concurrent: B M B 211, B M B 212, FD SC 200, FD SC 201

Changes Effective Spring 2022:

- Title
- Abbreviated Title
- Description
- Prerequisites

FDSC 407: Food Toxins (2 Credits)
Old Listing Effective Through Fall 2021:

Microbiological and chemical aspects of food poisoning; toxicological principles; case histories and prevention of problems.

Prerequisites: PreRequisite: senior standing in food science or related majors

Changes Effective Spring 2022:

- Credits
- Description
- Prerequisites

FDSC 410: Chemical Methods of Food Analysis (3 Credits)
Old Listing Effective Through Fall 2021:

Qualitative and quantitative determinations of food constituents.

Prerequisites: B M B 212, FD SC 400. Prerequisite or concurrent: FD SC 200, FD SC 201

Changes Effective Spring 2022:

- Remove Prerequisites

FIN 418: Introduction to Energy Finance (3 Credits)
Old Listing Effective Through Fall 2021:

This course provides an introduction to the physical and financial energy markets, along with concepts important to managing risk.

Prerequisites: Enforced Prerequisite at Enrollment: FIN 301 or equivalent approved course

Changes Effective Spring 2022:

- Title
- Abbreviated Title
- Description

FR 2: Elementary French II (4 Credits) (BA)
Old Listing Effective Through Fall 2021:

Grammar and reading continued; oral and aural phases progressively increased. Students who have received high school credit for four years of French may not schedule this course for credit, without the permission of the department.

Changes Effective Spring 2022:

- Remove Prerequisites

FR 3: Intermediate French (4 Credits) (BA)
Old Listing Effective Through Fall 2021:

Grammar, reading, composition, oral and aural exercises.

Changes Effective Spring 2022:

- Description
- Prerequisites

FR 409: Commercial and Technical Translation (3 Credits) (IL) (BA)
Old Listing Effective Through Fall 2021:

Translation from English to French of commercial and technical materials; vocabulary building; writing of abstracts and summaries.

Prerequisites: FR 402Y

Changes Effective Spring 2022:

- Description
- Prerequisites

FR 426Y: French Literature of the Renaissance (3 Credits) (WF) (IL) (BA)
Old Listing Effective Through Fall 2021:

Survey of key texts from sixteenth century France, with attention to historical and philosophical currents of French social thought.

Prerequisites: FR 351 or FR 352

Changes Effective Spring 2022:
France will be explored in texts by major writers.

Prerequisites: FR 351. Prerequisite or concurrent: FR 352

Changes Effective Spring 2022:

- Prerequisites

FR 452Y: Nineteenth-Century French Literature (3 Credits) (WF) (IL) (BA)
Old Listing Effective Through Fall 2021:

Selected readings in romanticism, realism, and symbolism, including Balzac, Stendhal, Sand, Baudelaire, and others, with emphasis on cultural issues. FR 452Y Nineteenth-Century French Literature (3) (IL)This course offers an overview of Nineteenth-Century French literature. It includes reading material representative of the major literary movements of the period (romanticism, realism, symbolism). It also gives students a chance to examine a great variety of literary genres (novels, plays, short stories, poems, children's narratives among others). In addition to developing close textual reading skills, emphasis is placed throughout the semester on the larger relationship between literary production, aesthetics and Nineteenth-Century history (political systems, education, social transformations, industries and technologies, etc.). Anthologies and complete texts will be used.

Prerequisites: FR 351 or FR 352

Changes Effective Spring 2022:

- Prerequisites

FR 458: African Literature of French Expression (3 Credits) (IL) (BA)
Old Listing Effective Through Fall 2021:

- Prerequisites

The changing relationship of the individual to society in pre-Revolutionary France will be explored in texts by major writers.

Changes Effective Spring 2022:

- Prerequisites

FR 460: Contemporary French Literature (3 Credits) (IL) (BA)
Old Listing Effective Through Fall 2021:

Major authors and movements in French novel, drama, and poetry from Proust to the present. FR 460 Contemporary French Literature (3) This course is designed for advanced undergraduate work and it is taught in French. To function well in this course, students need to have passed an intermediate introductory course to French literature. The primary goal of FR 460 is to facilitate students acquisition of a coherent view of major contemporary literary movements, from modernism in poetry and drama, through surrealism, both lay and Christian humanistic fiction, and existentialism, to the absurd theatre, the nouveau roman, and post-modernism, écriture feminine, anticolonial and post-colonial literatures. Major authors are presented thru one of their works, taking into account the cultural, historical context in which they were developed. Instruction also comprises an initiation to basic theoretical notions on genres, literary techniques, and critical reading methodology. Contents will vary according to instructors choices but balance between periods, movements and genres is implied. Multi-media resources abound for the purpose of illustration and interdisciplinary considerations but the primary thrust is cultural/ literary enrichment, and the development of students reading and analytical skills in French. Web resources, excerpts, and shorter whole texts will be incorporated to the reading materials and will supplement the required books. Students are expected to read between ten and thirty pages according to the level of difficulty of the materials. No manual or anthology has been established a satisfactory choices for this course even though such tools exist, they generally do not treat the last third of the period properly. So FR 460 instructors have relied on a variety of primary texts to achieve as comprehensive yet coherent a survey of this overflowing century as possible. Occasionally a thematic approach has been attempted to introduce more cohesiveness in the selected readings but this must be combined with traditional, diacritical approaches so as to facilitate the students ability to see linkages between literature and history as well as other arts, as they pursue their French and other Liberal Arts majors.

Prerequisites: FR 351 or FR 352

Changes Effective Spring 2022:

- Prerequisites

FR 470: Race and Gender Issues in Literatures in French (3 Credits) (IL) (BA)
Old Listing Effective Through Fall 2021:

A critical presentation, taught in French, of changing ideas and values on race and gender in French and Francophone literatures. FR 470 Race
and Gender Issues in Literature in French (3) (IL)(BA) This course meets the Bachelor of Arts degree requirements. In addition to presenting subject matter that fosters an appreciation of literatures written in French while exploring racial and gender-related aspects of French and Francophone cultures, this course aims at developing a sophisticated, analytical outlook on peoples of different races and cultures and on women as authors, subjects, and literary 'constrictions' evolving over time. It provides a sense of the historical development of these questions and the interconnectedness of literature with society, and culture. One example of the issues and selections is the vindication of women - including Middle Eastern and Biblical figures - in Christine de Pisan's City of the ladies, in the early 15th c.; it is shown to have links with the 1970 modernistic and satirical text by Monique Wittig, Les Guirrbres. Other examples can be the famed surrealist negritude poetry of Aim Csaire of Martinique, or a classic saga of European Jews by Andr Schwarz-Bart, or the humorous narrative of an African boy in contemporary Paris by Calixthe Beyala. Evaluation is based on a balance of in-class and take home exams and a final paper. Participation is expected, including electronic communication with the instructor. Attendance and participation are assigned a significant proportion of the grade (20%) as is feasible and desirable in small classes with fifteen students or less. The class is led in French, the language of most materials presented, and it is designed primarily for French majors and minors. The literature is supported and illustrated with video excerpts and films available outside class. Internet research is encouraged and expected. It is offered every three or four years, alternating with FR 471 (Francophone Women in Literature and Culture), or special topics courses and period-bound, advanced literature courses in French.

Prerequisites: FR 351 or FR 352

Changes Effective Spring 2022:

• Prerequisites

GREEK 2: Elementary Classical and New Testament Greek (4 Credits) (BA)
Old Listing Effective Through Fall 2021:

Further instruction in syntax and sentence structure.
Prerequisites: GREEK001

Changes Effective Spring 2022:

• Prerequisites

GREEK 102: Intermediate Ancient Greek (4 Credits) (BA)
Old Listing Effective Through Fall 2021:

GREEK 102 continues the work begun in GREEK101, which is prerequisite for enrollment. Students will continue to learn the grammar and vocabulary necessary for reading ancient Greek literature of different periods. During this course, students will begin to read extended, unadapted passages from Plato, Xenophon, the New Testament and other sources. GREEK 102 will prepare students for GREEK 203.

Prerequisites: GREEK 101

Changes Effective Spring 2022:

• Prerequisites

GREEK 203: Greek Reading and Composition (4 Credits) (BA)
Old Listing Effective Through Fall 2021:

GREEK 203 is the third course in the introductory ancient Greek language sequence. The aim of this course is to help students increase their familiarity with forms and vocabulary, as well as gain confidence in their ability to read, appreciate, and interpret ancient Greek literature. Students will be introduced to advanced grammar and syntax and will read extensive passages of ancient Greek prose. Greek prose composition will also comprise a significant component of this course. Possible authors covered in this course may include but are not limited to: Plato, Xenophon, Herodotus, Attic orators, and Lucian. The prerequisite for this course is GREEK 102 or the permission of the instructor.

Prerequisites: GREEK 102115, 116, 117, 118

Changes Effective Spring 2022:

• Prerequisites

HM 329: Introduction to Food Production and Service (3 Credits)
Old Listing Effective Through Fall 2021:

Why do so many new restaurants fail? What factors drive the costs of foodservice operations and how do you go about controlling those costs? How do you make a foodservice operation profitable and why do many consider it one of the most difficult businesses to manage? How do you "WOW" the customer and build loyalty? This course will provide students with tools foodservice managers use on a daily basis to make sure they end each year "in the black." Students develop knowledge and skills needed to be successful in future courses that follow HM 329. This course provides students with information on the basic principles of effective food production and service management. The primary focus is on controlling costs, both food and labor. Course content stresses the integration of menu planning, recipe writing (including HACCP), and development and maintenance of quality standards, with other management tools used throughout the foodservice manufacturing cycle, such as operating ratios, procurement, recipe costing, menu analysis, and budgeting to successfully control costs and manage customer service. Course content is critical to laboratory assignments in HM 330 & HM 430, and advanced topics in NUTR 386.

Prerequisites: Enforced Prerequisite at Enrollment: NUTR 119 or NUTR 320 or Concurrent Courses at Enrollment: NUTR 119 or NUTR 320

Changes Effective Spring 2022:

• Change Number to 230
• Title
• Abbreviated Title
• Description
• Remove Prerequisites

HM 335: Hospitality Financial Accounting (3 Credits)
Old Listing Effective Through Fall 2021:

Accounting, in many respects, is the language of business and translates business transactions into quantifiable information. The purpose of this course is to provide the tools as to how to use and understand this language for making informed business decisions. Areas of focus include how to analyze and record business transactions, compiling and analyzing three of the four major financial statements, banking procedures and control of cash, various issues related to the payment of employees and the introduction of how to analyze financial statements. Regardless of the functional area in the hospitality industry in which students choose to work, they will be most likely be required to understand how accounting impacts the various financial statements,
and how to use financial information to make informed business decisions. Therefore, an understanding of the importance of accounting information to make informed business decisions is vital to students’ future success.

Prerequisites: Enforced Prerequisite at Enrollment: a grade of C or better required in HM 201

**Changes Effective Spring 2022:**

- Change Number to 235
- Abbreviated Title

**HM 336: Hospitality Managerial Accounting (3 Credits)**

**Old Listing Effective Through Fall 2021:**

The course provides managerial tools for decision-making by focusing on the basic concepts, analyses, uses, and procedures of cost accounting in the hospitality industry. Managerial decision-making using accounting data is an integral part of the function of managers in the hospitality industry. The accounting function of a business generates financial data, and managers need to be able to interpret the data, analyze it and make decisions based on their interpretation and analysis of the data. This course provides the student with the core knowledge needed to understand the kinds of data generated by the financial systems of hospitality operations, prepare budgets, perform variance analysis, and provide control over the financial aspects of the hospitality business.

Prerequisites: Enforced Prerequisites at Enrollment: (ACCTG 211 or HM 335) and a grade of C or better in HM 271

**Changes Effective Spring 2022:**

- Prerequisites

**HM 350: Operations Management in Hospitality (3 Credits)**

**Old Listing Effective Through Fall 2021:**

This course introduces students to key operations management decisions within the hospitality industry, and the methodologies and analytical techniques required to make effective data-driven decisions. Areas of focus include demand forecasting, employee scheduling, quality management, process strategy, analysis and design, project management, and principles of revenue management. Students will learn how to develop spreadsheet-based models to forecast demand and schedule employees. They will apply statistical techniques to track quality, and develop spreadsheet-based quality tracking models. Students will apply analytical methods and spreadsheet-based simulation models to assess the performance of service delivery systems. Students will be introduced to the fundamentals of revenue management and how to apply it to different revenue streams in the hospitality environment. The course also introduces students to project management tools that can be applied to manage service operations projects.

Prerequisites: Enforced Prerequisites at Enrollment: STAT 200 and a grade of C or better required for HM 271

**Changes Effective Spring 2022:**

- Title
- Abbreviated Title
- Description
- Prerequisites

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**HM 380: Hotel Management (3 Credits)**

**Old Listing Effective Through Fall 2021:**

Students will explore the typical ownership and management structures of various types of hotels. Ownership discussions include the various types of ownership entities from sole proprietorships to real estate investment trusts and large institutional owners. The role of the owner is discussed to enable students to understand how ownership entities effect their role as a hotel manager. Students will learn about the responsibilities of the hotel manager. Starting with the organizational structure of various types of hotels, management discussions include the role of the hotel manager in staffing the hotel; orienting and training associates; building a service-oriented team; and ensuring the safety and security of associates and guests. Students will learn how each of the operating departments of a typical hotel work and how the departments interrelate and work with one another to deliver exceptional guest service. Discussions of the major operating departments in a hotel to include front office, housekeeping and laundry, engineering, sales and marketing, food and beverage and safety and security. Students will be provided tours of the primary operating departments, housekeeping and laundry, food and beverage, maintenance, and front office, to experience and observe operations. Students will have the opportunity to enhance their classroom learnings with observation of functioning operations.

Prerequisites: Enforced Prerequisite at Enrollment: a grade of C or better required in HM 201

**Changes Effective Spring 2022:**

- Change Number to 280
- Title
- Description
- Prerequisites

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**HM 480: Advanced Hotel Management (3 Credits)**

**Old Listing Effective Through Fall 2021:**

Advanced hotel operations, internal control systems, and service philosophy. Integrates management, departmental operations, law, technology applications, marketing and managerial accounting.

Prerequisites: Enforced Prerequisites at Enrollment: HM 380 and a grade of C or better in HM 336

**Changes Effective Spring 2022:**

- Title
- Abbreviated Title
- Description
- Prerequisites

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**IE 306: Machining Process Design & Analysis (3 Credits)**

**Old Listing Effective Through Fall 2021:**

Application of Engineering Principles for the Design and Implementation of Economic and Effective Machining Processes. I E 306 Machining Process Design & Analysis (3) Machining Process Design & Analysis is an elective course within the Department of Industrial & Manufacturing Engineering that can be used to satisfy the undergraduate, manufacturing process course requirement. It will be offered both fall and spring semesters. Its purpose is to provide students with an in-depth experience into the science, engineering, and thought processes that are used to apply machining processes to economically convert raw materials into finished products. Students will learn how to design,
analyze, implement, and troubleshoot machining processes and machining systems. Students taking this course must have previously completed IE 305, and have knowledge of produce specification, metrology, and computer aided design tools.

Prerequisites: IE 305 and IE 322

Changes Effective Spring 2022:

• Prerequisites

IE 307: Additive Manufacturing Process and Reverse Engineering (3 Credits)
Old Listing Effective Through Fall 2021:

The study and application of rapid prototyping technologies in design and manufacturing. IE 307 Additive Manufacturing Process and Reverse Engineering (3) Speed to market is an essential element of competitiveness. New manufacturing technologies, driven by CAD, such as Additive Manufacturing (AM), Rapid Tooling (RT), and Reverse Engineering are making it possible for companies to significantly cut design and manufacturing cycles times. This course will explore these new manufacturing technologies, study the basic processes and their role in the design and manufacturing cycle, and provide hands on experience with these processes. Students will be able to use process models, characteristics and capabilities of specific AM processes such as Stereo Lithography Process, Fused Deposition Modeling, Selective Laser Sintering, Electron Beam Melting, and 3-D Printing to compare different processes. The students will study the use of these processes for Rapid Tooling applications for sand casting, investment casting, and injection molding. The students will be able to describe the role of CAD and Reverse Engineering in providing the data needed and current technological challenges for AM. The students will be able to develop cost models for the processes to evaluate the production economics. Students will gain hands on experience with the processes and reverse engineering through the laboratory component.

Changes Effective Spring 2022:

• Prerequisites

IE 311: Principles of Solidification Processing (3 Credits)
Old Listing Effective Through Fall 2021:

Discussion, laboratory practices, and laboratory experiments covering principles of metal casting and joining, nondestructive testing, and nonmetallic processing.

Prerequisites: IE 305

Changes Effective Spring 2022:

• Prerequisites

IE 312: Product Design and Manufacturing Processes (3 Credits)
Old Listing Effective Through Fall 2021:

Theory and principles of mechanical design specification, verification, and manufacturing. Industrial engineering majors may not schedule this course.

Prerequisites: E MCH213, E MCH210H or E MCH210; Prerequisite or concurrent: E SC 414M or MATSE259

Changes Effective Spring 2022:

• Prerequisites

• Concurrent

IE 323: Statistical Methods in Industrial Engineering (3 Credits)
Old Listing Effective Through Fall 2021:

The study and application of statistics in the solution of engineering problems. IE 323 Statistical Methods in Industrial Engineering (3) Statistical Methods in Industrial Engineering is a second level junior course required for all the baccalaureate students in the Department of Industrial and Manufacturing Engineering. It will be offered in fall and spring semesters. It exposes students to the statistical tools such as estimation, testing of hypotheses, control charts, process capability indexes, gage R & R studies, simple regression and design of experiments, which are necessary for analyzing and solving real life engineering problems using data. Students taking this course should be familiar with the following topics taught in the first course in probability offered in the department. Probability concepts, Random variables, Independence, Probability Distributions (both discrete and continuous), Mathematical Expectation, Variation and Binomial and Standard Normal tables.

Changes Effective Spring 2022:

• Prerequisites

IE 327: Introduction to Work Design (3 Credits)
Old Listing Effective Through Fall 2021:

Job analysis, cognitive and physical considerations in design of work, work measurement. IE 327 Introduction to Work Design (3) Introduction to Work Design is a first level junior course required for all the baccalaureate students in the Department of Industrial and Manufacturing Engineering. It will be offered in fall and spring semesters. It exposes students to the basic introductory tools required for analyzing and designing both the job and the worksite in a cost-effective manner, as well as measuring the resulting output. These tools include human information processing, basic auditory and visual displays, anthropometry and musculoskeletal principles, cumulative trauma disorders, work measurement and stopwatch time study. Students taking this course should be familiar with the basic concepts of cost.

Prerequisites: MATH 141

Concurrents: EMCH 211 or EMCH 210

Changes Effective Spring 2022:

• Prerequisites

• Concurrent

IE 330: Engineering Analytics (3 Credits)
Old Listing Effective Through Fall 2021:

The study and application of Computing, Information Technology and Analytics to industrial Engineering. IE 330 Engineering Analytics (3) Engineering Analytics is a required course for all baccalaureate students in the Industrial Engineering major. It provides students with a quantitative background in descriptive analytics which deals with data mining, predictive analytics which deals with forecasting, and the use of Big Data in analysis. Examples of analytics will be presented in various industries including manufacturing, healthcare, and distribution. The students will learn to work in settings to make data-informed decisions.
IE 402: Advanced Engineering Economy (3 Credits)
Old Listing Effective Through Fall 2021:

Concepts and techniques of analyses useful in evaluating engineering projects under deterministic and uncertain conditions.

Prerequisites: IE 302 and IE 322 and IE 405

Changes Effective Spring 2022:

• Prerequisites

IE 408: Cognitive Work Design (3 Credits)
Old Listing Effective Through Fall 2021:

Design and evaluation of cognitive work, including the human/computer interface, visual displays, software design, and automated system monitoring, with emphasis on human performance. IE 408 Cognitive Work Design (3)Cognitive Work Design is a senior level course offered in the Department of Industrial and Manufacturing Engineering. It is one of two courses which follow IE 327, Introduction to Work Design. This course focuses on the cognitive part of human factors and work design. It will be offered in fall and spring semesters. This course will enable students to design, implement, and evaluate human-computer interfaces according to principles outlined in foundational human-computer interaction readings. Students will be engaged in the active learning of design, programming, and usability concepts by way of building interfaces on the personal computer. Students taking this course should be familiar with computer programming and introduction to work design.

Prerequisites: IE 327

Changes Effective Spring 2022:

• Prerequisites

IE 418: Human/Computer Interface Design (3 Credits)
Old Listing Effective Through Fall 2021:

Design and evaluation of the human/computer interface, including the human/computer interface, visual displays, software design, and automated system monitoring, with emphasis on human performance. IE 418 Human/Computer Interface Design (3) The objective of this course is to enable students to design, implement, and evaluate human-computer interfaces according to principles outlined in foundational human-computer interaction readings. Students will be engaged in the active learning of design, programming, and usability concepts by way of building interfaces on the personal computer as well as on the Palm computing platform. A major component of the course is the capstone design project for which student teams will communicate with users to design, implement, and assess interfaces to improve existing work processes in an actual work domain (e.g., safety office, power plant).

Prerequisites: IE 327 and CMPSC 200 or CMPSC 201

Changes Effective Spring 2022:

• Prerequisites

IE 419: Work Design – Productivity and Safety (3 Credits)
Old Listing Effective Through Fall 2021:

Methods improvement, physical work design, productivity, work measurement; principles and practice of safety. IE 419 Work Design – Productivity and Safety (3)Work Design – Productivity and Safety is a senior level course offered in the Department of Industrial and Manufacturing Engineering. It is one of two courses which follow IE 327, Introduction to Work Design. This course focuses on the methods improvement physical work design, productivity, work measurement; principles and practice of safety. It will be offered in fall and spring semesters. This course will enable students to perform work measurement: develop an MTM analysis, and carry out a work sampling study. Students taking this course are expected to understand basic concepts of work design.

Prerequisites: IE 327

Changes Effective Spring 2022:

• Prerequisites

IE 424: Process Quality Engineering (3 Credits)
Old Listing Effective Through Fall 2021:

Statistical methods for engineering process characterization and improvement. For non-Industrial Engineering majors. IE 424 Process Quality Engineering (3) This course will provide students with probabilistic and statistical methods required to improve the quality of products and processes. It will start with the introduction to quality culture and the key elements of quality improvement. Then the methods for data presentation and interpretation are discussed. Next, the basic probability concepts and commonly used probability distributions are taught followed by statistical concepts, such as sampling distributions, point and interval estimation, and hypotheses testing. The concepts and methods of statistical tools required for process selection and improvement such as process capability indexes and control charts are discussed next. The course ends with the coverage of simple and multiple regression models.

Prerequisites: MATH 141

Concurrents: MATH 220 or BE 301

Changes Effective Spring 2022:

• Prerequisites

IE 425: Stochastic Models in Operations Research (3 Credits)
Old Listing Effective Through Fall 2021:

This course will be an introduction to the modeling of stochastic systems. The student will learn about Poisson processes, Markov Chains, Dynamic Programming, and Queuing systems; both model formulations and solutions strategies. The students will learn several applications of these models in manufacturing and service systems, so that they can synthesize the lecture material. The student will study the topic of inventory theory, including fundamental trade-offs, economic order quantity (EOQ) modeling, and stochastic models. This will be a required course for all undergraduate students pursuing a baccalaureate degree in Industrial
Prerequisites: MATH 220 AND IE 322

Changes Effective Spring 2022:

- Prerequisites

IE 433: Regression Analysis and Design of Experiments (3 Credits)
Old Listing Effective Through Fall 2021:

Theory and Application of Regression Analysis and Design of Experiments to build models and optimize process and product parameters. IE 433 Regression Analysis and Design of Experiments is an elective course for the baccalaureate students in the Department of Industrial and Manufacturing Engineering. It will be offered in the spring semester. It exposes students to the two important statistical tools which are regression analysis and design of experiments. The specific topics include simple and multiple regression analysis, 2k full and fractional designs and analysis and Taguchi’s orthogonal arrays. Students taking this course should be familiar with the following topics taught in the second course in probability and statistics offered in the department. Properties of point estimators, sampling distributions, testing of hypotheses, and introduction to linear regression and design of experiments.

Prerequisites: IE 323; STAT 319; MATH 319; STAT 415; MATH 415

Changes Effective Spring 2022:

- Prerequisites

IE 434: Statistical Quality Control (3 Credits)
Old Listing Effective Through Fall 2021:

Statistical techniques for univariate and multivariate monitoring of independent and autocorrelated processes; foundations of quality control and improvement. IE 434 Statistical Quality Control (3) This course is about the use of modern statistical methods for process and product improvement. The goal is to impart a sound understanding of the principles and basis for applying them in a variety of practical situations in manufacturing and service fields. The course will give an overview of the basic statistical methods and then concentrate on some of the more useful recent developments including univariate and multivariate techniques to monitor autocorrelated data, analyzing process capability, and improving process quality in short-run environments. The course objectives are to: (1) understand the assumptions and theoretical foundations of process monitoring; (2) know how to select, set up, and use monitoring charts effectively depending on the system characteristics; and (3) understand the basic business and economic principles of process monitoring.

Prerequisites: IE 323 OR STAT 319 OR MATH 319 OR STAT 415 OR MATH 415

Changes Effective Spring 2022:

- Prerequisites

IE 436: Six Sigma Methodology (3 Credits)
Old Listing Effective Through Fall 2021:

Techniques for structured problem-solving to improve the quality and cost of products and processes. IE 436 Six Sigma Methodology (3) Six Sigma is a structured, quantitative approach to improving the quality and cost of products and processes. It provides a framework for quality improvement that builds upon statistical tools to achieve business objectives. Although statistical techniques are emphasized throughout, the course has a strong engineering and management orientation that will prepare students for synthesizing the material that comprises the Six Sigma body of knowledge. Important aspects of the Six Sigma approach include a strong focus on the customer, proactive management, fact-based decision-making, and interdisciplinary collaborations. The course objectives are: (1) to give students a fundamental understanding of and experience with solving a problem using the structured problem-solving approach of Define-Measure-Analyze-Improve-Control (DMAIC); (2) to provide an opportunity for students to solve or be involved with solving business problems with statistical tools; and (3) to help students build confidence in their business sense and statistical skills.

Prerequisites: IE 323; STAT 319; MATH 319; STAT 415; MATH 415

Changes Effective Spring 2022:

- Prerequisites

IE 453: Simulation Modeling for Decision Support (3 Credits)
Old Listing Effective Through Fall 2021:

Introduction of concepts of simulation modeling and analysis, with application to manufacturing and production systems. IE 453 Simulation Modeling for Decision Support (3) Simulation Modeling for Decision Support is a senior level course offered in the Department of Industrial and Manufacturing Engineering. It is the third course in operations research offered to the undergraduate students. The objective of this course is for students to learn to appropriately apply discrete event simulation modeling for decision support in IE problems through developing skills in model building, simulation output analysis, and communication of technical information and conclusions drawn from data analysis. Students taking this course should be familiar with computer programming and operations research techniques.

Prerequisites: CMPSC 200 or CMPSC 201 and IE 323 and IE 425

Changes Effective Spring 2022:

- Prerequisites

IE 456: Industrial Robot Applications (3 Credits)
Old Listing Effective Through Fall 2021:

Introduction to robotics, with emphasis on robot selection, programming, and economic justification for manufacturing applications. IE 456 Industrial Robot Applications (3) This course is a technical elective, and is normally taken by students in their Senior years. In this course, students learn about present and future status of robot applications, and are required to apply fundamental knowledge of physics and mathematics to develop software to analyze and control robots. The course deals with mechanics and control of robot manipulators and wheeled mobile robots. First, students are taught to analyze 3-D kinematics, statics and dynamics of robot manipulators. Then, control algorithms for robot manipulators are presented. Sensors, actuators and softwares used in industrial robots are discussed. In the end, kinematics and control of wheeled mobile robots are presented. During this course, application of computer, particularly Matlab, is emphasized as much as possible.

Prerequisites: EMCH 212 and ME 360 or ME 367

Changes Effective Spring 2022:

- Prerequisites
IE 460: Service Systems Engineering (3 Credits)
Old Listing Effective Through Fall 2021:

Use of quantitative models and methods for analysis, design and control of service systems. IE 460 Service Systems Engineering (3) This course focuses on using operations research methods such as mathematical programming, network analysis and applied probability to solve problems that arise in service systems. The lecture topics will include measuring service quality, methods for evaluating service systems, financial engineering & portfolio optimization, supply chain design & operations, manpower planning & scheduling, and revenue management. Several case studies will be used to illustrate applications. Course grades are based on homework, case studies, mini-project, midterm and final exams.

Prerequisites: IE 322 AND IE 405

Changes Effective Spring 2022:

- Prerequisites

IE 466: Concurrent Engineering (3 Credits)
Old Listing Effective Through Fall 2021:

Concurrent engineering methods for product/process development, capturing customer requirements, insuring manufacturability and serviceability.

Prerequisites: MATH 141 AND MATH 220

Changes Effective Spring 2022:

- Prerequisites

IE 467: Facility Layout and Location (3 Credits: Maximum of 3 Credits)
Old Listing Effective Through Fall 2021:

Analytical and computational methods for facility layout designs, material handling systems and equipment, and location. IE 467 Facility Layout and Material Handling (3) Facilities planning and design is the process of locating and laying out the of industrial and service facilities to best support the purpose of the facility while respecting constraints on resources such as space and budget. The facility planning function involves strategic, tactical and operational decisions depending on the nature of the facility. In this course, we address both the layout and the location of facilities. The layout problem involves a discussion of the arrangement of departments within a plant, the design of material handling systems and the design of storage and warehousing systems. Structural and architectural design questions are NOT addressed in this course. We shall also consider simplifications to the manufacturing process that result in a simplification of the layout problem. Finally, we will investigate a range of facility location problems, including median and center location problems as well as some advanced variants. One of the objectives of this course is also to familiarize the student with the analytical and computer tools that can be used for facility planning and other production and operations management problems.

Prerequisites: IE 322 AND IE 405

Changes Effective Spring 2022:

- Prerequisites

IE 468: Optimization Modeling and Methods (3 Credits)
Old Listing Effective Through Fall 2021:

Mathematical modeling of linear, integer, and nonlinear programming problems and computational methods for solving these classes of problems. IE 468 Optimization Modeling and Methods (3) This course provides an analytic treatment of optimization models in linear, integer, and nonlinear programming. In particular, the course is concerned with the development of mathematical optimization models and computational solution techniques for solving these problems. The mathematical modeling of real-world applications is complemented with the use of modeling software such as LINGO or GAMS (General Algebraic Modeling System), which allows the user to readily develop large-scale mathematical models. The course also considers solution techniques for solving these optimization problems. Students will develop a basic understanding of the solution techniques through actual implementation of simple algorithms, as well as the use of commercial software such as those provided by LINDO, LINGO, and GAMS.

Prerequisites: IE 405 AND MATH 231 OR MATH 230

Changes Effective Spring 2022:

- Prerequisites

IE 470: Manufacturing System Design and Analysis (3 Credits)
Old Listing Effective Through Fall 2021:

Contemporary design and analysis methodologies used to organize systems for economic manufacture of products. IE 470 Manufacturing System Design and Analysis (3) Manufacturing System Design and Analysis is a senior level course in manufacturing, required for all the baccalaureate students in the Department of Industrial and Manufacturing Engineering. Students will be exposed to the contemporary techniques used to design and analyze manufacturing systems for economic manufacture of products. Students will learn to design manufacturing systems (human and automated) to satisfy differing types of product demand. Students taking this course should be familiar with introduction to manufacturing and product specifications and introduction to manufacturing process design and analysis.

Concurrents: IE 306 OR IE 307 OR IE 311 OR IE 428

Changes Effective Spring 2022:

- Prerequisites

IE 479: Human Centered Product Design and Innovation (3 Credits)
Old Listing Effective Through Fall 2021:

Consumer product design for a global market, incorporating human factors principles and user desires in a multicultural perspective. EDSGN I (E) 479 Human Centered Product Design and Innovation (3) This course will focus on consumer product design for a global market, incorporating human factors and ergonomics principles as well as user needs and emotional desires. The students will be led through product design process, various product design strategies, product planning, managing the development process, product evaluation, decision making tools, and market entry. Special emphasis will placed on user centered design, incorporating user characteristics, user needs and emotional desires (including Kansei engineering approaches), survey methodology, and usability testing. To emphasize the multicultural perspectives in today’s global product design, interdisciplinary teams from two universities on opposite sides of the globe will apply these principles on actual industrial product designs for leading consumer product manufacturers.

Prerequisites: IE 408 OR IE 419
Changes Effective Spring 2022:

• Prerequisites

IE 480W: Capstone Design Project (3 Credits) (WF)
Old Listing Effective Through Fall 2021:

Industry-based senior capstone design project emphasizing manufacturing systems, service systems, and information systems in an interdisciplinary setting. IE 480W Capstone Design Project (3) Students will develop ‘real world’ engineering project experience through an industry-based project. Projects will focus on manufacturing systems, service systems, and/or information systems. Students will work in teams to complete the projects, where the teams will be interdisciplinary and composed of students from within the major with different areas of expertise and students from other majors as needed. Students interested in taking this course should have senior standing and be familiar with basic principles in manufacturing, operations research, and human factors engineering. Students will be evaluated through in-class participation, and a group project that consists of weekly communication with the project sponsor along with three design reviews, interim written reports and a final report, presentation and poster. This is a Writing-Intensive course in the department and hence students will be given opportunities to practice writing throughout the semester in multiple writing assignments.

Prerequisites: IE 302 AND IE 305 AND IE 323 AND IE 327 AND IE 405
Concurrents: IE 330

Changes Effective Spring 2022:

• Prerequisites
• Concurrent

INART 1: The Arts
Old Listing Effective Through Fall 2021:

Develop critical perception, knowledge, and judgments through an examination of the basic concepts common among the arts.

Changes Effective Spring 2022:

• General Education Recertification
• Description

INTAG 100: Introduction to International Agriculture (3 Credits) (IL)
Old Listing Effective Through Fall 2021:

Ag in developing countries; contemporary crucial issues in global agriculture; emphasizing hunger and food security. INTAG 100 Introduction to International Agriculture (3) (GS;IL) (BA) This course meets the Bachelor of Arts degree requirements. This class focuses on agriculture in developing countries and frames this focus with a discussion of contemporary crucial issues facing agriculture on a global scale, emphasizing global hunger and food security. The primary goal of the course is to inform students about international agriculture, challenging them to think critically and independently about agricultural issues and development and to generate global citizens who are more aware and conversant on important contemporary challenges in the global food, agriculture, and natural resource systems. The specific objects of this course are for students to: 1) Articulate major contemporary challenges related to agrifood systems across economic, social, environmental, and political sectors; 2) Critically assess the benefits and pitfalls of different approaches to addressing global challenges in agrifood systems; 3) Understand and apply current conceptual and theoretical frameworks in agricultural development; and 4) Empower students to make more informed decisions as consumers and global citizens. This class will primarily focus on agriculture in developing countries and frame this focus within a discussion of contemporary crucial issues facing food, agriculture and natural resources on a global scale. Specific emphasis will be placed on debates concerning global hunger and food security. Several examples from around the world will be included. Class will take a variety of formats, including formal lectures, guest speakers, videos, and site visits. The course is a foundation course of the International Agriculture minor. Evaluation consists of group presentations, exams, and reading quizzes. The course is offered both fall and spring semesters.

Changes Effective Spring 2022:

• Add GN Designation
• Add Inter-Domain Designation
• Title
• Abbreviated Title
• Description

INTAG 300: Agricultural Production and Farming Systems in the Tropics (3 Credits) (IL)
Old Listing Effective Through Fall 2021:

This course focuses on contemporary issues in tropical agriculture and the production of crops, livestock and forestry within tropical agroecosystems.

Changes Effective Spring 2022:

• Title
• Abbreviated Title
• Description
• Add Travel Component

IST 130: Emerging Technologies in Popular Culture (3 Credits)
Old Listing Effective Through Fall 2021:

A survey course that explores emerging technologies used to produce and consume popular cultural artifacts. IST 130 Emerging Technologies in Popular Culture (3) (GA) Popular culture refers to people’s capacity to classify, codify, and communicate their experiences symbolically. Popular culture is shaped by the development of new technologies of text, sound and image recording and dissemination. While mass media companies have traditionally served as the primary means by which popular culture is diffused throughout society, emerging technologies enable people to produce and consume their own cultural artifacts as well as redefine mass produced cultural artifacts. As people become more adept in their use of emerging technologies, mass media industries such as film, news, radio and television respond by introducing Internet-based services that deliver both newly designed and repackaged traditional content to consumers. We use four approaches to analyze the intricate relationships between people and industry, emerging technologies and popular culture. 1. Production Analysis: Who owns the media? Who creates new media? What technologies are being used to produce new media? How does new media challenge the historical dominance of mass media? 2. Textual Analysis: How do specific works of popular culture gain their meaning? 3. Audience Analysis: How do different audiences make sense of the same cultural and technological artifacts? 4. Historical
Analysis: how do current popular culture perspectives on emerging technologies differ from those of the past? What accounts for these changing perspectives? Through individual and team-based learning activities, students will analyze and interact with cultural artifacts across popular culture genres. The course content and the assignments are directed at helping students to both create and critique cultural artifacts in ways that demonstrate their understanding of, engagement with, and reflections upon the relationships among people and industry, emerging technology, popular culture. Assessment is based on students’ ability to clearly and convincingly articulate their analysis through classroom discussions, individual activities, and team-based projects. Students will gain hands-on experience with social media such as wikis, virtual worlds, and podcasts. Students will also design and produce short films that demonstrate their ability to integrate and synthesize central themes from the course. Grading will be based on individual and team components. This is an introductory course in IST, and meets the requirements for a General Education course in Arts (GA). This course is delivered with significant student and instructor interaction with computers and digital media.

Changes Effective Spring 2022:

- Abbreviated Title
- Description
- General Education Recertification

**IT 320: Introduction to Italian Culture; Food, Fashion, Family (3 Credits) (BA)**

*Old Listing Effective Through Fall 2021:*

Focus on the social, historical, and socio-political issues of Italy in the last two centuries. IT 320 Introduction to Italian Culture: Food, Fashion, Family (3)(BA) This course meets the Bachelor of Arts degree requirements. This course focuses on advanced grammar development in the context of social, historical, and sociopolitical issues of Italy in the last two centuries with particular emphasis on contemporary current events. Readings from newspapers, magazines, and the web on Italian geography, regional differences, Italian politics, food, and cultural traditions. Evaluation methods include exams, current events reviews, class debates, and oral presentations. This course is in Italian. It is for students who have completed IT 003 or equivalent. It will be offered once per year. Enrollment limited to 20.

Prerequisites: IT 003

**Changes Effective Spring 2022:**

- Title
- Abbreviated Title
- Description
- Prerequisites

**LATIN 2: Elementary Latin (4 Credits) (BA)**

*Old Listing Effective Through Fall 2021:*

Advanced listing through Fall 2021: Latin 2, Latin: Elementary Latin (4 Credits) (BA). This course is designed to provide undergraduate students the opportunities of Latin professional pre-certification preparation via lecture format, professional travel to acquire hands-on skills at a top caliber training facility, and an expert panel round table discussions. Throughout the course, students will have exposure to professional communication with faculty through formats including, but are not limited to the following: faculty/professional/expert discussions, lectures, training sessions, quizzes and examinations that are designed to prepare students to pass a national certification. Students will enhance skills needed to develop exercise leadership characteristics, communicate information effectively, and build a foundation of exercise testing and prescription guidelines which are safe, effective and motivating to clientele. Other class foundational principles include but are not limited to Exercise Programming, Health Risk Assessment, Serial Testing, Metabolic Calculations, Nutrition and Weight Management and Facility Administration. Students will take practical experience and knowledge gained from this professional course and apply principles into their proposed field of study in a safe and effective manner.

Prerequisites: Enforced Prerequisite at Enrollment: LATIN 001 Concurrent: LATIN 456 and LATIN 457

**Changes Effective Spring 2022:**

- Add Travel Component
- Prerequisites

**KINES 495E: Advanced Professional Development in Kinesiology (3 Credits)**

*Old Listing Effective Through Fall 2021:*

KINES 495E Advanced Professional Development in Kinesiology (3) This course is designed to provide undergraduate students the opportunities of fitness professional pre-certification preparation via lecture format, professional travel to acquire hands-on skills at a top caliber training facility, and an expert panel round table discussions. Throughout the course, students will have exposure to professional communication with faculty through formats including, but are not limited to the following: faculty/professional/expert discussions, lectures, training sessions, quizzes and examinations that are designed to prepare students to pass a national certification. Students will enhance skills needed to develop exercise leadership characteristics, communicate information effectively, and build a foundation of exercise testing and prescription guidelines which are safe, effective and motivating to clientele. Other class foundational principles include but are not limited to Exercise Programming, Health Risk Assessment, Serial Testing, Metabolic Calculations, Nutrition and Weight Management and Facility Administration. Students will take practical experience and knowledge gained from this professional course and apply principles into their proposed field of study in a safe and effective manner.

Prerequisites: Enforced Prerequisite at Enrollment: LATIN 001 Concurrent: LATIN 456 and LATIN 457

**Changes Effective Spring 2022:**

- Remove Prerequisites
LATIN 052 Elementary Intensive Latin for Graduate Students II (3) This is the second in a series of three courses designed to give students an intensive introduction to Latin. This is the second half of elementary sequence in reading, writing, syntax, and cultural contexts. Lessons are taught in an authentic cultural context.

Prerequisites: LATIN 51 and graduate standing

Changes Effective Spring 2022:

• Remove Prerequisites

LATIN 53: Intermediate Intensive Latin for Graduate Students (3 Credits)
Old Listing Effective Through Fall 2021:

Continued intensive study of Latin at the intermediate level: reading, writing, syntax, and cultural contexts. LATIN 053 Intermediate Intensive Latin for Graduate Students (3) This is the third in a series of three courses designed to give students an intensive intermediate knowledge of Latin. This is an intensive sequence in reading, writing, syntax, and cultural contexts. Lessons are taught in an authentic cultural context.

Prerequisites: LATIN052 or equivalent and graduate standing

Changes Effective Spring 2022:

• Remove Prerequisites

LATIN 102: Advanced Latin (4 Credits)
Old Listing Effective Through Fall 2021:

Advanced study of Latin grammar, syntax, and vocabulary. LATIN 102 Advanced Latin (4) LATIN 102 continues from LATIN 101, which is a prerequisite for enrollment. Students who have taken at least three years of high school Latin may qualify to enroll in the course if they have performed well on either a Latin A.P. exam (minimum grade of 3) or a placement exam set by the instructor. LATIN 102 pursues the advanced study of the forms of syntax of classical Latin, the literary dialect spoken and written by Romans from the first century BCE to the second century CE. This is the language that the classical Roman authors wrote, poets such as Catullus, Virgil, Horace, Ovid, Lucan, and Seneca and prose writers such as Caesar, Sallust, Cicero, Livy, Petronius, Tacitus, and Suetonius. The purpose of the course is to equip students with the grammatical rules to read and write complex sentences in Latin. The course consists of short weekly presentations of new grammatical and lexical content, vocabulary to be memorized, drills to practice forms and concepts, exercises in reading sentences, homework assignments translating sentences from Latin into English and English into Latin, and regular quizzes and tests to ensure retention and comprehension of material. The goal of the course in the second semester is for students to be able to read longer passages of continuous Latin prose that has not been adapted. The course focuses on reading, translating, and writing rather than speaking, although students will be expected to be able to read Latin aloud with correct pronunciation. LATIN 102 will also continue to introduce students to Roman civilization and prepares students to take a 400-level course in Latin.

Prerequisites: LATIN101 or evidence of advanced placement through a Latin A.P. exam (minimum grade of 3) or a placement exam set by the instructor

Changes Effective Spring 2022:

• Description
• Remove Prerequisites

LATIN 203: Latin Reading and Composition (4 Credits)
Old Listing Effective Through Fall 2021:

The course reviews Latin grammar, syntax, and vocabulary and introduces students to classical Latin poetry and prose. LATIN 203 Latin Reading and Composition (4) This four-credit course is at the intermediate-level and follows LATIN 003 or LATIN 102. It satisfies the 12th-credit foreign language requirement and prepares students to take 400-level Latin courses. The course is concerned with perfecting the knowledge of Latin grammar, which in the Middle Ages was considered to be the mother of the other Liberal Arts. This is accomplished by the review of grammatical rules and by the reading and explanation of Latin authors. The course reviews the forms, syntax, and vocabulary of Latin, and gives students practice exercises that improve translation skills. Equally important, students are introduced to the principles of Latin style by learning how to translate English into Latin. The review of Latin grammar and the introduction to Latin prose composition provide students with the competence to read representative Roman authors in poetry and prose. Rudimentary Latin readings, supported by school commentaries, are intended to familiarize students with famous examples of classical Roman literature while exemplifying the principles of classical Latin style. For the Republican period, students read selections of Caesar’s Gallic Wars or a speech by Cicero and selections of Catullus’s love poetry. For the Imperial period, one investigates different accounts of the rape of Lucretia by Livy and Ovid, in poetry and prose, respectively. These readings not only show how exemplary authors write in different styles, but how Latin language and literature lay the linguistic and cultural foundations of western civilization. Evaluation methods include assessment of students through in-class oral and written drills, in-class translation of Latin into English and English into Latin, weekly translation assignments, biweekly quizzes, two tests, and a final exam. These methods are intended to promote the learning of Latin vocabulary and grammar, to increase the comprehension of the assigned readings, and to foster an appreciation of the stylistic virtuosity of Rome’s greatest writers.

Prerequisites: LATIN102

Changes Effective Spring 2022:

• Description
• Remove Prerequisites

LATIN 402: Republican Literature (3-12 Credits: Maximum of 12 Credits) (BA)
Old Listing Effective Through Fall 2021:

Selected works by Plautus, Lucretius, Catullus, Cicero (content varies).

Prerequisites: LATIN003

Changes Effective Spring 2022:

• Prerequisites

LATIN 403: Augustan Age Literature (3-12 Credits: Maximum of 12 Credits) (BA)
Old Listing Effective Through Fall 2021:

Selected works by Virgil, Horace, Propertius, Tibullus, Ovid, Livy (content varies).
LER 100: Introduction to Labor and Human Resources (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

This course will provide students with an opportunity to develop an understanding of the role of work and the employment relationship in their lives from an individual, institutional and global perspective. The course begins with a series of lessons focusing on the meaning of work to each of us. Students will study motivation theories to help them understand the various needs that work can satisfy from earning a paycheck to serving others. The course then moves to a description of the types of organizations that represent the 'employer' from the 'mom and pop' operation to the for-profit corporate environment. In this context students will be exposed to basic management concepts (e.g., authority, span-of-control) as well as the manner in which bureaucracy affects the nature of the workplace. Students will conclude this section with a study of the employment contract, particularly the manner in which the nature of at-will employment philosophies dominate U.S. labor markets. Part II of the course is a systematic study of several important issues associated with the human resource function and how it affects the individual workers. Students will study such topics as recruitment and selection not only from the perspective of the employer seeking to attract staff who will contribute to organizational efficiency and effectiveness, but also from the point of view of the applicants who seek to pursue positions consistent with their own personal needs and career aspirations. The HR function exists in every organization; however, in some situations students will work under a different set of rules. Part III will focus on the environment associated with labor unions and the various elements defining the relationships among employers, unions and employees. In addition to studying the history of the labor movement, students will develop an understanding of the collective bargaining process and its effect on their employment circumstances. Part IV addresses what has reemerged as a critical element in the relationship between workers and work: the globalization of the economy. Students will learn about the opportunities and threats globalization presents. They will also study the development of global labor standards.

Changes Effective Spring 2022:

- Prerequisites: LATIN003

LATIN 404: Silver Age Literature (3-12 Credits: Maximum of 12 Credits) (BA)
Old Listing Effective Through Fall 2021:

Selected works by Petronius, Seneca, Tacitus, Juvenal, Martial, Pliny the Younger (content varies).

Prerequisites: LATIN003

Changes Effective Spring 2022:

- Prerequisites

LER 136W: Race, Gender, and Employment (3 Credits) (WF) (US)
(BA)
Old Listing Effective Through Fall 2021:

This course will ask how race and gender affect work in the contemporary United States. We will consider how race and gender shape people's work opportunities, their wages at work, and whether they participate in paid or unpaid labor (or both). We will begin with an overview of work and the changes in the workforce over time; we will move to investigate how workplace structures reproduce gender and race inequalities; will ask how race and gender inequalities are informally maintained through education systems and social networks; will consider differing dimensions of inequality across poverty, immigration, and sexuality; and will consider how studying unpaid labor helps us better understand the formal paid economy. The course emphasizes writing in the form of short assignments and longer papers as a means to develop comprehension of these ideas. This course is a writing intensive course designed to develop formal writing appropriate for a business context. We will use an active and engaged writing process using the course topics of diversity and employment inequality to strengthen writing skills.

Cross-Listed Courses: AFAM 136W WMNST 136W

Changes Effective Spring 2022:

- Change Abbreviation to LHR
- Change Number to 136Y
- Cross-Listing

LER 410: Employment Strategies for People with Disabilities (3 Credits)
Old Listing Effective Through Fall 2021:

Develop knowledge, skills, and resources necessary to understand and practice effective employment strategies in working with people with disabilities. This course is designed or students to develop knowledge, skills, and necessary resources to understand and practice effective employment strategies in working with people with disabilities, including individuals from culturally diverse backgrounds. Students will develop skills on networking with employers (e.g., social media, professional organizations, interviewing employers, etc.) for building professional contacts and networks. Various forms of labor market information will be analyzed to identify both challenges and opportunities for people with disabilities in different sectors of the labor market (primary and secondary). Throughout the course, students will learn about disability issues in the workplace (e.g., laws, policy, stigma, accommodations, etc.). A strong emphasis will be on understanding how laws and policies impact employment for people with disabilities, and students will identify legal and illegal practices. Best employer practices will be identified regarding mitigating disability impact on both employees (current and future) and employers. This course will incorporate Assistive Technology (AT) applications so students will be able to identify appropriate AT devices to assist people with disabilities in obtaining and retaining employment along with applicable strategies for working with employers in developing employment opportunities in today's changing world of work. Students will understand how disability is a critical component of workforce diversity and strengths people with disabilities bring to the workplace. Students will identify how people with disabilities should prepare for the employment process including training opportunities (formal and informal), resume development, interview preparation, and initiatives to promote increased employment outcomes. Different disability populations (e.g., youth, Veterans, aging workers, etc.) will be
discussed including common barriers for employment as well as how to create opportunities in different employer settings.

Changes Effective Spring 2022:

• Change Abbreviation to LHR
• Prerequisites

LER 428: Total Rewards (3 Credits)
Old Listing Effective Through Fall 2021:
This course requires students to learn the link between company's strategy and compensation, and understand core policies necessary to develop effective compensation systems. The core policies include internal alignment, external competitiveness, and employee contribution. First, theoretical frameworks of human resource management and corporate strategies will be discussed to define the relationship between company's strategy and compensation philosophy. Students then will study how to establish internally consistent and fair pay levels for various jobs using techniques such as job analysis, job evaluation, and competency analysis. The course then will discuss how to collect and analyze salary data and covers 'pay for performance' where students learn the concept of performance management and various incentive practices at the individual, team, and organizational levels. The course will be finalized with the discussion of employee benefits. In this section, students will discuss various benefit options that companies can provide, and various legal issues.

Prerequisites: LER 100

Changes Effective Spring 2022:

• Change Abbreviation to LHR
• Prerequisites

LER 460: Ethics in the Workplace (3 Credits)
Old Listing Effective Through Fall 2021:
The course will explore ethics from both a normative and behavioral perspective. A key operating assumption of this course is that every employee of an organization has a responsibility to demonstrate ethical leadership. The course will emphasize the importance and applicability of shared mutual accountability. Four interrelated and mutually reinforcing subject areas will be explored in the course at the individual, organizational and transnational levels business ethics, ethics in unionized firms, corporate social responsibility, and sustainability. Students will develop their abilities to articulate their own moral values and to recognize and resolve ethical dilemmas within an organizational setting. Students will analyze situations using ethical theories and learn to advocate for particular management and labor relations approaches, practices and policies based on ethical considerations. While no one view of ethics is identified as "best," students learn to recognize, evaluate, compare and apply different approaches. Students also will develop their abilities to identify, read, and explain academic literature related to the topic of ethical leadership from a management and employment relations perspective.

Prerequisites: 7th Semester standing LER 304, LER 305

Changes Effective Spring 2022:

• Change Abbreviation to LHR
• Prerequisites

LER 472: Work-Life Practices and Policies
Old Listing Effective Through Fall 2021:
Explore the causes and consequences of conflicts between work, family, and other life commitments, and how these may be resolved. LER 472 Work-Life Practices and Policies (3)(BA) This course meets the Bachelor of Arts degree requirements. The interdisciplinary field of work-family and work-life developed as a result of middle-class women's entry into the labor force, a movement that generated conflict between family and paid work commitments. Overall, the course addresses the reasons the field developed, relevant theoretical perspectives regarding the issues, and related problems as well as proposed solutions at both the public and private sector levels. The overarching objectives of the course are to expand students' understanding of conflicts between work and family commitments, and how these might be resolved through private and public sector initiatives. Specifically, the course concerns how individuals, families, and organizations interact to help hinder the achievement of balance between work and life commitments, and relevant effects on those involved. The changing demographics of the family, laws and trends around working time, father and mother time with children, the expanded need for elder care, work-life programs such as flextime, concierge services, paid parental leave, part-time careers, paid time-off banks, and the role of unions, corporations and government legislation are covered. The course attempts to link the likely future needs of students to broader trends in society and how balance could be achieved at the level of individuals, families, other stakeholders in the community, and for society as well. Fields of research relevant to the course include labor studies, women's studies, Industrial/Organizational psychology, the sociology of work and of family, and child development. Students will be evaluated on the basis of class participation, through two in-class examinations, and through a final written or oral project providing a chronology and analysis of an adult's work-family history. The course is offered most fall and spring semesters, and typically 30 students are enrolled.

Cross-Listed Courses: WMSN 472
Prerequisite: 3 credits of LER

Changes Effective Spring 2022:

• Course Abbreviation
• Description
• Prerequisites

LER 475H: Labor in the Global Economy (3 Credits: Maximum of 3 Credits) (H)
Old Listing Effective Through Fall 2021:
This course focuses on how the nature of work is changing in the global economy, and the implications for economic opportunity and inequality in both. LER 475H Labor in the Global Economy (3) This seminar focuses on how the nature of work is changing in the “new economy” and the implications for economic opportunity and inequality. Sections of the course examine: theoretical approaches to understanding contemporary process of labor restructuring, including globalization, rise of multinational corporations, and growth in global supply chains; case studies of restructuring processes; and innovative labor organizing initiatives at a local, regional and global scale. This course aims to develop a framework for understanding the nature of contemporary processes of economic restructuring and its impact on the world of work. Case studies will provide a deeper understanding of how broad macro-level changes in the nature of contemporary capitalism are mediated.
by a variety of technological, political, and socio-economic factors in particular industries and geographic contexts. The case studies section of the course will also examine business ethics and corporate social responsibility initiatives. Finally, an in-depth look at workers’ responses to these changes at different scales (local, regional, global) will help deepen our understanding of the contested nature of workplace restructuring while exploring promising strategies for improving working conditions. This is a reading-intensive course dealing with the theoretical literature on rapid economic restructuring and how this is shaping work and employment.

Prerequisites: A minimum of 12 GEOG or LER credits before taking the course (or the permission of the program)

Changes Effective Spring 2022:

• Change Abbreviation to LHR
• Prerequisites

LER 480: Current Issues in Human Resources (3 Credits)
Old Listing Effective Through Fall 2021:

Identity and race, gender and heritage, centrality and marginality, self and other, as expressed in literary works from around the world. Students will study current trends that are shaping human resources management. These trends include information technology, internationalization, new organizational forms, changing demographics, and competitive landscape. Examples of topics include use of social media in human resource management, virtual work, managing an aging workforce and working across international boundaries. The course is case based and as such explores experiences of actual companies. Students will study and discuss the strategies, successes and failures of companies and how these issues and challenges relate to the human resources function. Timely readings that expose students to theoretical structures underlying these changes will be part of this course. In addition, because this is a current issues class, students will be expected to actively follow trending news in the business world through news media and critically examine how it is shaping the human resource management practices. This course will serve as a complement to MGMT 100, 341, 441 and LER 100, 201, 401 and 443.

Prerequisites: LER 305

Changes Effective Spring 2022:

• Change Abbreviation to LHR
• Prerequisites

ME 348: Circuit Analysis, Instrumentation, and Statistics (4 Credits)
Old Listing Effective Through Fall 2021:

ME 348 Circuit Analysis, Instrumentation, and Statistics (4) This course is required for all mechanical engineering students, and is taken in the junior year. It serves as an introduction to the fundamental principles of circuit analysis, instrumentation and measurement, as well as statistics. The course includes a 3-hour-per-week, hands-on laboratory where students explore the concepts taught in the lecture. For many students this is the first time they have actual hands-on experience with electronics and measurement equipment, such as oscilloscopes, breadboards, function generators, digital data acquisition systems, integrated circuits strain gages, displacement meters, thermocouples, tachometers, dynamometers, filters, volume flow meters, velocity meters, pressure transducers, etc. Students learn not only how to use these devices in the lab, but also the fundamental principles of their operation. Statistical analysis is integrated into the course, especially in the hands-on laboratories, where statistics is used to analyze and interpret acquired data.

Prerequisites: Prerequisite: MATH 251 and PHYS 212

Changes Effective Spring 2022:

• Credits

METEO 3: Introductory Meteorology (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Nontechnical treatment of fundamentals of modern meteorology and the effects of weather and climate. METEO 3 Introductory Meteorology (3) (GN)(BA) This course meets the Bachelor of Arts degree requirements. The objectives of the course are for students to gain a better understanding of atmospheric structure and processes so they can better apply the weather information they encounter – in essence, to help students become better weather consumers. Students will learn to read the sky so they can make their own short-term forecasts and adjust their behavior accordingly. When presented with a weather forecast containing caveats, students will have a better feeling for what controls the evolution of a developing system so they can understand why a certain degree of hedging is necessary. Students will acquire the foundation to evaluate, in a scientifically rigorous way, the veracity of many claims about weather and climate that they might see on television or the internet.

Changes Effective Spring 2022:

• Title
• Description

MGMT 415: Project Portfolio Management and Organizations (3 Credits)
Old Listing Effective Through Fall 2021:

An advanced course in project management focusing on portfolio planning and control within the context of specific organizational challenges. MGMT 415 Project Portfolio Management and Organizations (3) Project Portfolio Management (PPM) is a strategically focused course on the management of projects, programs, and portfolios in organizations. The management of individual projects is a complex, multi-level challenge involving myriad issues of planning, organizing, and controlling all project elements. Project portfolio management addresses a more strategic need, namely, the process of project selection in order to develop a balanced portfolio of projects designed to support organizational initiatives. As a result, this course addresses the critical issues of maximizing value in a portfolio, linking projects to organizational strategy, understanding the critical organization effects of structure, environment, and culture on project success, and creating a coherent PPM framework for the firm. Because the focus is more strategic, the role of the instructor in this course is to go beyond the mechanics of planning and controlling a single project to training students how to think strategically where projects and programs are concerned; to recognize their role in creating a PPM plan for an organization, selecting projects for value, rebalancing a project portfolio, and maintaining this focus within the organization.

Prerequisites: Enforced Prerequisite at Enrollment: SCM 301 and (MGMT 409 or MGMT 410)

Changes Effective Spring 2022:
MGMT 418: Project Planning and Resource Management (3 Credits)
Old Listing Effective Through Fall 2021:

Advanced course in project management focusing on a more in-depth approach to project planning and scheduling and resource management. MGMT 418 Project Planning and Resource Management is a more in-depth look at some of the most important aspects of project management; the ability to accurately plan and schedule projects using the latest and most accurate methods. Further, the course addresses resource management within the context of planning, noting the important linkage between these two elements. Accurate planning can be done through a variety of techniques, including CPM, PERT, simulation, linear programming and other optimization methods. Students will learn when each of these methods are most useful, benefits and drawbacks of various planning and resource management techniques, and how to apply these techniques to their projects. In addition, students will learn about different types of project risks, and techniques for analyzing and managing these risks. Because the focus is hand-on and problem-based. The role of the instructor in this course is to demonstrate these analytical techniques through classroom exercises and assignments and software packages, including MS Project, simulation, and Analytic Hierarchical Process (AHP).

Prerequisites: Enforced Prerequisite at Enrollment: SCM 301 and (MGMT 409 or MGMT 410)

Changes Effective Spring 2022:

- Abbreviated Title
- Enforced Prerequisites

MGMT 425: New Venture Creation (3 Credits)
Old Listing Effective Through Fall 2021:

Via problem-based learning, teams define new business ventures to meet current market needs, develop business plans, and present to investors. ENGR 425SENGR (MGMT/IST/ENTR) 425 Introduction to Entrepreneurship (3) The goal of ENGR (MGMT/IST/ENTR) 425 is to better prepare undergraduate students to be business leaders in adaptive, globally-minded, technology-savvy companies. The course is structured so students develop skills that are of high value in any workplace: they develop improved leadership skills, higher self-efficacy, creativity and the ability to deal with ambiguity. On course completion, students will have a working knowledge of traditional and non-traditional ways for identifying a new product or business opportunity, quantifying the potential, understanding the key competitive factors, researching the audience and producing a convincing executive summary for internal or external financing and launch. Students who want to augment the skills and knowledge from their major with the ability to refine a new product/service process in an interdisciplinary team will find ENGR (MGMT/IST/ENTR) 425 a valuable course. This is a novel problem-based learning (PBL) course, where the learning is student-centered, with faculty acting primarily in the role of facilitators. Active learning happens in this course because students develop ownership in their new business venture concept and are fully responsible for the genesis of the idea. The course leverages the on-line course management system (ANGEL) to define weekly learning objectives, support electronic delivery of assignments, robust video content with entrepreneurs is provided on CD-ROM or via ANGEL, providing additional insights into entrepreneurship. The technology or business segment focus of the class is easily adapted by using different case studies and course mentors. This will be one of two courses in the new two-course sequence for business students in entrepreneurship. This course will be accepted as a supporting course in the Engineering Entrepreneurship Minor (E-SHIP) and in the Engineering Leadership Development Minor (ELDM). ENGR (MGMT/IST/ENTR) 425 can be used as a technical elective in many of the engineering departments. It will be accepted as a Support of Option course for the Information Sciences and Technology (IST) major. This course will be offered each Fall and Spring semester with two sections each semester. Class enrollment per section will be set at 60 total.

Cross-Listed Courses: ENGR 425 IST 425

Enforced Prerequisite at Enrollment: (ECON 102 or ECON 104 or ECON 14) and CAS 100

Changes Effective Spring 2022:

- Abbreviated Title
- Description
- Enforced Prerequisites

MIS 204: Introduction to Management Information Systems (3 Credits)
Old Listing Effective Through Fall 2021:

Introduction to Management Information Systems provides an overview of the role of information systems in business process design, the current technologies used for obtaining, storing, securing, and communicating information in support of operations and decision-making within a business organization, as well as, the concepts and principles for developing and using popular spreadsheet and database tools. Applications focus on important problems and issues found in business disciplines, including accounting, finance, marketing, supply chain operations, and general management. The evaluation of students will be based on tests, at least one application project, and hands-on exercises.

Changes Effective Spring 2022:

- Add GQ Designation
- Description

MIS 315: Python Programming (3 Credits)
Old Listing Effective Through Fall 2021:

Students will learn how to program with Python, which is an interpreted, object-oriented, high-level programming language with dynamic semantics. Students will demonstrate how to easily use this for small, large, online and offline projects. Students will utilize Python for web development, simple scripting and data analysis. Students will describe how Python supports modules and packages, which encourages program modularity and code reuse. Students will develop a project with Python's interactive mode combined with the PyPI (Python Package Index). Students will become proficient with Python, which is the leading language of choice for many data scientists.

Prerequisites: Enforced Prerequisite at Enrollment: MIS 204

Changes Effective Spring 2022:

- Remove Prerequisites
Voice study in group and individual formats, supervised by in-class lessons and discussions, enhanced by additional individual instruction with pedagogy students. MUSIC 053 Class Voice Practicum (1) (GA)(BA) This course meets the Bachelor of Arts degree requirements. MUSIC 053 is a voice class experience that affords the pupil instruction in a class setting and in individual lessons. The weekly class meetings feature either demonstration lessons with his or her teacher (from the voice pedagogy curriculum). These lessons give the instructor the opportunity to monitor the progress of the pupils, supervise and evaluate the teaching of the pedagogy students, and make suggestions for further growth. Pupils and pedagogy students also have the opportunity to learn by observing the demonstration lessons of others in the class. Lesson evaluation forms are completed and turned in at the end of each meeting. Class concerts typically occur at mid-term and at the end of the semester. These performances give the pupils the opportunity to display their vocal and musical progress. The individual lessons that pupils receive out-of-class give them an occasion for concentrated work in a more relaxed atmosphere. It may be of interest that this is the only course offering individual voice instruction in the School of Music that does not carry an additional applied music fee. In addition to the vocal and musical advancement for pupils in MUSIC 053, this course also serves as a progressive training ground in teaching for advanced voice students. They gain important teaching experience in a closely supervised forum.

PreRequisite: audition

Changes Effective Spring 2022:
- General Education Recertification
- Description

MUSIC 81: Marching Blue Band (1 Credits: Maximum of 4 Credits) (BA)
Old Listing Effective Through Fall 2021:

Rehearsal and performance of appropriate music and maneuvers for football games and related events. MUSIC 81 Marching Blue Band (1 per semester/maximum of 4) (GA)(BA) This course meets the Bachelor of Arts degree requirements. This course develops the instrumental performance skills and marching skills of class members within the marching band setting. Objectives are to combine high level musical and visual performance with uniform marching style to create interesting and entertaining maneuvers suitable for parades, football games, and other athletic/outdoor venues. This course is open to students in all majors. Evaluation is based upon participation, achievement of individual music and marching performance requirements, and contribution to group performance goals. An audition is required for participation. Class meetings occur in an outdoor setting and require a facility with a fully lined football field. This course is offered every fall semester with an enrollment of 275.

PreRequisite: audition

Changes Effective Spring 2022:
- General Education Recertification
- Description

MUSIC 340: Music Learning and Development (2 Credits)
Old Listing Effective Through Fall 2021:

Application of psychological principles to teaching of music, including curriculum design and contemporary practices in music education. MUSIC 340 Music Learning and Development (2)(BA) This course meets the Bachelor of Arts degree requirements. MUSIC 340 is offered every fall semester for students who have just been accepted into the Teacher Certification program in Music Education. The focus of the course is music learning and development and their application to curriculum design for school music settings. Topics include: philosophical frameworks for music education, skill and content learning sequences in music, writing instructional objectives, and the process for developing music curricula. The instructional format includes: lecture, large and small group discussion, readings, and musical and teaching examples. Students complete several practical assignments, present summations of small group discussions, and prepare two drafts of a philosophical statement. A midterm and final exam are typically given. Students in MUSIC 340 also enroll concurrently in MUSIC 341 and MUSIC 395A, a practicum course focusing on teacher delivery skills and application of content from MUSIC 340 and MUSIC 341.

Prequisites: acceptance into Teacher Education Degree Program in Music; Concurrent: MUSIC341, MUSIC395A

Changes Effective Spring 2022:
- Add BA Designation
- Title
- Abbreviated Title
- Description

MUSIC 441W: Emphasis in Elementary General and Choral Music (3 Credits) (WF)
Old Listing Effective Through Fall 2021:

Selection and application of materials, methods, teaching and assessment strategies for elementary general and choral music settings. MUSIC 441W Capstone Experiences in Elementary General and Choral Music (3) This course is intended for Music Education majors in their senior year who have particular interest in working with elementary school children in a general music or choral setting. Students will apply all previous Music Education course work to this teaching setting. They will learn how to construct a course of study, including assessment strategies. Students will then apply that course of study by working with one elementary music class in the local schools. Teacher delivery issues, reflective practice, and assessment of student achievement will become a major component of this experience. A review of traditional approaches to elementary music teaching will also be presented and critically discussed. In addition, students will prepare two drafts of a philosophical statement justifying the inclusion of music in every child’s curriculum as well as four drafts of a paper reviewing and summarizing articles on a topic of interest related to elementary music teaching.

PreRequisite: MUSIC345, MUSIC395 B

Changes Effective Spring 2022:
- Travel Component
- Title
- Abbreviated Title
- Description
- Prerequisites

MUSIC 458: Electronic Music Composition (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

An introduction to the art of composition in the electronic audio medium. MUSIC 458 Electronic Music Composition (3)(BA) This course meets
the Bachelor of Arts degree requirements. Music 458 will focus on the creative craft of musical composition in the medium of electronic audio. Topics covered will include but not be limited to: recording, MIDI and digital audio techniques, study of literature and the investigation of the creative process in musical composition. Students are expected to enter the class with strong fundamentals in both music theory and MIDI and digital audio. The student will be expected to complete several projects that demonstrate both their creativity and their technical competence in the medium.

PreRequisite: INART 258A

Changes Effective Spring 2022:

• Title

NURS 200M: Principles of Nursing Research and Evidence-Based Practice-Honors (3 Credits) (H) (WF)

Old Listing Effective Through Fall 2021:

NURS 200M is an introduction to principles and methods of nursing research and application of research evidence to practice. The course is a writing intensive Honors course. Students will work individually and in cooperative learning groups to analyze and discuss nursing research from multiple viewpoints with a focus on integrity, global perspectives and leadership in nursing research. Each honor student will identify an evidence-based practice topic that could potentially lead to an undergraduate thesis to study in depth. Every inclass and out-of-class assignment is tailored to their topic. The students though, a series of writing intensive assignments, will be taught how to conduct a written peer review; will practice this in formative written review sessions on their peer’s projects. NURS 200M will culminate with the development of evidenced based practice paper, which will be delivered to their peers as they would at a scientific meeting. This paper will also serve as the first draft of their thesis proposal. Upon completion of the course students will be able to: Discuss the roles and responsibilities of the nurse related to research and evidence-based practice (EBP); compare and contrast the research process and EBP process; explain the interrelationships among nursing theory, practice, and research; identify sources of evidence as a basis for EBP; describe the process in formulating EBP questions; formulate EBP questions; describe basic concepts and steps of research process; interpret research findings; appraise current issue relevant to nursing; and critically appraise published research studies.

Recommended Preparations for NURS majors: STAT 200 or STAT 250 and NURS 225. Recommended preparation for NURN majors: STAT 250 and NURS 390

Changes Effective Spring 2022:

• Recommended Preparations

NURS 230: Introduction to the Fundamentals of Nursing (4 Credits)

Old Listing Effective Through Fall 2021:

Introduction to the nursing process, clinical competencies and psychosocial skills. NURS 230 NURS 230 Introduction to Fundamentals of Nursing (4) NURS 230 incorporates the analysis of the nursing process and introduction to clinical competencies and psychosocial skills. Students demonstrate beginning skills in utilizing the nursing process in the clinical setting to meet basic physical and psychosocial individual client needs. Upon completion of the course, students will be able to describe the characteristics of each step of the nursing process; demonstrate beginning skills in utilizing the nursing process in the clinical setting to meet basic physical and psychosocial individual client needs; demonstrate safe and competent performance of basic psychomotor nursing skills; demonstrate the ability to practice the principles of health and safety; perform basic interviewing techniques in collecting health status data; demonstrate communication skills that enable the student to establish appropriate interpersonal relationships; recognize variables influencing health status; recognize the psychosocial needs of individuals including basic needs related to loss, grief and the death experience; demonstrate a personal professional philosophy which addresses the individuality, dignity, values, beliefs, and culture of all clients; recognize the significance of evidence based practice as the basis for the use of the nursing process; recognize the importance of health teaching and health promotion across the life span; identify purposes and functions of appropriate community resources. Teaching strategies include lecture, discussion, audiovisuals, clinical experience, simulation laboratory demonstration and practice, self-learning medication and math mathematics packet. The course is offered each spring semester with an enrollment of approximately 120 nursing students divided into clinical sections limited to 10 students each.

Enforced Prerequisites: NURS 250 and NURS 251

Changes Effective Spring 2022:

• Concurrenits

NURS 250: Professional Role Dev I: Intro to Professional Issues in Nursing Practice and Nursing Informatics (2 Credits) (US)

Old Listing Effective Through Fall 2021:
NURS 250: Professional Role Dev I: Intro to Professional Issues in Nursing Practice and Nursing Informatics (2) (US) is the first course in the baccalaureate nursing program and introduces the students to the profession of nursing, the science of nursing and the use of information technology in health care. Designed to explore the wellness component of health and the role that informatics plays in the planning and delivery of health care. Upon completion of the course, the student will be able to meet the following course objectives: identify concepts of health and wellness that contribute to a foundation for nursing practice; discuss the influence of diversity on health care delivery systems and utilization of services; identify the roles of the professional nurse in the delivery of health care to patients, families, communities and populations; define elements that contribute to professional, evidence-based nursing practice; describe nursing theory and its relationship to the implementation of the nursing process; describe nursing informatics and its applications in the planning and delivery of health care; demonstrate beginning competency in utilizing information technology/nursing informatics in selected areas of nursing practice (e.g. research, patient care); apply concepts of ethical and legal considerations to the use of information technology/nursing informatics in health care. The concepts of diversity and cultural competence are emphasized and integrated within each major topic discussed. Teaching strategies emphasize inquiry-based learning, competency in informatics and promote critical thinking and include lecture, selected readings, exploration of internet sites on health and nursing, case studies, small group activities, group discussions, audiovisuals, role playing, journaling, self-reflection, and field trips. Enrollment is limited to sophomore-level nursing students.

Enforced Prerequisite at Enrollment: BIOL 161 and BIOL 163

Changes Effective Spring 2022:

- Description

NURS 300: Honors Seminar in Nursing (3-12 Credits: Maximum of 12 Credits) (H)

Old Listing Effective Through Fall 2021:

Seminar activities on selected topics in nursing. NURS 300H NURS 300H Honors Seminar in Nursing (3-12) NURS 300H is an honors seminar course designed to follow the introduction to nursing research course for honor students only. Each class session focuses on a different element of the honors thesis proposal. Objectives for the course include: discussion of the role of health care research in the development of disciplinary knowledge; evaluation of researchable problems generated from clinical practice and existing literature; critiquing proposals for clinical studies; describing the ethical issues involved in clinical research, with emphasis on investigator responsibilities and participant's rights; discussing selected research designs used for clinical research; analyzing opportunities for replication of clinical studies; critiquing sampling techniques used in clinical research; and analyzing strengths and weaknesses of data collection techniques commonly used in clinical research. The course is taught in the spring semester only and is open only to nursing honor students. Teaching strategies include lecture, student presentations, handouts, individual conferences, and written research consent forms and proposals. Evaluation criteria of the course include a critique, protection of human subject packet preparation, class participation, and at the end of this course, students will be expected to have a fully developed honors thesis proposal. Proposals will be evaluated on how convincing the argument is for the proposed research (literature review and identified knowledge gaps), the logical procession of the thinking, the clarity of the writing, and the significance of the proposed research to nursing.

Enforced Prerequisites: NURS 250 and NURS 225 and NURS 230 and NURS 251 and admissions to the Schreyer's Honors Program

Changes Effective Spring 2022:

- Credits
- Abbreviated Title
- Description
- Prerequisites

NURS 305: Introduction to Pharmacological Concepts (3 Credits)

Old Listing Effective Through Fall 2021:

Study of basic concepts of pharmacology and relevant nursing implications. NURS 305 Introduction to Pharmacological Concepts (3) NURS 305 is the introduction to pharmacological concepts and identifies the pharmacodynamics of major classifications of drugs. Prototypes or original drug models from which subsequent types arise are summarized. This course is closely linked to pathophysiology (a prerequisite) as most medications are administered based on a pathophysiologic condition. Pharmacologic principles covered in the course have practical application for students administering medications to clients in the clinical setting during the junior and senior years. Upon completion of this course, the student will be able to identify the measures taken in the United States to ensure drug safety; describe the process of drug development and evaluation; describe the methods of drug standardization; differentiate official and unofficial drug information sources; recognize the legal aspects and nursing responsibilities relative to the administration of drugs to ensure client safety; identify the pharmacodynamics of major classifications of drugs; recognize characteristics and nursing implications of the various types of pharmaceutical preparations and identify research related to pharmacology which influences nursing practice. Teaching strategies include videos, lectures, handouts and power point slides. Enrollment is limited to junior level nursing students or special permission from the instructor for non-nursing majors. The course is offered yearly during the fall semester.

Enforced Prerequisites: NURS 225 and NURS 230.

Recommended Corequisites: NURS 301 and NURS 310

Changes Effective Spring 2022:

- Enforced Prerequisites

NURS 306: Nursing Care of Children and Adolescents (3 Credits)

Old Listing Effective Through Fall 2021:

Common health problems and nursing intervention for children and adolescents. NURS 306 Nursing Care of Children and Adolescents (3) NURS 306 focuses on common health problems and nursing intervention for children and adolescents. Upon completion of this course, the student will be able to formulate nursing actions that are based on scientific principles and concepts from contributing disciplines in caring for children and adolescents to maximize client care outcomes; develop interpersonal skills in responding in a humanistic manner to the unique needs of children, adolescents, and their families; recognize pathophysiological and pharmacological aspects related to the nursing care of the adult medical surgical client; assess the health needs of diverse populations of children and adolescents based on an understanding of the developmental, psychosocial, environmental,
and cultural variables with an emphasis on health promotion; evaluate nursing care in a variety of settings to meet the health needs of children of various ages; utilize assessment data and technology to plan, implement, and evaluate interventions specific to the health care needs relevant to the characteristics of the child and adolescent client in interaction with the personal and suprapersonal environments; evaluate nursing care in a variety of settings to meet the health needs of children of various ages and promote healthy lifestyles; collaborate with colleagues in nursing and other health professions to promote the well being of children and adolescents in a variety of settings including the community; relate relevant research findings to child health nursing practice; practice legal, ethical and professional accountability in the delivery of child health care; participate in activities that advance personal and professional development, cultural competency, and the professional specialty of pediatric nursing and promote factors that create a culture of safety and caring for children and adolescents.

Teaching strategies include lecture, discussion, audiovisuals, hands-on clinical care, laboratory simulation experiences. Emphasis is placed on delivery of safe and competent nursing care. Clinical sections of 8-10 students spend 45 hours caring for child/adolescent clients in a variety of settings (clinics, day care centers, elementary schools, and hospitals). Enrollment is approximately 120 nursing students (split between UP and HMC) and the course is offered each spring semester of the junior year.

Enforced Prerequisite at Enrollment: NURS 305

Changes Effective Spring 2022:

- Enforced Prerequisites

NUTR 320: Science and Methods of Food Preparation (4 Credits)
Old Listing Effective Through Fall 2021:

The purpose of this course is to teach students the science of food preparation, to develop culinary skills, to learn how to preserve the nutritional content of plant and animal foods, and how to apply food safety principles during food preparation. Additionally, for each food preparation method, students will learn the underlying chemical and physical principles responsible for the recipe outcome. Students will gain an understanding of production methods used by food manufacturers and the source of food additives used to make processed foods. Students will apply scientific principles of food preparation by modifying recipes to improve the nutritional quality of prepared foods while maintaining product quality. The course will include a didactic and cooking lab to reinforce the didactic concepts. During the lab sessions, students will learn basic culinary techniques and apply these techniques by reading recipes, preparing foods, and using sensory evaluation to analyze the prepared foods. Furthermore, students will apply the concepts learned during lecture and the assigned readings to evaluate the outcomes of the prepared recipes.

Prerequisites: Enforced Prerequisites at Enrollment: NUTR 251 and CHEM 202

Changes Effective Spring 2022:

- Description
- Enforced Prerequisites

NURS 350: Professional Role Development II: Ethics, Legal and Genetic Issues (2 Credits)
Old Listing Effective Through Fall 2021:

The study of the interaction of ethical, legal, and genetic concepts as they apply to current health care practice. NURS 350 Professional Role Development II: Ethics, Legal and Genetic Issues (2) NURS 350 is the second of three professional role development courses and addresses the interaction of ethical, legal and genetic concepts as they apply to current health care practice. Upon completion of the course the student will be able to define the fundamental ethical theories; define and integrate into evidence based practice the basic ethical concepts as they relate to nursing; state the American Nurses’ Association Code of Ethics for Nurses; demonstrate ethical behaviors such as honesty, integrity, responsibility, and dependability in clinical practice and everyday life; define and describe the concepts of standards of care and scope of practice; analyze nurse practice acts as they pertain to licensure and scope of practice; define the concepts of negligence versus malpractice; define and distinguish between the concepts of informed consent, patient self-determination, right of refusal, and advance directives (such as living wills, durable power of attorney, and do not resuscitate orders); analyze the role of advocacy from an ethical and legal perspective; communicate effectively (including the use of new technologies) with patients and families regarding legal, ethical, and genetic issues; describe the concept of confidentiality from ethical and legal perspectives; identify the impact genetics has played in the practice of health care; describe the historical to current research findings in genetics that have or may change health care practice guidelines; identify the role ethics, legal issues, and genetics plays in providing health care to culturally sensitive populations; analyze and discuss historical and current biomedical dilemmas utilizing various ethical, legal and genetic perspectives. Teaching strategies include lecture, discussion, audiovisuals, small group activities, role-playing and group presentations. The course is offered spring semester and enrollment is limited to nursing majors.

Enforced Prerequisites at Enrollment: NURS 305

Changes Effective Spring 2022:

- Concurrents

NURS 357: Introduction to Nursing Informatics (3 Credits)
Old Listing Effective Through Fall 2021:

NURS 357 is an introduction to nursing informatics focusing on technology applications to the nursing profession. This course provides a broad overview of nursing informatics and the various applications of informatics principles in the healthcare setting. Students will explore the data-information-knowledge-wisdom paradigm of informatics and gain an appreciation of how informatics principles contribute to nursing knowledge and practice. Students will assess personal informatics competencies and set goals for building informatics skills, and explore future trends in healthcare technologies.

Recommended Preparations: (NURS 301, NURS 306, NURS 310, NURS 320; NURN Major)

Changes Effective Spring 2022:

- Recommended Preparations

NURS 390: Transition and the Professional Nursing Role (3 Credits)
(US)
Old Listing Effective Through Fall 2021:

Transition to baccalaureate education and professional nursing practice, emphasizing leadership, management, and issues influencing nursing education and practice. NURS 390 Transition and the Professional
Nursing Role (3) (US) NURS 390 is the first nursing course that the registered nurse (RN) student completes. The course’s intent is to set the groundwork for transition of the RN to baccalaureate education and professional nursing practice. With the emphasis being on leadership, management, and issues influencing nursing education and practice, the RN has the foundation on which to build nursing expertise as nursing courses progress. The course prerequisite is a current and valid RN license. Teaching strategies include: lecture, discussion, audiovisuals, self-assessment, reflective analysis, critical thinking/problem solving, computer assignments and active/collaborative learning. Evaluation of the course is by grading of written assignments, presentations, and testing. The course is offered in fall, spring or summer semesters of the junior year with a projected enrollment of 10 – 15 students, and is a prerequisite to other nursing courses. Upon completion of this course, the student will be able to: 1. Explain the processes inherent in successful transition to the role of the baccalaureate prepared nurse. 2. Analyze the influences that impact role development and nursing practice, especially self-regulation and accountability. 3. Appraise the health care environment as it relates to nursing roles and nursing practice. 4. Measure the impact of nursing theory and research on baccalaureate level nursing practice. 5. Evaluate the importance of nursing research to nursing practice and the legislative arena. 6. Critically analyze issues that influence nursing education and practice today and in the future.

Changes Effective Spring 2022:

• Recommended Preparations

NURS 405B: Nursing Care of the Adult Client with Complex Health Problems: Part B (4 Credits)
Old Listing Effective Through Fall 2021:

In-depth study of care of patients with acute and complex health problems, utilizing evidence based practice. NURS 405B – Nursing Care of the Adult Client with Complex Health Problems: Part B (4) NURS 405B focuses on nursing care of adult clients with acute and complex health problems related to all major systems of the body. The emphasis is on enhancing critical thinking skills necessary for making sound nursing judgments and the demonstration of self-direction in providing nursing care for clients with complex medical surgical problems. Upon completion of this course, the student will be able to: Synthesize knowledge from nursing and contributing discipline to maximize client care outcomes; Recognize pathophysiological and pharmacological aspects related to the nursing care of the adult client; Demonstrate the ability to communicate effectively including the use of technology with patients, families and the health care team; Promote factors that create a culture of safety and caring for the adult client; Demonstrate the ability to perform a comprehensive and systematic assessment and take appropriate nursing actions for the client with complex health problems; Collaborate with colleagues from nursing and related disciplines using empirical and theoretical resources when defining nursing care priorities and determining nursing actions; Utilize assessment data and technology to plan, implement, and evaluate interventions specific to the complex health problems of the adult client; Participate in activities that advance the personal relinquish the professional specialty of adult medical-surgical nursing; Practice legal, ethical and professional accountability in the delivery of care to the adult medical-surgical client; Apply evidence based practice to maximize client outcomes in health promotional and educational activities for the complex health needs of the adult client; Demonstrate current and relevant knowledge of the social, health, behavioral and psychological sciences that can be applied to nursing practice for the adult client; Demonstrate increasing self direction and confidence in providing nursing care for the adult client with complex health needs; Demonstrate the role of professional nurse as a client advocate; Demonstrate the ability to assess risk and actively promote the well being, safety, and security (patients and coworkers) in the work environment; Demonstrate the ability with guidance to lead and coordinate a team, delegating care appropriately and safely; Demonstrate the ability to respond appropriately to the emotional, psychological and spiritual needs of the adult client with complex care needs. Teaching strategies include lecture, discussion, laboratory simulation and clinical experiences. The course is offered fall semester with approximately 120 students enrolled (60 at UP and 60 at HMC) with clinical sections limited to 10 students per section.

Enforced Prerequisite at Enrollment: NURS 305

Changes Effective Spring 2022:

• Enforced Prerequisites

NURS 417: Family and Community Health Concepts (4 Credits) (US) (IL)
Old Listing Effective Through Fall 2021:

Study of the concepts of family and community based nursing care emphasizing multicultural influences on health practices. NURS 417 Family and Community Health Concepts (4) (US;IL) Upon completion of the course the student will be able to (a) Synthesize knowledge from nursing, public health, family, and community theory as a foundation for culturally congruent community health nursing practice that is sensitive to race, religion, gender, disability and sexual orientation; (b) Utilize the nursing process and principles of primary, secondary and tertiary prevention that are culturally appropriate in the care of community based clients who differ in terms of health beliefs, values, and practices; (c) Develop skill in the use of independent/interdependent nursing actions to deliver care to clients across the life span; (d) Demonstrate the management of client, family, and community care through appropriate use of concepts of leadership, case management and group process; (e) Describe collaboration at the collegial level with nurses and other members of the health care team to provide continuity of care through culturally appropriate communication, consultation, and referral; (f) Use coherent, comprehensive and culturally sensitive communication in oral and written form; (g) Analyze biostatistical/epidemiological data and nursing research findings to improve/enhance the delivery of nursing care to diverse populations in the community; (h) Analyze the impact of culture as a significant influence on the health perceptions, interpretations, and behaviors of diverse groups.Students will spend 40 hours practicing in a clinical setting. In that setting they will be responsible for assessing, planning, implementing and evaluating the care of families within the context of a community. Students will have the opportunity to analyze the impact of culture on health perceptions, interpretations, and behaviors of diverse groups.Evaluation methods: Students will be evaluated both theoretically and clinically by use of the following: (a) Guided study of complex family and community health patterns using collaboration case analysis; (b) Case findings and analysis; (c) Direct care to culturally diverse families in the community setting.Relationship/linkage of course to other courses: This course applies and integrates family and community nursing concepts to culturally diverse clients in the community. It is offered at the senior level and incorporates previously learned theoretical and clinical nursing knowledge with an appreciation for how diversity influences the health care behaviors of families and communities as they relate to the health care system.Relationship of course to major: This senior level nursing course is one of the components of the Advanced Standing Option. It is a required course that provides students with the opportunity to develop
skill in delivery of health services to globally diverse populations across the life span. It is also designed to increase the student's knowledge base related to the community based client including relationships, lifestyle and kinship patterns. Lastly, it provides an arena for community health planning for diverse populations. Special facilities required to teach the course: The clinical arena which will be used to teach this course includes but is not limited to high risk populations in the community, senior or special housing projects, prisons and missions. Frequency of offering an enrollment: The course will be offered every semester and enrollment varies from 10 to 20 students.

Enforced Prerequisite at Enrollment: NURN Major. Recommended Preparation: NURS 390 and NURS 357

Changes Effective Spring 2022:

- Recommended Preparations

NURS 420: Mental Health Nursing (4 Credits)
Old Listing Effective Through Fall 2021:

Emphasizes clinical application of mental health theory in nursing care of patients with acute and chronic mental health problems. NURS 420 NURS 420 Mental Health Nursing (4) NURS 420 focuses on care of clients experiencing mental health problems and emphasizes the clinical application of mental health theory in nursing care of patients with acute and chronic mental health problems. Upon completion of this course, the student will be able to synthesize knowledge from nursing and the social, health and behavioral sciences to describe the nature of mental adaptations throughout the lifespan; demonstrate effective therapeutic communication skills when dealing with clients, groups and families experiencing maladaptive responses to stress; assess the strengths and weaknesses of the client and family in the context of a group and community environment; demonstrate the ability to perform comprehensive and systematic assessments and take appropriate interventions, to make critical decisions, and to take appropriate nursing actions in the area of psychiatric mental health; utilize the nursing process as related to the Standards of Psychiatric and Mental Health Nursing practice; collaborate with nursing colleagues, mental health professionals and consumers in the practice of psychiatric mental health nursing; analyze individual and societal forces that effect nursing research and evidence based practice in the area of psychiatric mental health nursing; demonstrate the knowledge of self needed to be an effective therapeutic agent and a client advocate; demonstrate culturally competency and the ability to provide holistic psychiatric mental health nursing care; perform the principles of psychiatric mental health and safety in a caring, nonjudgmental manner; demonstrate a current and relevant knowledge base of legal and ethical issues that can be applied to psychiatric mental health nursing; and identify and support mental health promotion and mental health educational activities to maximize client care outcomes and evaluate psychiatric mental health nursing as a professional specialty. Teaching Strategies include lecture, process recordings, discussion, selected readings, audiovisuals, laboratory simulation and clinical experiences. NURS 420 is offered fall and spring semesters with an annual enrollment of approximately 120 students (60 at UP and 60 at HMC) with clinical sections limited to 10 students each.

Enforced Prerequisite at Enrollment: NURS 305

Changes Effective Spring 2022:

- Enforced Prerequisites

NURS 450A: Professional Role Development III: Leadership and Management (2 Credits)
Old Listing Effective Through Fall 2021:

Study of leadership roles and various styles of nursing management and their implications for the professional nurse. NURS 450A — Professional Role Development III: Leadership and Management (2) NURS 450A is the senior level professional role development course that focuses on delegation of care, leadership and management. Upon completion of the course, the student will be able to analyze influences which impact on role development and nursing practice; recognize the significance of professional, ethical, regulatory and legal codes within the context of nursing practice; recognize nursing skills necessary to respond to the client's needs throughout the life span including end of life issues; recognize current and relevant knowledge of leadership and management theory as it relates to the health care environment; recognize current and relevant knowledge of ethical, legal, national and international policies as it relates to the health care environment; demonstrates current knowledge of nursing research and modern technologies to recognize nursing care that is rigorous and evidence based; assess the nursing profession's responsibility for self-regulation and accountability in order to maximize client care outcomes; demonstrates the ability to promote, support, and facilitate the health, well being, and comfort of vulnerable populations as to enhance the quality of service delivery; recognize the principles of leadership, accountability and delegation that promote the well being, safety and security of patients and coworkers; recognize and promote the ability to communicate effectively (including the use of technology) with patients, families, social groups and the health care team; demonstrates increased awareness of the nurse generalist role and the value of life-long learning. Teaching strategies include lecture, audiovisuals, student presentations, discussion, guest speakers, simulation and role-playing. The course is offered each fall semester with approximately 120 students enrolled.

Enforced Prerequisite at Enrollment: NURS 305

Changes Effective Spring 2022:

- Enforced Prerequisites

NURS 450B: Professional Role Development III: Clinical Capstone (3 Credits)
Old Listing Effective Through Fall 2021:

Senior level clinical capstone course that emphasizes the integration and application of theory and evidence based practice. NURS 450B is the clinical capstone course for the Nursing Program and provides a total of 135 clinical hours. Ninety (90) clinical hours will be spent with a preceptor in a clinical setting, where the student will be responsible for assessing, planning, implementing and evaluating the care of clients and will have the opportunity to employ management and delegation skills in the care of clients. The remaining 45 clinical hours will be obtained from simulation, case studies and other course work such as NCLEX review. All clinical hours focus on preparing the student to transition into the Registered Nurse role. Upon completion of this course, the student will be able to demonstrate the ability to practice in a holistic, culturally competent and caring manner; demonstrate the ability to practice within the context of professional, ethical, regulatory and legal codes of nursing practice; demonstrate the ability to promote, support, and facilitate the health, well-being, and comfort of vulnerable populations so as to enhance the quality of service delivery; demonstrate the ability to perform comprehensive and systematic assessments and take appropriate actions; demonstrate the ability to utilize evidence based practice and
modern technologies to assess and respond appropriately to patient needs; utilize nursing skills to provide optimum care and to practice principles of health and safety in a caring, nonjudgmental manner; utilize nursing skills to respond to a person's needs throughout the life span, i.e. life choices, disability, and end of life issues; demonstrate current and relevant knowledge of the social, health, and behavioral sciences that can be applied to nursing practice; demonstrate current and relevant knowledge of ethical, legal, national, and international policies that can be applied to nursing practice; demonstrate current knowledge of nursing research to provide nursing care that is rigorous and evidence-based; demonstrate the ability to communicate effectively (including the use of technology) with patients, families, social groups and the health care team; identify, manages and support health promotion and health educational activities to optimize patient safety and well-being; demonstrate the ability to lead and coordinate a team, delegating care appropriately; demonstrate the ability to assess risk and actively promote the well-being, safety, and security (patients and coworkers) in the work environment; demonstrate increased confidence in the nurse generalist role and in the value of life-long learning.

Enforced Prerequisite at Enrollment: NURS 305

Changes Effective Spring 2022:

- Enforced Prerequisites

NURS 465: Health Concepts for Adults with Complex Health Care Needs (3 Credits)
Old Listing Effective Through Fall 2021:

In-depth study and application of the theoretical principles and roles of adult clients and families with complex healthcare needs. NURS 465 focuses on the application of concepts that relate to the adult high-risk client, family, or significant other in a complex health care setting. Upon completion of this course, the student will be able to: integrate theory and knowledge of nursing and related disciplines as a basis for professional nursing practice with adult high-risk clients; demonstrate interpersonal skills to support and guide clients/families/significant others in the selection of appropriate health patterns; utilize the nursing process to analyze complex adult high-risk situations occurring in acute care, transitional care, and/or community settings; apply critical thinking skills to clinical nursing practice situations involving the high-risk client/families/significant others; collaborate with colleagues in the design, implementation, and evaluation of nursing interventions; demonstrate in the clinical nursing practice setting the role of the professional nurse as case manager; change agent, advocate and researcher with the adult high-risk client/families/significant others; demonstrate a comprehensive understanding of opportunities for clinical nursing research with the adult high-risk client/families/significant others; and demonstrate nursing practice within the professional legal and ethical guidelines. The RN student selects a clinical nursing practice experience that focuses on the application of nursing concepts related to complex health care of the adult high-risk client and, based on course objectives, develops clinical practice objectives in collaboration with the course faculty.

Enforced Prerequisite at Enrollment: NURN major. Recommended preparation: NURS 390 and NURS 35

Changes Effective Spring 2022:

- Recommended Preparations

NURS 475: Integrated Concepts in Nursing Practice (3 Credits)
Old Listing Effective Through Fall 2021:

Project-based capstone course for application of nursing concepts to health promotion/disease prevention in populations. RECOMMENDED CONCURRENT FOR NURS 475 IS NURS 417 OR NURS 465. NURN MAJOR CONTROL. NURS 475 is a project-based capstone clinical course for the RN student with a focus on the application of nursing concepts and the RN's development of future career goals. The course is designed to provide opportunity for students to synthesize and apply the art and science of nursing to health promotion and disease prevention in culturally diverse populations in varied clinical settings of the global community. Upon completion of this course, the student will be able to synthesize knowledge from nursing and related sciences for application to evidence-based nursing practice; interpret legislative and regulatory processes relevant to the capstone project; collaborate with members of the health team to provide continuity of care through appropriate communication, consultation, and referral; communicate effectively using written, verbal, nonverbal and emerging technology methods; apply biostatistical, epidemiological, and research findings to enhance the delivery of evidence-based nursing care; provide evidence-based nursing care that contributes to safe and high quality patient outcomes within healthcare Microsystems; participate in the development and implementation of theory-based and a population-focused health promotion project; facilitate change in the healthcare Microsystems affecting the provision of nursing care to diverse populations throughout the lifespan; demonstrate accountability in the delivery of professional nursing care; and integrate the concept of life-long learning into professional nursing practice.

Enforced Prerequisite at Enrollment: NURN major. Recommended Concurrent: (NURS 417 and NURS 475) or (NURS 465 and NURS 475)

Changes Effective Spring 2022:

- Enforced Prerequisites
- Concurrents
- Recommended Preparations

NURS 480: NCLEX Prep (2 Credits)
Old Listing Effective Through Fall 2021:

This course is designed to prepare nursing majors who are in their final semester to take the National Council Licensure Exam (NCLEX®) exam. Passing this exam is required to obtain licensure as a registered nurse (RN) in all US states and territories. Major topics include the structure and format of the exam, the NCLEX® test plan, test-taking strategies, and review of key nursing concepts from across the curriculum that will be tested on the exam. The course is intended to be interactive and students are given extensive practice answering NCLEX®-style questions. Students are encouraged to identify areas in which they need further study to prepare for the exam. At the end of the course students are expected to develop a personal study plan to guide their preparation for the exam.

Prerequisites: NURS 405A

Concurrent courses: NURS 405B

Changes Effective Spring 2022:

- Prerequisites
NUTR 386: Managing Quality in Food and Nutrition Services (3 Credits)
Old Listing Effective Through Fall 2021:

NUTR 386 Managing Quality in Food and Nutrition Services (3) This course is designed to foster the integration of management principles in the profession of nutrition and dietetics. Topics include strategic application of principles of management and systems in the provision of food and nutrition services to individuals and organizations, quality management, health care systems, leadership theory, corporate culture and communication, fiscal management in food and nutrition services, employee staffing, counseling and retention, and marketing. A business plan is also developed incorporating key operating indicators for organizational structure, marketing and financial objectives.

Prerequisites: Enforced Prerequisites at Enrollment: HM 329

Changes Effective Spring 2022:

- Abbreviated Title
- Remove Prerequisites
- Concurrent

PHIL 401: American Philosophy (3 Credits)
Old Listing Effective Through Fall 2021:

Survey of key figures and movements in American thought, including the Transcendentalists, the Pragmatists, and contemporary developments.

Prerequisites: 9 credits of philosophy, or 6 credits of philosophy at the 200-level or 5th semester standing

Changes Effective Spring 2022:

- Add US Designation
- Title
- Description
- Prerequisites

PHIL 402: European Philosophy
Old Listing Effective Through Fall 2021:

Survey of key figures and movements of Europe, including phenomenology, existentialism, structuralism and post-structuralism, and critical theory.

Prerequisite: PHIL 102, 6 credits of philosophy at the 200 level or 5th semester standing

Changes Effective Spring 2022:

- Title
- Abbreviated Title
- Description
- Prerequisites

PHIL 405: Philosophy of Law
Old Listing Effective Through Fall 2021:

Examines philosophical views of the nature of law, legal ethics, law and society through questions regarding definition, interpretation, and institutions.

Prerequisite: 9 credits of philosophy, including PHIL 105 or 6 credits of philosophy at the 200 level or 5th semester standing

Changes Effective Spring 2022:

- Title
- Abbreviated Title
- Description
- Prerequisites

PHIL 407: Technology and Human Values
Old Listing Effective Through Fall 2021:

Interrelationships of twentieth-century technological change and human values. Emphasis on the social and ethical aspects of technological progress.

Cross-Listed Courses: STS 407

Prerequisite: 9 credits of philosophy, including PHIL 107 or 6 credits of philosophy at the 200 level

Changes Effective Spring 2022:

- Remove Cross-Listing
- Title
- Abbreviated Title
- Description
- Prerequisites

PHIL 408: Social and Political Philosophy
Old Listing Effective Through Fall 2021:

Historical and philosophical foundations of political organization, authority, and justice, and contemporary issues of rights, community, and culture.

Prerequisite: 9 credits in philosophy including PHIL 108 or 6 credits at the 200 level

Changes Effective Spring 2022:

- Title
- Abbreviated Title
- Description
- Prerequisites

PHIL 410: Philosophy of Science
Old Listing Effective Through Fall 2021:

Historical and contemporary foundational and methodological issues such as causality, relativity and epistemological relativism, teleology, and the nature of reality.

Prerequisite: 9 credits of philosophy, including PHIL 110 or 6 credits of philosophy at the 200 level

Changes Effective Spring 2022:

- Title
- Abbreviated Title
- Description
- Prerequisites
PHIL 413: Philosophy of Literature  
Old Listing Effective Through Fall 2021:
Discusses truth, belief, illusion, imagination and creativity through philosophical literature, as well as problems of philosophical writing.
Prerequisite: 9 credits of philosophy, including PHIL 113 or 6 credits of philosophy at the 200 level
Changes Effective Spring 2022:
• Title
• Abbreviated Title
• Description
• Prerequisites

PHIL 416: Philosophy of Social Science  
Old Listing Effective Through Fall 2021:
Examines the philosophical nature and foundations of methodology, structures and objects, value-neutrality and objectivity in the social sciences.
Prerequisite: 9 credits of philosophy, including or 6 credits of philosophy at the 200 level
Changes Effective Spring 2022:
• Description
• Prerequisites

PHIL 418: Ethics  
Old Listing Effective Through Fall 2021:
Examines ethical theories, justice, rights, community, and human values revolving around such issues as preservation, conservation, pollution, sustainability, and population.
Prerequisite: 9 credits of philosophy including PHIL 103 or 6 credits of philosophy at the 200 level or 5th semester standing
Changes Effective Spring 2022:
• Title
• Abbreviated Title
• Description
• Prerequisites

PHIL 427: Philosophy of Mind  
Old Listing Effective Through Fall 2021:
Investigates problems of mind from the standpoint of traditional metaphysical views, modern scientific psychology, neuroscience, and artificial intelligence.
Prerequisite: 9 credits of philosophy, including PHIL 127 or 6 credits of philosophy at the 200 level
Changes Effective Spring 2022:
• Title
• Abbreviated Title
• Description
• Prerequisites

PHIL 435: The Interrelation of Science, Philosophy, and Religion  
Old Listing Effective Through Fall 2021:
The historical and transformative interactions between science and Western philosophical and religious views of nature, humanity, and God.
Cross-Listed Courses: STS 435
Changes Effective Spring 2022:
• Remove Cross-Listing
• Title
• Abbreviated Title
• Description
• Prerequisites

PHIL 438: Feminist Philosophy  
Old Listing Effective Through Fall 2021:
Examines the central currents of feminist philosophy, selected problems and concepts regarding difference, gender and sex, identity, and political culture.
Cross-Listed Courses: WMNST 438
Prerequisite: 9 credits of philosophy, including 6 credits of philosophy at the 200-level or 5th semester standing
Changes Effective Spring 2022:
• Title
• Abbreviated Title
• Description
• Prerequisites

PHIL 453: Topics in Ancient Philosophy  
Old Listing Effective Through Fall 2021:
Examines the philosophy of central figures in ancient philosophy from the pre-Socratics to the post-Aristotelians and Neoplatonists.
Prerequisite: 9 credits of philosophy, including PHIL 200 or 6 credits of philosophy at the 200 level
Changes Effective Spring 2022:
• Title
• Abbreviated Title
• Description

PHIL 455: Topics in Modern Philosophy  
Old Listing Effective Through Fall 2021:
Descartes to Kant, including mind and reality, space and time, God and nature, morality and autonomy.
Prerequisite: 9 credits of philosophy, including PHIL 202 or 6 credits of philosophy at the 200 level
Changes Effective Spring 2022:
• Title
• Abbreviated Title
PHIL 466: Topics in Nineteenth Century Philosophy  
Old Listing Effective Through Fall 2021:

Hegel to Nietzsche, including nature and spirit, history and human nature, ideology and morality.

Prerequisite: 9 credits of philosophy, including PHIL 203 or 6 credits of philosophy at the 200 level

Changes Effective Spring 2022:

• Title
• Abbreviated Title
• Description
• Prerequisites

PHIL 458: Topics in Contemporary Philosophy  
Old Listing Effective Through Fall 2021:

Topics in the philosophy of contemporary figures such as Foucault, Habermas, Rorty, Derrida, Rawls, Davidson, and MacIntyre.

Prerequisite: 9 credits of philosophy, including PHIL 204 or 6 credits of philosophy at the 200 level or 5th semester standing

Changes Effective Spring 2022:

• Title
• Abbreviated Title
• Description
• Prerequisites

PHIL 456: Jewish Philosophy  
Old Listing Effective Through Fall 2021:

Explores major figures and trends in Jewish philosophy and their influences on other philosophical traditions.

Changes Effective Spring 2022:

• Description
• Prerequisites

PHOTO 202: Fundamentals of Professional Photography (3 Credits)  
Old Listing Effective Through Fall 2021:

This professionally oriented photography course gives students a foundation in the techniques and other competencies relevant to professional photography. PHOTO 202 Fundamentals of Professional Photography is a professionally oriented problem based learning class where students are introduced to the fundamental technical and creative aspects of client centered photography relevant to careers in photography and photography related or dependent fields. Students will be introduced to the photographic techniques; professional practices; creative sensibilities; and cultural knowledge significant to the work of a professional photographer and fields reliant on or related to professional photography. The course content focuses student attention on mastering the technical fundamentals of professional photography in the context of the photographer/client relationship. The learning problems place emphasis on the communication, collaboration, and cooperation necessary to solve visual photographic problems in a professionally oriented setting. Under these conditions, students must collaborate with their clients to foster creatively productive relationships and meet their photographic needs. This problem requires developing communication and interpersonal relation skills, which require clearly understanding the clients’ needs and educating them about the creative possibilities and limitations. Under this teaching and learning model, students must learn to merge their own creative vision with the needs and desires of their professional clients. These skills are directly applicable to the real world problems students will encounter in professionally oriented circumstances after they graduate. In the learning problems student peers, with the instructor’s guidance, will play dual roles of clients and photographers with the goal of concentrating the photographers’ attentions on communicating with their clients to create effective and creative purpose-driven images. Consequently, the course places a greater emphasis on communication, collaboration, and cooperation than it does on personally and individually motivated expression. Since the advent of digital photography, the medium has undergone an unprecedented period of technological, creative, and cultural flux. Digital photography, computer technology, and social media have had dramatic impact on the medium, which we expect will continue into the future. Consequently, we have used a problem based learning approach to ensure we can continuously address the most relevant and current topics and information. We have also chosen major teaching and learning topics, which will continue to meet the fundamental needs of the students even as technology continues to shift. At the beginning of each semester, students and the instructors will work collaboratively to develop five student learning-problems. These problems or projects will address the major teaching and learning topics under a variety of conditions designed to reinforce the subject matter, encourage flexibly creative thinking, and allow students to pursue the subject with greater critical depth and awareness.

Changes Effective Spring 2022:

• Add GA Designation
• Description

PHOTO 301: Beyond Photoshop: Techniques in Digital Photographic Imaging (3 Credits)  
Old Listing Effective Through Fall 2021:

Students will learn aspects of photographic image making by capturing, processing, editing, retouching, and manipulating of digital photographs. Through a series of learning problems, students will focus on developing new skills and knowledge needed to accomplish techniques used in the creation of photo-based digital imagery. With awareness and knowledge of the total process, they will synthesize photographic shooting practices with computer-based image post-processing for creative, and
professionally oriented image-making results. They will develop creative, critical and conceptual sensibilities needed to discuss and evaluate their work and the work of others using these methods. Students will identify, research, and analyze effective professional and creative practices in the field of photography with emphasis on developing skillful digital post-processing techniques. These practices include previsualization of images, shooting practices for enhanced digital workflow and choosing the image post-processing techniques most appropriate for the end-use of images. Manipulation of photos has a history dating back to the 1850s, however it is only over the last twenty years with digital technology that these techniques have entered the popular mainstream. This shift has raised ethical challenges in photography-related fields such as the arts, sciences, advertising, and journalism. Students will analyze and assess factors necessary to recognize in making ethical image-making decisions. Web sites and social media outlets have presented new popular venues for photographs and thus greatly increased the demand for photos of all sorts with much of the Internet relying on photography for its visual content. As part of the spectrum of digital media digital, photography is often integrated with other modes that can be transmitted or shared using the internet such as webpage technology, digital video, 3D imaging, etc. Students will learn to integrate their photography with other media and evaluate its effectiveness with relation to the broader media environment.

Prerequisites: PHOTO 101

Changes Effective Spring 2022:

- Travel Component
- Description
- Prerequisites

PHOTO 303: Professional Photography: Studio Technique and Photocomposition (3 Credits: Maximum of 6 Credits)

Old Listing Effective Through Fall 2021:

PHOTO 303 Professional Photography: Studio Technique and Photocomposition is an intermediate-level problem-based learning class where students acquire practical skills, and learn creative techniques relevant to professional photographic image making. The course focuses on building and synthesizing career oriented competencies in the areas of intermediate to advanced digital photography, photocomposition, studio lighting, and image processing related to professional photography. This is a technically oriented course, which emphasizes image making for professional purposes such as for clients or specific audiences. Using this approach, students will practice methods to tailor their own creative vision to the needs of collaborators such as art directors or other professionals. Students will focus on using lighting, cameras & lenses, and creative design techniques as tools to achieve professional quality photographs appropriate for creative artist portfolios used for photography and related careers. Students will develop the skills necessary to recognize and deconstruct lighting, camera, and design techniques in professional photography they may encounter in advertising, magazines, websites and other places where professional photography is used. After they graduate, students will be able to continue using these critical skills to learn and experiment with new techniques, which drive the constantly changing styles in photographic design and thus keep their work looking fresh and current. They will additionally develop and hone visual and verbal skills necessary to critically analyze their own photos and the photos of their peers. The course will culminate with students producing professional portfolios of their work suitable for career purposes.

Prerequisites: PHOTO 200 or PHOTO 202 or by Portfolio review

Changes Effective Spring 2022:

- Prerequisites

PHOTO 304: Photography in the Darkroom (3 Credits: Maximum of 6 Credits)

Old Listing Effective Through Fall 2021:

In PHOTO 304, students will develop the skills and knowledge needed to work in the area of darkroom photography. Students will learn aspects of camera operation, film development, darkroom enlarging, film scanning, and large-scale inkjet printing. Darkroom photography and associated film techniques are useful for students who wish to have a more thorough understanding of the entire photographic process. These understandings, especially those associated with the action of light, are directly applicable to aspects of digital photography as well. Students will learn the craft associated with the handling of film, chemicals and enlarging equipment to make effective photographs. PHOTO 304 also incorporates the use of scanning, digital post processing, and large-scale inkjet printing. With this melding of processes, students will gain a solid understanding of the relationship between analog and digital photographic methods. They will develop critical skills in process management and variability control necessary to make portfolio and gallery quality photographic images. Students do not need to supply their own cameras to take PHOTO 304 since they will have access to traditional view camera equipment. Using these simple traditional-style cameras and hand-held light meters, they will develop a foundational understanding of photographic exposure making often missed with the automation of advanced digital cameras. This knowledge is directly applicable to achieving more nuanced control of light, tone and contrast in digital as well as film photography. Students will demonstrate their mastery of various photographic processes through the production of excellent quality creative photographs. Since film-cameras do not provide an immediate visual verification of a successful image through a built-in screen, as do digital cameras, students will develop skills in the area of image pre-visualization and careful camera control so they can be confident in their aesthetic and technical decisions without the need for immediate digital feedback. Professional photographers rely on these skills for efficient and effective image making regardless of the process. Darkroom photography processes are intrinsically viable media and art forms. They are closely related historic processes such as wet-plate, albumen printing, etc. and have strong followings in the broader photography community, which can be open to students who have the appropriate darkroom-related skills. Art gallery venues provide good visibility for students who engage in this work. The College of Arts and Architecture, School of Visual Arts, maintains a safe and efficient darkroom facility especially designed to accommodate the chemical based processes students will encounter and experiment with in PHOTO 304.

Prerequisites: PHOTO 200 or PHOTO 202 or by Portfolio review.

Changes Effective Spring 2022:

- Prerequisites

PHOTO 401: Fashion Photography (3 Credits: Maximum of 6 Credits)

Old Listing Effective Through Fall 2021:

Students will learn the primary technical, aesthetic, and stylistic photographic techniques and knowledge required for the creation, presentation, and marketing of professional fashion photographs.
The course will additionally address the relevant business practices associated with the field. Other essential material covered in the course will involve student research culminating in presentation projects relating to the history, aesthetics, and ethics of fashion photography. The course features a problem based learning approach where students and instructors work collaboratively to develop five student learning-problems. These problems or projects will address the major teaching and learning topics under a variety of conditions designed to reinforce the subject matter, encourage flexibly creative thinking, and allow students to pursue the subject with greater critical depth and awareness. Like fashion itself, fashion photography is subject to constant aesthetic, stylistic, and cultural change. To address these problems practitioners need to develop an awareness of style and trends in both the fashion industry and the fashion publishing industry, which are dependent on photography for marketing and advertising. Photography additionally adds historic value as a stylistic and creative archive for these industries. Fashion photographers must have the skills and mindset necessary to constantly learn and experiment with new techniques, which keep their work technically proficient and stylistically innovative and fresh. This problem based learning approach will allow the course to remain dynamic and address, in real-time, changing issues relevant to the industry and our students.

Prerequisites: PHOTO 200 or PHOTO 202 or by Portfolio review

Changes Effective Spring 2022:
- Prerequisites

PHOTO 402: Photographic Narratives (4 Credits: Maximum of 8 Credits) (BA)
Old Listing Effective Through Fall 2021:

The development of a photographic project that leads to the creation of a handmade book. PHOTO 402 Photographic Narratives (4 per semester/maximum of 8) PHOTO 402 is a project course in photography focused on the construction of a handmade book that features a student’s photographs as the central content of that book. The course gives the student the opportunity to choose a subject and explore it through photographic means over an extended period of time, in this case, an entire semester. Emphasis is placed on the quality of photography and the organization of those photographs in a book for their display. Students will be evaluated on their abilities to understand the medium through classroom instruction. Evaluation will also be determined by a student’s imaginative capabilities through visualization and through the completion of a series of finished pieces. The prerequisite to PHOTO 402 is PHOTO 200. PHOTO 402 will be offered fall and spring semesters.

PreRequisite: PHOTO200

Changes Effective Spring 2022:
- Description
- Prerequisites

PHOTO 404: Professional Photography Capstone Seminar: Self-Marketing and Professional Presence (4 Credits)
Old Listing Effective Through Fall 2021:

PHOTO 404: Professional Photography Capstone: Self-Marketing and Professional Presence is a culminating problem based learning course where students analyze, synthesize, and organize their creative, academic, co-curricular, internship and photographic experiences to present to audiences of potential clients and employers in preparation for careers in professional photography or related fields. Trends in effective self-marketing and professional presence change over time with shifts in cultures, styles, and technologies. The Internet has given rise to global niche markets as well, which photographers often accommodate. As a result, there is no clear one-size-fits-all approach to this inconstant problem. We have chosen to apply a problem-based learning approach to this course with the intent that students will work with their instructors and peers to tailor the course learning problems to be relevant to each individual student and still meet the course learning objectives. To achieve that, in collaboration with their instructor and peers, every student will design five individualized capstone projects specifically pertinent to his or her situation. Each project will directly address at least two of the course major teaching topics. Much of the work of the capstone course will focus on reflection, refinement, and synthesis.

Prerequisites: PHOTO 300 or PHOTO 303 or by Portfolio review.

Changes Effective Spring 2022:
- Prerequisites

PHOTO 405: Creative Projects in Photography (4 Credits: Maximum of 8 Credits) (BA)
Old Listing Effective Through Fall 2021:

Special individual problems related to photographic vision. PHOTO 405 Creative Projects in Photography (4 per semester/maximum of 8) PHOTO 405 is a project course in photography designed to challenge students and engage them in photographic assignments that expand their personal and individual vision. Projects may be developed using either digital or photochemical process (or a combination of the two) and may be organized as either group or individual assignments. PHOTO 405 will be offered fall and spring semesters.

PreRequisites: PHOTO201 , PHOTO300

Changes Effective Spring 2022:
- Prerequisites

PHOTO 406: Product Photography (2 Credits)
Old Listing Effective Through Fall 2021:

This advanced level course will explore the practices of photographing products for print and product advertising. PHOTO 406 Product Photography (2) This advanced level course will introduce the practice of photographing products with a focus on advertising. The development of the photographers’ problem solving abilities, when lighting varied surfaces, will be considered. The importance of lighting for scale will be examined along with how or when to contribute to the context of a product by introducing appropriate set propping. Aesthetic and intellectual concepts of rendering of products for specific end uses will be explored. Theory will be applied and practiced by the student in a studio environment. As a practical course, lectures and studio demonstrations are major elements of the instruction. The lecture time will modify throughout the course to allow each student the flexibility to practice learned skills. Students will be responsible for scheduling individual studio time with the Integrative Arts Photo Services unit. A digital camera and a laptop computer with a copy of Adobe Photoshop installed are required.

PreRequisite: PHOTO 200

Changes Effective Spring 2022:
• Prerequisites

**PHOTO 407: Portrait Photography (2 Credits)**

Old Listing Effective Through Fall 2021:

This advanced level course investigates contemporary portrait photography and traditional and modern styles of photographic lighting. PHOTO 407 Portrait Photography (2) This advanced level course will investigate what portrait photography is and how portrait lighting evolved from the influences of early painting. Throughout the course there will be an ongoing investigation of the successes of historic, contemporary & influential photographers. Styles of photographic lighting will be explored as well as natural and artificial light sources. Why posing is important to portrait photography will be considered as well as how or when to suggest or direct a subject to acquire a pleasing pose will be examined and practiced. Theory will be applied and practiced by the student in environmental and studio locations. Through the study of character and expression, the student Portrait Photographer will introduce their style to portrait making. The course will enable the student to make intellectual and aesthetic choices when choosing appropriate equipment and technique, command the application of skillful lighting, develop sensitivities of interaction in prelude to the direction of the photo session and understand the incorporation of space or environment and it’s relationship to the individual subject. A digital camera and a laptop computer with a copy of Adobe Photoshop installed are required.

Prerequisites: PHOTO 200

Changes Effective Spring 2022:

• Prerequisites

**PHOTO 410: Photographing Motion and Athletic Events (2 Credits)**

Old Listing Effective Through Fall 2021:

A practicum in photographing sports and athletic events.

Prerequisites: PHOTO 200

Changes Effective Spring 2022:

• Description
• Prerequisites

**PLANT 200: Introduction to Agricultural Crop Growth, Form, and Function (3 Credits)**

Old Listing Effective Through Fall 2021:

About 12,000 years ago, humans began harvesting their food from the natural biological diversity that surrounded them, resulting eventually to domesticated agricultural crops. Over thousands of years farmers selected for desirable traits in crops, and thus improved the plants for agricultural purposes. Agricultural Crop Growth, Form, and Function is a required introductory course for options in the Plant Science major. This course provides fundamental information on agricultural crop growth needed for understanding content of upper level courses within the major. The major focus areas will include general crop growth and function, environmental and plant interactions in agriculture, Pests of agricultural crops, and breeding and genetics of agriculturally important crops. Upon successful completion of the course students should have a better understanding of the following topics: structural components of cells and plants; growth of tissue systems; plant interactions with their environment; physiological processes in plant growth; basic components of plant genetics; and the impact of human selection, genetic engineering, and climate modifications on plant development and food production.

Prerequisites: BIO 110 AND SOILS 101

Changes Effective Spring 2022:

• Add GN Designation
• Prerequisites

**PLSC 2: American Public Policy (3 Credits) (BA)**

Old Listing Effective Through Fall 2021:

Examination of selected areas of public policy in America. Analysis of policy content, alternatives, and impact.

Changes Effective Spring 2022:

• Number to 202
• Add GS Designation
• Add US Designation
• Abbreviated Title
• Description
• Cross-Listing
• Prerequisites

**PPEM 456: From the Tame to the Wild: The Environments and Ecologies of Microbes (3 Credits)**

Old Listing Effective Through Fall 2021:

This is a lecture based course that will broaden students' understanding of the diverse biotic and abiotic interactions relevant to microbes in diverse environments. In particular, this course focuses on ecological interactions between microbes in a common environment or between microbes and their eukaryotic hosts (e.g. plants and animals). In addition to learning about ecological theory as it applies to microbes, students will learn about historical and contemporary approaches to studying microbes in different environments. This will include substantial focus on cutting edge '-omics', microscopic, and direct functional analytical approaches to understand both the distribution of microbial taxa (i.e. who's there) and what processes they carry out in their natural environments (i.e. what they're doing). In the latter portions of the class, students will apply the theory and techniques to understanding the ecology of specific environments, including environmental, agricultural, and food environments. The objectives of this course include: provide students with a firm understanding of contemporary microbial ecology and environmental microbiology; conceptually link processes that occur in disparate environments, such as plant roots, termite guts, and cheese rinds; provide students with the language to discuss these concepts and processes; make students familiar with and conversant in '-omic' and other cutting edge functional techniques used to study microbes in their natural environments; provide select examples of how humans take advantage of microbial ecology for our benefit (such as suppression of pathogens or promotion of waste decomposition). The course will conclude with a research and writing project where students will review the microbial ecology of a specific environment. This course expects students to have an understanding of basic microbiological concepts.

Prerequisites: Prerequisites: MICRB 201; MICRB 201H

Changes Effective Spring 2022:
PUBPL 201: Introduction to Homeland Security (3 Credits)
Old Listing Effective Through Fall 2021:

An introduction to homeland security, and defense, with a focus on policy, legal issues, organization, and administration. PUBPL 201 Introduction to Homeland Security (3) Introduction to Homeland Security provides a baseline of common knowledge for understanding the nature of homeland security. The course achieves this goal by focusing on homeland security, the motivation and nature of terrorists, the policies established by governments, pertinent governmental plans to meet homeland security goals, who the key players are in homeland security, and the relevant legal issues framing efforts to defend the nation’s security. As an introduction to the broad area of study, this course serves as a basis for specialized study such as critical infrastructure protection, emergency response management (including natural disasters), border security, security administration, national security, and terrorism. Understanding key principles of homeland security will be expected from students who complete this course.

Changes Effective Spring 2022:

- Cross-Listing

PUBPL 306: Introduction to Crisis and Emergency Management (3 Credits)
Old Listing Effective Through Fall 2021:

An introduction to emergency management in mitigating, preparing for, responding to and recovering from hazards. PUBPL 306 Introduction to Crisis and Emergency Management (3) The course offers an overview of the field of emergency management in dealing with routine emergencies, crises or disasters, and mega disasters. Specific topics emphasized include: the roles and interactions of the public, nonprofit, and private sectors in emergency management; the legal and organizational structure of the national emergency management system; and the problems and policy issues associated with emergency management. This is done by examining the four phases of emergency management: mitigation, preparedness, response and recovery as they relate to resilience, the attempt to; and an overview, including case studies, of various human-made and, technological disasters as well as disasters related to natural hazards. Emergency management as conducted within the U.S. integrated emergency management system (IEMS) by local state and national emergency management agencies, not terrorist incidents, is the course focus rather than the emerging field of homeland security and terrorist events.

Changes Effective Spring 2022:

- Cross-Listing

RPTM 140: Outdoor School Field Experience (2 Credits: Maximum of 6 Credits)
Old Listing Effective Through Fall 2021:

To provide students with educational leadership skills and teaching opportunities working with children in an outdoor residential camp setting. RPTM (SCIED) 140 Outdoor School Field Experience (2 per semester/maximum of 6) The Outdoor School Field Experience course allows students to observe, learn, and apply leadership techniques and teaching methodologies in an experiential education program that occurs off campus. This field-based experience provides students with numerous opportunities to practice and refine their leadership and teaching skills through active participation in one week of Outdoor School Field Experience, a residential outdoor/environmental education program.

Cross-Listed Courses: SCIED 140

Changes Effective Spring 2022:

- Add GHW Designation
- Abbreviated Title
- Description

RPTM 330: Adventure-Based Program Leadership (3 Credits)
Old Listing Effective Through Fall 2021:

Both theoretical and experiential components are included as the role of the reader in outdoor adventure programs is examined. RPTM 330 Adventure-Based Program Leadership (3)Both theoretical and experiential components are included as the role of the leader in adventure-based programs is examined. This course will focus on the philosophy, ethics, and current practices in the area of adventure-based programming. Focus of instruction will be upon program design, developing skills for facilitating personal growth and providing leadership for outdoor pursuits including rock climbing, canoeing, teambuilding, hiking and backpacking. Main topics to be covered: *Leadership aspects of teambuilding: spotting, the purpose of teambuilding initiatives, debriefing *Leadership aspects of rock climbing: belaying, safety, climbing skills, a look at top rope set up *Leadership aspects of whitewater canoeing: preparation, reading the river, rope rescues, righting a capsized canoe, paddling skills *Leadership aspects of backpacking: leave no trace environmental ethics, how to pack and prepare, 2-night backpacking trip to Black Moshannon State Park, planning a trip, reading a topographic map, acquiring a permit RPTM 330 is one of the selections for RPTM majors in the adventure-based programming emphasis of the Outdoor Recreation Option. The course is open to students from all majors.

Changes Effective Spring 2022:

- Add Travel Component
- Abbreviated Title
- Description
Your Information: What is the WCP? These are campus wide 90 minute, personal meetings with course instructors (twice per semester). For small group dialogue sessions (three times per semester), and performance goal-setting with instructors and WCP staff (weekly), that a student takes the class, and consists of a combined approach each semester. The method of evaluation is standard for each semester they have successfully accomplished the learning objectives set forth for interpretation skills learned during the first two semesters in a way that only if they can clearly articulate the advanced facilitation/observation/work as facilitators. Semester 3: Students stay on for a third semester personal racial and cultural identities and how these enter into their own personal cultural identity with more advanced facilitation their learning involves integrating a more advanced understanding of developing their social and emotional intelligence as the foundation for implementing successful conversational interventions. The core of their learning involves integrating a more advanced understanding of their own personal cultural identity with more advanced facilitation techniques. In other words, in order to master small group facilitation and group process, students need to explore the nuances of their own personal racial and cultural identities and how these enter into their work as facilitators. Semester 3: Students stay on for a third semester only if they can clearly articulate the advanced facilitation/observation/interpretation skills learned during the first two semesters in a way that allows them to assume the role of a peer mentor with new facilitators. A student is only invited back for subsequent semesters of SOC 469 if they have successfully accomplished the learning objectives set forth for each semester. The method of evaluation is standard for each semester that a student takes the class, and consists of a combined approach that includes: 1) live observations via an audio/video monitoring system and performance goal-setting with instructors and WCP staff (weekly), 2) self-evaluation and personal goal-setting through review of recorded small group dialogue sessions (three times per semester), and 3) personal meetings with course instructors (twice per semester). For Your Information: What is the WCP? These are campus wide 90 minute, peer facilitated small groups where trained undergraduate students (former SOC 119 facilitators) help participants explore their personal stories, views, biases and roles in race relations using a version of the Socratic Method. These inquiry-based sessions are designed to discuss the true nature of race relations face to face in an ideologically neutral environment. The conversations are extremely popular with participants (85 percent rate them as valuable and worthwhile) and the number offered each year has grown from 140 to over 800 in just six years. Currently twenty facilitators work for the project, all Penn State undergraduate students. The WCP Mission Statement: The mission of the RRP is to create an ideologically neutral environment for dialogue where individuals can voice their true concerns about race relations and begin to address these concerns in a productive and meaningful way. WCP Philosophy: Our guiding assumption is that the articulation of one's viewpoint on an issue is the beginning of greater understanding and knowledge of that subject. And the experience of doing so with others in a group setting creates a kind of synergy that advances critical thinking as well as bridge building.

Prerequisites: SOC 119 and SOC 300

Changes Effective Spring 2022:
- Add GS Designation
- Title
- Abbreviated Title
- Prerequisites

SPAN 100: Intermediate Grammar and Composition (3 Credits) (BA)

An intermediate level grammar review that also incorporates directed and original composition exercises.

Prerequisites: SPAN 003 or placement

Changes Effective Spring 2022:
- Prerequisites

SPAN 100B: Intermediate Grammar and Composition for Students in Medical-Related Fields (3 Credits)

Intermediate Grammar and Composition for Students in Medical-Related Fields. SPAN 100B Intermediate Grammar and Composition for Students in Medical-Related Fields (3) The main goals of the course are to help students develop their competence in using medical terminology in Spanish and to become familiar with the cultural aspects in the health care of Latinos/Hispanics in the United States. In addition, the course will review intermediate level Spanish-language grammar and will provide structure to improve students receptive (listening and reading) and productive (speaking and writing) skills needed for this specialized vocabulary. During the semester students will learn and practice health terminology in Spanish, and they will apply the specialized vocabulary through case scenarios, noticias (news) and readings. Participants will be exposed to Spanish from the first day and are expected to stay up-to-date with the current health news as it relates to the Hispanic/Latino population of the United States. The course is intended for those who are beyond the basic level of Spanish (must have taken Span 003), but participants are not expected to be fluent speakers.

Prerequisites: SPAN 003
Changes Effective Spring 2022:

- Prerequisites

**SPAN 100C: Intermediate Grammar and Composition for Students in Communication-related Fields (3 Credits)**
Old Listing Effective Through Fall 2021:

This course focused on grammar and the media environment replaces Spanish 100 for students going into Communication majors. SPAN 100C Intermediate Grammar and Composition for Students in Communication-related Fields (Spanish in the Media) is an online content-based course for Spanish majors aimed to develop communication skills through a focus on mass media in Hispanic culture. This online course is a perfect match for double majors in Spanish and Media Advertising/Public Relations, Media Studies, Journalism, etc). This course is restricted to students who are Communication majors or pre-majors. Completing this course achieves 15th credit level proficiency and replaces SPAN 100.

Prerequisites: SPAN 003 or placement

Changes Effective Spring 2022:

- Prerequisites

**SPAN 110: Intermediate Conversation (3 Credits) (BA)**
Old Listing Effective Through Fall 2021:

Practice in oral expression in Spanish, with emphasis on aural comprehension, idiomatic usage, and fluency. Use of journalistic materials.

Prerequisites: SPAN 003 or placement

Changes Effective Spring 2022:

- Prerequisites

**SPAN 120: Intermediate Reading (3 Credits) (BA)**
Old Listing Effective Through Fall 2021:

Emphasis on rapid reading comprehension. Selected readings from contemporary Hispanic literature, social sciences, current events, etc.

Prerequisites: SPAN 003 or placement

Changes Effective Spring 2022:

- Prerequisites

**SPAN 300: Advanced Grammar and Composition Through Reading (3 Credits) (BA)**
Old Listing Effective Through Fall 2021:

Development of advanced grammar and composition skills through reading texts by native speakers and adapting their techniques for original compositions.

Prerequisites: SPAN 200

Changes Effective Spring 2022:

- Prerequisites

**SPAN 410: Advanced Oral Expression and Communication (3 Credits) (BA)**
Old Listing Effective Through Fall 2021:

Emphasis on achieving practical command of spoken Spanish and the comprehension of native speech. Use of journalistic materials.

Prerequisites: SPAN 200

Changes Effective Spring 2022:

- Prerequisites

**SPAN 412: Translation (3 Credits)**
Old Listing Effective Through Fall 2021:

Techniques of written translation from Spanish to English and vice versa, particularly for business, literature, and social work. Students will learn translation theory and best practices, as well as strategies for overcoming the most common translation problems in Spanish-English translation. Some time will be spent on a review of grammar issues that most commonly result in errors in translation. Students will also learn how to deal with colloquial language and cultural references in a Spanish source text, and will be taught to consider the function of dialect, style and register in a source text and their impact in translation. In the final weeks of the semester, the focus shifts from the theoretical to the practical, as students apply their skills to the translation in advertising, scientific and technical texts, documents, and literary and artistic translation.

Prerequisites: SPAN 200

Changes Effective Spring 2022:

- Prerequisites

**SPAN 417: How Languages Are Learned (3 Credits)**
Old Listing Effective Through Fall 2021:

This class is a linguistics course that focuses on language acquisition in children and adults. Linguistics is the scientific study of language and its structure, and linguistic inquiry focuses on various levels of language: phonology examines the sounds of language, morphology examines the structure of words (e.g., root words and their inflections), and syntax focuses on the structure of phrases and sentences. Using the tools of phonology, morphology, and syntax, this course will address the following questions. What is unique about human language? How is language learned in infancy? How do humans learn additional languages after they have learned their first language? How does bilingual language development compare to monolingual language development? Can knowing more than one language actually be detrimental? What are the different languages spoken by bilinguals in the Spanish-speaking world? What sorts of bilingual education programs are there in the Spanish-speaking world, including in the U.S.? By answering these questions, this course introduces students to bilingualism and bilingual language acquisition.

Prerequisites: SPAN 215

Changes Effective Spring 2022:

- Prerequisites

**SPAN 418: The Evolution of Spanish (3 Credits)**
Old Listing Effective Through Fall 2021:
The emergence and development of the sounds and forms of Spanish.

Prerequisites: SPAN 200, SPAN 215

Changes Effective Spring 2022:

- Prerequisites

SPAN 439: Don Quijote (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Thorough study of the masterpiece, including its sources, genesis, language, style, success, and influence.

Prerequisites: SPAN 253W

Changes Effective Spring 2022:

- Prerequisites

SPAN 440: Teaching of Romance Languages (3 Credits)
Old Listing Effective Through Fall 2021:

Theories of second language acquisition. Current classroom practices in the teaching of Romance languages.

Prerequisites: SPAN 200

Changes Effective Spring 2022:

- Prerequisites

SPAN 470: Youth Cultures in Latin(a/o) America (3 Credits)
Old Listing Effective Through Fall 2021:

Young people have been at the center of political and cultural revolutions around the world and throughout history. For example, revolutions, urban movements, ethnic/racial pride, LGBTQ+, feminist movements, music basaars, DJs and rave parties, and “barras de futbol” are only some of the manifestations associated with young people in Latin(a/o) American literature, film, music, and journalism. Nevertheless, the concept of “youth” as an academic category only appeared in the 1960's. In this course, we will study different manifestations of youth cultures in the Hemispheric Americas, paying special attention to the Latinx communities in the U.S. and Latin America, since the 1960's and until the contemporary moment. The key question that will guide us is: How does each of these literary, artistic, and media representations of youth enter into dialogue with political events in which young people have been at the center of efforts to bring about political changes in the U.S. Latinx communities and Latin American? Using short fiction, film and documentaries, songs, blogs, and other cultural materials (YouTube clips, images, graffiti, etc.), we will identify and compare different youth cultures in Latinx communities in the U.S. and Latin America in terms of their productions, representations, and effects in the public sphere. We will enrich our analysis of primary materials with theoretical and critical readings that will help us to contextualize the different manifestations in our study.

Cross-Listed Courses: LTNST 470

Prerequisites: SPAN 253W

Changes Effective Spring 2022:

- Prerequisites

SPAN 472: The Contemporary Spanish American Novel (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

The regionalist and social novel since 1910, together with the social background.

Prerequisites: SPAN 253W

Changes Effective Spring 2022:

- Prerequisites

SPAN 474: Many Mexicos (3 Credits)
Old Listing Effective Through Fall 2021:

Overview of Mexican literature, culture and history from pre-colonial period to present.

Prerequisites: SPAN 253W

Changes Effective Spring 2022:

- Prerequisites

SPAN 476: Masterpieces of Spanish American Literature (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Reading, analysis, and discussion of selected major works representative of Spanish American prose and poetry.

Prerequisites: SPAN 253W

Changes Effective Spring 2022:

- Prerequisites

SPAN 479: U.S. Latina/o Culture en Espanol (3 Credits) (US)
Old Listing Effective Through Fall 2021:

This course is conducted in Spanish and will analyze some of the central themes that shape the diverse Latina/o experiences in the United States. Some of the main topics that the course will address include: the politics of labeling; definitions of displacements; the politics of language; imaginary homelands and geographic spaces; and conceptualizations of race, gender, and sexuality. These themes will be seen through the lens of Latina/o literature and film. The main objective of this course is to help students think critically about the conceptual, theoretical, historical, and social issues that inform the Latina/o experience in the United States.

Cross-Listed Courses: LTNST 479

Prerequisites: SPAN 253W

Changes Effective Spring 2022:

- Prerequisites

SPAN 488: War, Revolution, and the Struggles for Modernity: Spain 1898-1939 (3 Credits)
Old Listing Effective Through Fall 2021:

This course, conducted in Spanish, examines Spanish literature from 1898 to 1939.

Prerequisites: SPAN 253W
Changes Effective Spring 2022:

• Prerequisites

SPAN 490: Masterpieces of Spanish Prose (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Reading, analysis, and discussion of selected masterpieces of Spanish novels, short stories, etc.
Prerequisites: SPAN 253W

Changes Effective Spring 2022:

• Prerequisites

SPAN 491: Masterpieces of Spanish Drama and Poetry (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

Reading, analysis, and discussion of selected masterpieces of Spanish drama and poetry.

Changes Effective Spring 2022:

• Add Prerequisites

SPLED 395: **SPECIAL TOPICS**
Old Listing Effective Through Fall 2021:

Observations of exceptional persons and techniques used by their teachers in a variety of settings, e.g., school, daycare, vocational. *The course seeks to develop skills in observing behavior, monitoring another’s progress, and evaluating data. Students will also create records of their observations. Because it is a writing intensive course, 395 also provides students with opportunities to practice and refine the necessary writing skills of a special educator. Students observe a series of different classroom settings and analyze these experiences with their peers.*

Prerequisite: EDPSY101. PA Act 34 clearance required. In addition, non-Pennsylvania residents must provide evidence of an FBI background information check. (Forms: 228 Chambers)

Changes Effective Spring 2022:

• Prerequisites
• Corequisites
• Recommended Preparation

STAT 481: Intermediate SAS for Data Management (1 Credit)
Old Listing Effective Through Fall 2021:

Intermediate SAS for data management. STAT 481 Intermediate SAS for Data Management (1) STAT 481 builds on the skills and tools learned in STAT 480 to provide intermediate level ability to use the Statistical Analysis System (SAS). It covers additional capability and major uses of the program, such as error checking, report generation, date and time processing, random number generation, and production of presentation quality output for graphs and tables. Other possible topics include advanced merging, PROC SQL, importing and exporting data sets, SAS GRAPH, and the Output Delivery System.

Prerequisites: Enforced Prerequisite at Enrollment: STAT 480

Changes Effective Spring 2022:

• Remove Enforced Prerequisites
• Concurrents

STAT 482: Advanced Topics in SAS (1 Credit)
Old Listing Effective Through Fall 2021:

Advanced statistical procedures in SAS, including ANOVA, GLM, CORR, REG, MANOVA, FACTOR, DISCRIM, LOGISTIC, MIXED, GRAPH, EXPORT, and SQL. STAT 482 Advanced Topics in SAS (1) STAT 482 builds on the skills and tools learned in STAT 480 and STAT 481 to provide advanced programming ability to use the Statistical Analysis System (SAS). It provides a survey of the major statistical analysis procedures, such as the TTEST, GLM, REG, MANOVA, FACTOR, DISCRIM, LOGISTIC, and MIXED procedures. Other topics include using the TABULATE procedure to create reports, generating random numbers, exporting data from SAS data sets, using the SAS/Graph module to produce presentation quality graphs, using the SQL procedure to query and combine data tables, and using macros to write more efficient SAS programs. Credit can not be received for both STAT 482 and STAT 480/481/483.

Enforced Prerequisite at Enrollment: STAT 480 and STAT 481

Changes Effective Spring 2022:

• Remove Prerequisites
• Concurrents

THEA 270: Introduction to Lighting Design (3 Credits) (BA)
Old Listing Effective Through Fall 2021:

This course will focus on helping each student to develop a design process that takes them from script to stage. THEA 270 Introduction to Lighting Design (3 per semester/maximum of 99)(BA) This course meets the Bachelor of Arts degree requirements. Introduction to Lighting Design will focus on helping each student to develop a design process that takes him or her from script to stage. Students will study each step of the lighting design process and use these steps to create the design for a fictional production. Students will also have the opportunity to hone their design skills with a series of practical projects that will allow them to experiment with intangible qualities of light. This class will use a traditional proscenium presentation for the development of these techniques.

Changes Effective Spring 2022:

• Abbreviated Title
• Description
• Add Prerequisites
• Add Recommended Preparation

THEA 459: Theatre Portfolio & Business Practices (2 Credits) (BA)
Old Listing Effective Through Fall 2021:

Life as a professional theatre designer. Contracts, taxes, record-keeping, resumes, portfolios, interviewing, job hunting, and legal considerations. THEA 459 Theatre Portfolio & Business Practices (2) (BA) This course meets the Bachelor of Arts degree requirements. This course is designed to prepare the student of design for life as a professional theatre designer. There are many challenges to working in the business of design, arising primarily from the fact that most theatre designers are self-employed. It's not enough to be a talented designer; one must also be a savvy business person. Contracts, taxes, recordkeeping, resumes, portfolios, interviewing, job hunting, and legal considerations will all be addressed, as they relate to life as a freelance designer. Special attention...
will be paid to the assembly of a professional portfolio, which is the centerpiece of any designers’ work.

Prerequisites: THEA 450 or THEA 460 or THEA 470 or THEA 480 or THEA 485

Changes Effective Spring 2022:

- Title
- Credits
- Description
- Prerequisites

**WFS 310: Wildlife and Fisheries Measurements**

Old Listing Effective Through Fall 2021:

Introduction to field and laboratory approaches for collecting, analyzing, and communicating data regarding wildlife and fish populations and their habitats. W F S 310 Wildlife and Fisheries Measurements (3) This course will introduce students to basic measurements used to describe fish and wildlife populations and their habitats. Laboratory exercises will stress sampling approaches and implementation, common techniques for collecting information about amphibians, fish, birds, and mammals and their respective habitats, mapping and orienteering, and methods for summarizing and reporting findings.

Prerequisite: or concurrent: W F S209, STAT 240

Changes Effective Spring 2022:

- Abbreviated Title
- Description
- Concurrents

**WFS 452: Ichthyology**

Old Listing Effective Through Fall 2021:

Study of the structure, taxonomy, systematics, and natural history of freshwater and marine fishes.

Prerequisite: BIOL 110, BIOL 240W

Changes Effective Spring 2022:

- Description
- Prerequisites

**WFS 453: Ichthyology Laboratory**

Old Listing Effective Through Fall 2021:

Identification of fishes, major fish families, use of keys.

Prerequisite: BIOL 110, BIOL 240W. Prerequisite or concurrent: W F S452

Changes Effective Spring 2022:

- Description
- Prerequisites
- Recommended Preparation

**WFS 460: Wildlife Behavior**

Old Listing Effective Through Fall 2021:

Scholarly discussion and critique of history, concepts, and application of wildlife behavioral concepts to conservation issues. The course will give an in-depth coverage of concepts related to an understanding of wildlife behavior. Particular focus will be given to a discussion, critique, and development of these concepts and their application to contemporary issues in conservation and natural resource management of wildlife because there is a general lack of understanding of behavior by conservationists and natural resource managers.

Prerequisite: at least 6 credits in general wildlife or biology

Changes Effective Spring 2022:

- Prerequisites

**WFS 461: Animal Welfare: Science and Ethics**

Old Listing Effective Through Fall 2021:

Understanding animal welfare and well-being in farmed, wild and captive animals, and the implications for policy, legislation and conservation. Whether we interact with farmed animals, wild animals in natural settings, or captive reared wild animals bred for research or for reintroductions, there is a growing interest in their welfare. What do animals need to manifest good welfare and wellbeing? To find answers we need to devise experiments that determine what animals want and what they find aversive. This allows us to find ways to decrease fear and stress associated with handling and captivity. This course covers the practical issues of animal welfare; animal ethics in wildlife management, conservation, and agriculture; and the use of animals in research. The course provides a framework with which to consider philosophical positions on animal use (covering aspects such as rights-based views versus utilitarian views) and the history of ethical debate over the interactions that humans have with other species. The course also addresses the current social, economic, and legal developments related to animal welfare and animal ethics.

Prerequisite: BIOL 110 or W F S 209

Changes Effective Spring 2022:

- Prerequisites

**WFS 462: Amphibians and Reptiles**

Old Listing Effective Through Fall 2021:

Critique of global evolution and conservation of amphibians and reptiles, focusing on Northeastern U.S. natural history and ecology. W F S 462 Amphibians and Reptiles (3) This course explores the evolution, ecology, and conservation of amphibians and reptiles. This course is open to all students with some background in biology. The objectives of this course are for students to 1) describe the evolution, anatomy, reproduction, and physiology of amphibians and reptiles, 2) place contemporary research in the context of the natural history traits and behavioral ecology of herps, and 3) critically evaluate the application of these concepts to natural resource management for salamander, frog, turtle, lizard, and snake species and populations. Evaluation methods include minute papers and exams.

Prerequisite: 5th semester standing or higher and 6 credits of general biology

Changes Effective Spring 2022:

- Abbreviated Title
- Description

**WILDL 106: Wildlife Management Techniques**

Old Listing Effective Through Fall 2021:
Overview of laboratory and field techniques for natural resource research and management. This course is an overview of laboratory and field techniques for wildlife and natural resource research and management. The first third of the course prepares students to become proficient in land navigation by emphasizing topographical map, compass and Global Positioning System (GPS) use and basic surveying techniques and measurements. The second third of the course covers urban and suburban wildlife management, including techniques for encouraging native wildlife and discouraging human-wildlife conflict. The final third of the course addresses mark and recapture techniques, censusing methods and population estimation, and wildlife telemetry methods. In-field data collection, data entry, and management are emphasized throughout the course. This course satisfies the DuBois campus first year engagement (FYE) by introducing the student to campus, University, and professional resources.

Prerequisite: WILDL 101

Changes Effective Spring 2022:
- Description
- Remove Prerequisites

WILDL 106T: Wildlife Management Techniques (Honors)
Old Listing Effective Through Fall 2021:

Overview of laboratory and field techniques for natural resource research and management. This course is an overview of laboratory and field techniques for wildlife and natural resource research and management. The first third of the course prepares students to become proficient in land navigation by emphasizing topographical map, compass and Global Positioning System (GPS) use and basic surveying techniques and measurements. The second third of the course covers urban and suburban wildlife management, including techniques for encouraging native wildlife and discouraging human-wildlife conflict. The final third of the course addresses mark and recapture techniques, censusing methods and population estimation, and wildlife telemetry methods. In-field data collection, data entry, and management are emphasized throughout the course. This course satisfies the DuBois campus first year engagement (FYE) by introducing the student to campus, University, and professional resources. The honors section of the course includes an in-depth exploration of a survey technique or method or additional field experience(s). The activities for the honors section vary by semester and are related to the interests of the students enrolled in the course. Previous activities have included participating in a night-time owl playback survey and generating transects for a deer pellet count.

Prerequisites: WILDL 101

Changes Effective Spring 2022:
- Description
- Remove Prerequisites

Program Changes

Aerospace Engineering, B.S. (AERSP_BS)
Effective Summer 2021:
- Changed Requirements for the Major from 113-115 credits to 111-117 credits
- Decreased Prescribed Courses from 72 credits to 69-70 credits
- Changed MATH 220 from 2 credits to 2-3 credits in Prescribed Courses
- Removed MATH 250 from Prescribed Courses
- Increased Additional Courses from 29-31 credits to 32-35 credits
- Removed AERSP 440 from Additional Courses
- Added AERSP 424 to Additional Courses
- Added MATH 250 and MATH 251 to Additional Courses

Effective Spring 2022:
- Added new Integrated Bachelor of Science in Aerospace Engineering and Master of International Affairs at University Park campus

African American Studies, B.A. (AAST_BA)
Effective Summer 2021:
- Added new Integrated B.A. in African American Studies and M.P.P. in Public Policy at University Park campus

Arts Administration, B.A. (Behrend, University College) (ARTSA_BA, ARAUC_BA)
Effective June 7, 2021:
- Enrollment Hold implemented; program not accepting new students

Effective Fall 2021:
- Program phased out at Behrend College

Behavioral Finance, Certificate (BEHFIN_UCT)
Effective Spring 2022:
- New certificate added

Biobehavioral Health, B.S. (Health and Human Development, Capital, University College) (BBH_BS, BBHCA_BS, BBHUC_BS)
Effective Fall 2021:
- Added 0-1 Elective credits
- Removed BIOL 479, HDFS 250H from Additional Courses
- Changed FDSC 407 from 2 to 3 credits in Additional Courses
- Removed "Must include at least 6 credits at the 400-level" requirement from Supporting Courses

Biological Engineering, B.S. (BE_BS)
Effective Summer 2021:
- Decreased the Requirements for the Degree from 129 credits to 128 credits
- Changed General Education credits included in Requirements for the Major from 27-30 credits to 27 credits
- Decreased Requirements for the Major from 111-114 credits to 110-111 credits
- Increased Common Requirements for the Major (All Options) from 75 credits to 77 credits
- Decreased Prescribed Courses for the Major from 68 credits to 61 credits
- Removed MATH 251 from Prescribed Courses for the Major
- Moved ENGL 15 from Prescribed Courses for the Major to Additional Courses for the Major
- Increased Additional Courses for the Major from 7 credits to 16 credits
- Removed 1 credit of First-Year Seminar from Additional Courses for the Major
• Added MATH 250, MATH 252, IE 424, STAT 240, STAT 250, STAT/MATH 318, STAT 401, STAT/MATH 418 to Additional Courses for the Major
• Decreased Total Requirements for the Option from 36-39 credits to 33-34 credits
• Decreased Agricultural Engineering Option from 36 credits to 33 credits
• Removed IE 424 and STAT 401 from Agricultural Engineering Option
• Decreased Food and Biological Processing Engineering Option from 39 credits to 33-34 credits
• Decreased Food and Biological Processing Engineering Option to Additional Courses in the Food and Biological Processing Engineering Option
• Removed NUTR 100 and IE 424 from the Food and Biological Processing Engineering Option
• Added CHEM 210, BMB 251, BME 201 to Additional Course in the Food and Biological Processing Engineering Option
• Decreased Natural Resources Engineering Option from 36 credits to 33 credits
• Remove Additional Courses section from the Natural Resources Engineering Option

Business, B.S. (Abington, Altoona, Berks, Intercollege, University College) (BSBAB_BS, BSBAL_BS, BSBBK_BS, BSBI_C_BS, BSBUC_BS)

Effective Fall 2021:
• Added Accounting Option to DuBois campus and Shenango campus
• Added new Business Analytics Option to Abington, Altoona, Beaver, Berks, Brandywine, DuBois, Greater Allegheny, Hazleton, Lehigh Valley, New Kensington, Schuylkill, Scranton, Wilkes-Barre, and York campuses
• Increased Requirements for the Major from 77 credits to 80 credits
• Changed General Education credits included in Requirements for the Major from 12 credits to 15 credits
• Increased Common Requirements for the Major (All Options) from 59 credits to 62 credits
• Added ENGL 15 and ENGL 30H to Additional Courses for the Major
• Moved ACCTG 405 from Additional Courses to Prescribed Courses in the Accounting Option
• Removed FINSV 405 from Additional Courses in the Accounting Option
• Moved ACCTG 405 from Additional Courses to Prescribed in the Financial Services Option
• Removed FINSV 405 from Additional Courses in the Financial Services Option

Effective Spring 2022:
• Added new Integrated B.S in Communications Arts and Sciences and Master of Public Policy at University Park campus

Effective Summer 2021:
• Added new Integrated B.A in Communication Arts and Sciences and M.A. in Media Studies at University Park campus

Effective Summer 2021:
• Added new Integrated B.A in Communication Arts and Sciences and Master of Public Policy at University Park campus

Effective Fall 2021:
• Added new Integrated B.S in Computer Engineering and M.I.A. in International Affairs at University Park campus

Effective Fall 2021:
• Added new Integrated B.S in Computer Science and M.A. in Media Studies at University Park campus

Effective Fall 2021:
• Increased Prescribed Courses from 59 credits to 62 credits
• Moved MATH 318/STAT 318 from Additional Courses to Prescribed Courses
• Decreased Additional Courses from 18 credits to 15 credits
• Removed STAT 301 from Additional Courses
• Revised Additional Courses section
• Added CMPSC 421, CMPSC 445, MATH 410, MATH 448, MATH 485 to Additional Courses
• Removed CMPSC 426 from Additional Courses

Effective Fall 2021:
• Changed the Requirements for the Major from 73 credits to 76 credits
• Changed General Education credits included in Requirements for the Major from 12 credits to 15 credits
• Decreased Prescribed Courses from 49 credits to 46 credits
• Added MGMT 457W to Prescribed Courses
• Removed MGMT 426 and MGMT 427W from Prescribed Courses
• Increased Additional Courses from 14 credits to 20 credits
• Added ENGL 15, ENGL 30H, ENGL 137H, ESL 15, and MGMT 427 to Additional Courses

Effective Summer 2021:
• Decreased Electives from 24-27 credits to 18-22 credits
• Changed Requirements for the Major from 49 credits to 48-49 credits
• Changed General Education credits included in Requirements for the Major from 12-15 credits to 6-10 credits
• Revised Prescribed Courses from 34 credits to 33-34 credits
• Changed SOC 119 to SOC 119N in Prescribed Courses
• Changed the credits for SOC 119N from 4 credits to 3-4 credits in Prescribed Courses

Effective Summer 2021:
• Added new Integrated B.A in Communication Arts and Sciences and Master of Public Policy at University Park campus
Criminal Justice, B.S. (Abington, Altoona, Berks, University College) (CJSAB_BS, CJBS_BS, CJSBK_BS, CRMUC_BS)
Effective Summer 2021:
• Decrease Electives from 24-27 credits to 18-22 credits
• Changed Requirements for the Major from 61 credits to 60-61 credits
• Changed General Education credits included in Requirements for the Major from 10-13 credits to 4-7 credits
• Revised Prescribed Courses from 34 credits to 33-34 credits
• Changed the credits for SOC 119 to SOC 119N in Prescribed Courses

Criminology, B.A. (CRMBBA_BA)
Effective Summer 2021:
• Added new Integrated B.A. in Criminology and M.P.S. in Criminal Justice Policy and Administration at University Park campus
• Added new Integrated B.A. in Criminology and M.I.A. in International Affairs at University Park campus

Criminology, B.S. (CRMBS_BS)
Effective Summer 2021:
• Added new Integrated B.S. in Criminology and M.P.S. in Criminal Justice Policy and Administration at University Park campus
• Added new Integrated B.S. in Criminology and M.I.A. in International Affairs at University Park campus

Cybersecurity Analytics and Operations, B.S. (Information Sciences and Technology, Abington, Altoona, Berks, Capital, University College) (CYAOP_BS, CAOWC_BS, CAOAB_BS, CAOAL_BS, CAOBK_BS, CAOCA_BS, CAOUC_BS)
Effective Fall 2021:
• Added program to Penn State Abington, the Abington College
• Revised Entrance to Major Requirements
• Revised total requirements for degree completion from 126 credits to 123 credits
• Decreased Requirements for the Major from 99 credits to 87 credits
• Changed General Education credits included in Requirements for the Major from 21 credits to 12 credits
• Moved CYBER 100S, IST 140, IST 242, IST 261, MATH 110, STAT 200 from Prescribed Courses to Additional Courses
• Removed CAS 100 and SRA 472 from Prescribed Courses
• Added CYBER 100, IST 140, CMPSC 121, CMPSC 131, CMPSC 122, CMPSC 132, IST 256, IST 361, MATH 140, and SCM 200 to Additional Courses
• Removed ENGL 15 and ENGL 30 from Additional Courses
• Decreased Supporting Courses and Related Areas from 12 credits to 9 credits

Development and Sustainability in Africa, Certificate (DSAFR_UCT)
Effective Fall 2020:
• New certificate added

Digital Multimedia Design, B.Des. (DIGMD_BDES)
Effective Summer 2021:
• Added DART 202 and HCDD 113 to Prescribed Courses
• Removed ART 201 and IST 140 from Prescribed Courses
• Added AA 121, ART 1, ART 30, COMM 282, COMM 296, COMM/IST 310, COMM 346, COMM 495, COMM 496, DART 100, DART 204, DART 205, DART 206, DART 296, DART 297, DART 300, DART 495, DART 496, DART 497, GD 110, GD 210, HCDD 264, IST 140, IST 240, IST 256, and IST 402 to Additional Courses
• Removed ART 203, ART 204, ART 302, COMM 428E, COMM 469, COMM 481, IST 242, and IST 413 from Additional Courses

Disability Studies, Minor (DBLTY_UMNR)
Effective Summer 2021:
• Revised Minor Description
• Removed LA 495 from Additional Courses
• Added ENGL 496 to Additional Courses

Dispute Management and Resolution, Minor (DMR_UMNR)
Effective Fall 2021:
• Revised Program Description
• Removed LER 100 from Prescribed Courses
• Added LER 304 to Prescribed Courses
• Removed CRIM/CRIMJ/WMNST 423, HDFS 311, HDFS 414, PLSC 14, PLSC 418, PLSC 437, PSYCH 423, PSYCH 484, SOC 119, SOC 403, SOC 432, and SOC 455 from Additional Courses
• Added CAS/WMNST 455, 426W, LER 201, 459, and 465 to Additional Courses

Economics, B.A. (ECLBA_BA)
Effective Summer 2021:
• Added new Integrated B.A. in Economics and M.A. in Economics at University Park campus

Economics, B.S. (ECLBS_BS)
Effective Summer 2021:
• Added new Integrated B.S. in Economics and M.A. in Economics at University Park campus

Electrical Engineering, B.S. (Engineering) (EE_BS)
Effective Summer 2021:
• Changed Requirements for the Major from 109-112 to 109-111
• Removed PHYS 410 from Additional Courses

Effective Fall 2021:
• Added new Integrated B.S. in Electrical Engineering and M.I.A. in International Affairs at University Park campus

Engineering Design, Certificate (ENDSN_UCT)
Effective Summer 2021:
• Revised Program Description
• Revised Admissions Requirements
• Revised Program Requirements

Engineering Design with Digital Tools, Certificate (EDDIT_UCT)
Effective Spring 2021:
• New certificate added
English, B.A. (University College) (ENGUC_BA)
Effective Fall 2021:

- Discontinued program at Greater Allegheny campus

Entomology, Minor (ENT_UMNR)
Effective Spring 2022:

- Changed Requirements for the Minor from 22 credits to 18 credits
- Changed Prescribed Courses from 9 credits to 3 credits
- Added ENT 496 to Prescribed Courses
- Removed BIOL 110 from Prescribed Courses
- Added ENT 317, ENT 419W, ENT 450, ENT 484, ANSC 419W, BIOL 406, BIOL 412, BIOL 417, BIOL 429, BIOL 446, BIOL 464, HORT 445, PPEM 300, SOILS 412W, WFS 460 to Additional Courses
- Moved ENT 313 and ENT 457 to Additional Courses

Food Science, B.S. (FDSC_BS)
Effective Fall 2021:

- Revised Program Description
- Increased Minimum Credits Required for Degree Completion from 120 credits to 121 credits
- Increased Requirements for the Major from 89 credits to 98 credits
- Decreased Electives from 4 credits to 2 credits
- Changed General Education credits included in Requirements for the Major from 18 credits to 24 credits
- Changed credits for FDSC 400 from 4 credits to 3 credits in Prescribed Courses for the Major
- Increased Prescribed Courses from 62 credits to 76 credits
- Added CAS 100, CHEM 202, ENGL 15, FDSC 417, FDSC 450 to Prescribed Courses
- Decreased Additional Courses from 13-15 credits to 10 credits
- Added FDSC 403, FDSC 404, and MATH 140B to Additional Courses
- Removed CHEM 202, CHEM 203, CHEM 210, CHEM 212, and CHEM 213 from Additional Courses
- Changed Supporting Courses and Related Areas from 12-14 credits to 12 credits

Fundraising and Advancement, Certificate (FNDADV_UCT)
Effective Spring 2022:

- Added AA 323, LER 409, LER 464, LER 465 to Additional Courses

Global and International Studies, B.A. (GSBA_BA)
Effective Fall 2021:

- Added new Integrated B.A. in Global and International Studies and M.I.A. in International Affairs at University Park campus

Global and International Studies, B.S. (GSBS_BS)
Effective Fall 2021:

- Added new Integrated B.S. in Global and International Studies and M.I.A. in International Affairs at University Park campus

Health Policy and Administration, B.S. (University College) (HPAUC_BS)
Effective Fall 2021:

- Added program to Beaver campus and Shenango campus

Homeland Security, Minor (HLS_UMNR)
Effective Summer 2021:

- Revised Minor Description
- Added HLS cross-listing to PUBPL 201, 306, and 483 in Prescribed Courses
- Added SRA 421 to Supporting Course and Related Areas

Hospitality Management, B.S. (Health and Human Development, Berks) (HM_BS, HMBK_BS)
Effective Fall 2021:

- Revised program description
- Changed Electives from 1-5 credits to 0-5 credits
- Changed Requirements for the Major from 79-86 credits to 79-87 credits
- Added HM 230, HM 235, HM 272, HM 280 to Prescribed Courses for the Major
- Removed HM 329, HM 335, HM 380 from Prescribed Courses for the Major
- Changed credits for HM 271 from 3 credits to 2 credits in Prescribed Courses for the Major
- Added Additional Course section for the Major
- Moved STAT 200 from Prescribed Courses to Additional Courses for the Major

Human Capital Management, B.S. (HCPMG_BS)
Effective Fall 2021:

- New program added

Humanities, B.A. (University College) (HUMUC_BA)
Effective Spring 2022:

- Added program to University College

Information Sciences and Technology, A.S. (University College) (2ISUC_AS)
Effective Fall 2021:

- Discontinued program at New Kensington campus

Information Sciences and Technology, B.S. (Information Sciences and Technology) (ISTBS_BS)
Effective Fall 2021:

- Enrollment Hold implemented on Information Systems: Design & Development Option at University Park campus; program not accepting new students at University Park campus

Information Sciences and Technology, B.S. (Abington, BERKS, University College) (ISSAB_BS, ISSBK_BS, ISSUC_BS)
Effective Spring 2022:

- Enrollment Hold implemented at Penn State Abington, the Abington College; Penn State Berks, the Berks College; and University College; program not accepting new students through Penn State Abington, the Abington College; Penn State Berks, the Berks College; and University College

Information Technology, B.S. (Abington, Altoona, Berks, University College) (ISTAB_BS, ITSAL_BS, ITSBK_BS, ITSUC_BS)
Effective Fall 2021:

- Enrollment Hold implemented at Penn State Abington, the Abington College; Penn State Berks, the Berks College; and University College; program not accepting new students through Penn State Abington, the Abington College; Penn State Berks, the Berks College; and University College
• New B.S. program added

**Interdisciplinary Science and Business, B.S. (ISB_BS)**
**Effective Summer 2021:**

• New B.S. program added

**Kinesiology, Minor (KINES_UMNR)**
**Effective Fall 2021:**

• Added ATHTR 202 to Additional Courses
• Removed KINES 180 from Additional Courses
• Added ATHTR 202, KINES 405N, KINES 419, KINES 430W, KINES 431, KINES 445, KINES 449, KINES 458, KINES 459, KINES 470, KINES 471, KINES 493W, KINES 495E, KINES 499 to Supporting Courses and Related Areas
• Removed KINES 180, KINES 443, KINES 444 from Supporting Courses and Related Areas

**Korean, B.A. (KORBA_BA)**
**Effective Summer 2021:**

• New B.A. program added

**Management, B.S. (Business) (MGMT_BS)**
**Effective Spring 2022:**

• Revised Program Description
• Increased Requirements for the Major from 73 to 76 credits
• Changed General Education credits included in Requirements for the Major from 12 credits to 15 credits
• Added MGMT 481 to Prescribed Courses
• Removed MGMT 471 from Prescribed Courses
• Increased Additional Courses from 17 credits to 20 credits
• Added ENGL 15, ENGL 30H, ENGL 137H, ESL 15 to Additional Courses
• Added MGMT 480, BA 441 to Additional Courses
• Removed MGMT 461 from Additional Courses

**Management Information Systems, B.S. (Behrend) (MISBC_BS)**
**Effective Summer 2021:**

• Removed Options
• Revised Program Description
• Increased Number of Credits Required for Degree Completion from 120 credits to 123 credits
• Changed Requirements for the Major from 96-97 credits to 99 credits
• Increased Prescribed Courses from 48 credits to 58 credits
• Added MIS 315, MIS 345, and MIS 445 to Prescribed Courses
• Added Supporting Courses and Related Areas Section

**Management Information Systems, Minor (MISBC_UMNR)**
**Effective Fall 2021:**

• Moved MIS 204 from Prescribed Courses to Additional Courses
• Added an Additional Courses section
• Added MIS 250 to Additional Courses

**Marketing, Minor (MRKTG_UMNR)**
**Effective Fall 2021:**

• Removed MKTG 344 from Additional Courses
• Added MKTG 444 to Additional Courses

• Removed requirement that 6 of the 9 supporting course MKTG credits must be at the 400-level

**Mathematical Sciences, B.S. (MASC_BS)**
**Effective Spring 2022:**

• Revised Entrance to Major and Retention Requirements
• Changed Requirements for the Major from 83-96 credits to 84-99 credits
• Changed Requirements for the Option from 63-75 credits to 64-78 credits
• Changed Prescribed Courses from 28-29 credits to 31-32 credits for the General Mathematical Sciences Option
• Added STAT 401 to Prescribed Courses for the General Mathematical Sciences Option
• Removed STAT 301 from Prescribed Courses for the General Mathematical Sciences Option
• Removed MATH 412 from Additional Courses in the General Mathematical Sciences Option
• Removed Additional Courses section from the General Mathematical Sciences Option
• Moved MATH 425 from Additional Courses to Prescribed Courses in the General Mathematical Sciences Option
• Changed Secondary Education in Mathematical Sciences Option from 74-75 credits to 77-78 credits
• Changed Prescribed Courses from 62-63 credits to 68-69 credits for the Secondary Education in Mathematical Sciences Option
• Added STAT 401, EDUC 466, EDUC 400 to Prescribed Courses in the Secondary Education in Mathematical Sciences Option
• Removed CI 280 and STAT 301 from Prescribed Courses in the Secondary Education in Mathematical Sciences Option
• Moved MATH 425 from Additional Courses to Prescribed Courses in the Secondary Education in Mathematical Sciences Option
• Removed Additional Courses section from the Secondary Education in Mathematical Sciences Option
• Changed Prescribed Courses from 68-69 credits to 77-78 credits
• Added STAT 401, EDUC 466, EDUC 400 to Prescribed Courses in the Secondary Education in Mathematical Sciences Option
• Removed CI 280 and STAT 301 from Prescribed Courses in the Secondary Education in Mathematical Sciences Option
• Removed Additional Courses section from the Secondary Education in Mathematical Sciences Option

**Mechanical Engineering, B.S. (Engineering) (MEENG_BS)**
**Effective Fall 2021:**

• Added program to Scranton campus

**Mechanical Engineering, B.S. (Altoona) (MEAL_BS)**
**Effective Fall 2021:**

• Added program to Penn State Altoona, the Altoona College

**Nursing, R.N. to B.S.N. (NURN_BSN)**
**Effective Fall 2021:**

• Enrollment Hold implemented at Mont Alto campus; program not accepting new students at Mont Alto campus
• Discontinued program at Mont Alto campus

**Plastics Engineering Technology (PLTBC_BS)**
**Effective Fall 2021:**

• Increased Electives from 1 credit to 2 credits
• Decreased Requirements for the Major from 106 credits to 105 credits
• Removed PLET 425 and PLET 477 to Prescribed Courses
• Added PLET 464 to Prescribed Courses

Political Science, B.A. (Liberal Arts, Altoona, Capital) (PLSC_BA, PLSAL_BA, PLSCA_BA)
Effective Fall 2021:
• Decreased Electives from 18 credits to 15 credits
• Increased Requirements for the Major from 36 credits to 39 credits
• Added Additional Courses section
• Removed Supporting Courses and Related Areas section

Product Realization, Minor (PRODR_UMNR)
Effective Summer 2021:
• Program phased out

Professional Photography, B.Des. (PHOTO_BDES)
Effective Summer 2021:
• Revised Entrance to Major Requirements
• Added PHOTO 495 to Prescribed Courses
• Increased number of Additional Courses credits from 18 credits to 21 credits
• Moved AA 325 and PHOTO 101 from Prescribed Courses to Additional Courses

Recreation, Park, and Tourism Management, B.S. (Health and Human Development, Abington, University College) (RPTM_BS, RPTAB_BS, RPTUC_BS)
Effective Fall 2021:
• Revised Program Description
• Changed Electives from 2-11 credits to 4-14 credits
• Changed Requirements for the Major from 67-74 credits to 64-71 credits
• Changed General Education credits included in Requirements for the Major from 0-4 credits to 3-4 credits
• Changed Requirements for the Option from 43-50 credits to 40-47 credits
• Changed Commercial Recreation and Tourism Management Option from 46-50 credits to 46-47 credits
• Changed Additional Courses from 6-7 credits to 12-13 credits in the Commercial Recreation and Tourism Management Option
• Added ACCTG 211, BA 100, 242, 250, 301, 303, 304, FIN 100, MKTG 221, 301, MGMT 100, 301, HM 201, LER 100, 136, and RPTM 336 to Additional Courses in the Commercial Recreation and Tourism Management Option
• Changed Supporting Courses and Related Areas from 15-18 credits to 9-13 credits in the Commercial Recreation and Tourism Management Option
• Changed Commercial Recreation Management Option from 43-47 credits to 43-44 credits
• Changed Supporting Courses and Related Areas from 15-18 credits to 15 credits in the Commercial Recreation Management Option
• Changed Professional Golf Management Option from 43-45 credits to 47 credits
• Changed Prescribed Courses from 37 credits to 20 credits in the Professional Golf Management Option

• Added RPTM 250, 254, and 350 to Prescribed Courses in the Professional Golf Management Option
• Removed BLAW 243, BA 303, BA 304, HM 336, HM 466, RPTM 495C, RPTM 495D, TURF 100 from Prescribed Courses in the Professional Golf Management Option
• Added BA 303, 304, RPTM 336, 415, and HM 466 to Additional Courses in the Professional Golf Management Option
• Changed Additional Courses from 6-8 credits to 12 credits in the Professional Golf Management Option
• Added Supporting Courses and Related Areas section to the Professional Golf Management Option
• Changed Outdoor Recreation Management Option from 49-50 credits to 40-41 credits
• Changed Prescribed Courses from 28 credits to 22 credits in the Outdoor Recreation Management Option
• Removed RPTM 325 and 330 from Prescribed Courses in the Outdoor Recreation Management Option

Secondary Education Social Studies, B.SOSC. (SESSTBSOSC)
Effective Summer 2021:
• Revised Program Description
• Revised Retention Requirements
• Increased Prescribed Courses from 65 credits to 68 credits
• Removed CI 280 from Prescribed Courses
• Added EDUC 400 and EDUC 466 to Prescribed Courses
• Added HIST 2 and HIST 11 to Additional Courses
• Decreased Supporting Courses and Related Areas from 18 credits to 15 credits
• Removed 3 credits of psychology from Supporting Courses and Related Areas

Security and Risk Analysis, B.S. (SRAWC_BS)
Effective Fall 2021:
• Enrollment Hold implemented on Information and Cybersecurity Option at World Campus; program not accepting new students at World Campus

Small Group Conflict and Collaboration, Certificate (SGCC_UCT)
Effective Fall 2021:
• New certificate added

Social Data Analytics, B.S. (SODA_BS)
Effective Summer 2021:
• Revised Entrance to Major Requirements
• Decreased Requirements for the Major from 90-92 credits to 87 credits
• Removed CMPSC 121, 122, and IST 210 from Prescribed Courses
• Moved MATH 140 and 141 from Additional Courses to Prescribed Courses
• Removed MATH 110, 111, and STS 101 from Additional Courses

Social Justice, Certificate (SOCJS_UCT)
Effective Fall 2020:
• New certificate added
Sociology, B.A. (SOCBA_BA)
Effective Summer 2021:
• Added new Integrated B.A. in Sociology and M.I.A. in International Affairs at University Park campus

Sociology, B.S. (Liberal Arts) (SOCBS_BS)
Effective Summer 2021:
• Added new Integrated B.S. in Sociology and M.I.A. in International Affairs at University Park campus

Spanish for Healthcare, Certificate (SPHLTH_UCT)
Effective Fall 2021:
• New certificate added

Sports Administration, Certificate (SPTADM_UCT)
Effective Fall 2021:
• Moved academic home from University College to Penn State Erie, the Behrend College

Structural Design and Construction Engineering Technology, B.S. (SDCET_BS)
Effective Fall 2021:
• Changed Electives from 2-10 credits to 0-8 credits
• Changed the Requirements for the Major from 95-102 credits to 96-106 credits
• Removed CMPSC 202 from Additional Courses for the Major
• Changed Requirements for the Option from 19-22 credits to 19-25 credits
• Removed EMCH 212 from Prescribed Courses in the Structural Design Option
• Added ET 321 and EMCH 212 to Additional Courses in the Structural Design Option
• Decreased Prescribed Courses from 13 credits to 10 credits in the Structural Design Option
• Increased Additional Courses from 3 credits to 6 credits in the Structural Design Option
• Changed the Requirements for the General Option from 22 credits to 25 credits
• Added ET 321, EMCH 212, CE 321 and ENVE 430 to Additional Courses in the General Option
• Increased Additional Courses from 10 credits to 13 credits in the General Option

Surveying Engineering, B.S. (SURE_BS)
Effective Summer 2021:
• Changed Requirements for the Major from 114 credits to 110-111 credits
• Added 3-4 credits of Electives
• Decreased Prescribed Courses from 93-94 credits to 90-91 credits
• Removed IE 302, PHYS 213, and STAT 401 from Prescribed Courses
• Added STAT 200 to Prescribed Courses

Surveying Engineering Technology, A. ENGT. (2SRT_AENGT)
Effective Fall 2021:
• Program phased out at Greater Allegheny campus
• Enrollment Hold implemented at Greater Allegheny campus; program not accepting new students at Greater Allegheny campus

Theatre, B.A. (THRBA_BA)
Effective Summer 2021:
• Removed all options
• Revised Program Description
• Added Entrance to Major Requirements
• Increased Electives from 1-8 credits to 12-13.5 credits
• Decreased Requirements for the Major from 44.5-51.5 credits to 40.5-42 credits
• Changed General Education credits included in Requirements for the Major from 1.5-7.5 credits to 3 credits
• Removed DANCE 170 and THEA 401 from Prescribed Courses
• Added DANCE 270, THEA 132, and THEA 210W to Prescribed Courses
• Removed THEA 107, 200, 130, and 131 from Additional Courses
• Removed Supporting Courses and Related Areas

Turfgrass Management, Advanced, Certificate (TURF2_UCT)
Effective Summer 2021:
• Added TURF 307 to Additional Courses

Turfgrass Management, Basic, Certificate (TURFB_UCT)
Effective Summer 2021:
• Added TURF 307 to Prescribed Courses

Youth Development and Social Justice, Certificate (YDSJ_UCT)
Effective Fall 2021:
• Revised Program Description
• Decreased Minimum Credits Required for Completion from 18 credits to 12 credits
• Added CAS 471, COMM 222N, EARTH 111, ERM 210, HDFS 175N, HDFS 345, HDFS 400 PSYCH 412, PLSC 291, PLSC 491, POL 1, PSYCH 231, PSYCH 424, PSYCH 432, PSYCH 441, PSYCH 479
• Removed CRIMJ 13, HDFS 397, HDFS 414, HDFS 433 from Required Courses

FAQs
1. Where can I find a list of General Education courses and information about requirements?
   • For information about General Education requirements, please see the General Education (https://bulletins.psu.edu/undergraduate/general-education/) section in this Bulletin.
2. The General Education requirements have changed. Do the new requirements apply to me?
   • The new General Education requirements apply to students who start at Penn State in Summer 2018 and later. Requirements have not changed for students who began at Penn State before this semester. The older set of requirements can be found in the Archives page. Additional information is available on the Office of General Education website (https://gened.psu.edu).
3. What does the blue keystone symbol mean?
• The keystone indicates that the course is designated as a General Education course. See the degree requirements for your program to identify the General Education courses that are required. Not all courses marked with the keystone count as meeting General Education requirements when required within your program. See the program requirements and speak to an adviser regarding General Education courses that count or do not count toward the General Education requirements.

4. Where can I find bachelor of arts degree requirements?
• Bachelor of arts degree requirements are included in the program requirements section for B.A. programs. You may also see the B.A. requirements in the Academic Information (https://bulletins.psu.edu/undergraduate/general-information/academic-information/) section.

5. Where can I find a list of courses and course descriptions?
• You may find courses and descriptions several different ways within the Bulletin. You may navigate to the full listing of courses and descriptions from the Courses (https://bulletins.psu.edu/university-course-descriptions/) link in the top navigation menu. You may also scroll over any course number within the Bulletin to see the course description in a course bubble. Search for specific courses through the search option on the homepage or in the search functions throughout the Bulletin.

6. Which Undergraduate Bulletin should I use?
• Your official record of general education requirements, University degree requirements, and program requirements is found in the Bulletin that matches the semester in which you enrolled at Penn State. See the Archive (https://bulletins.psu.edu/undergraduate/archive/) page to find past Bulletins.

7. Where can I find past Bulletins?
• Past Bulletins can be found on the Archive (https://bulletins.psu.edu/undergraduate/archive/) page, which can be accessed from any page in the Bulletin's top navigation menu.

8. When will the Undergraduate Bulletin be updated?
• The Bulletin will be updated at the beginning of each semester (fall, spring, and summer). Changes that occur between updates are identified on the Changes (p. 6) page.

9. What course description information is currently showing in the Bulletin?
• The University Bulletins shows course description data that is active as of the most recently released Schedule of Courses. When an upcoming semester’s Schedule of Courses is released, the course description information is updated on the same day to match that course data. Please visit the Understanding Course Description Information (p. 2) page to view the course description update calendar.

10. Why are there some courses listed in the Bulletin that I can’t schedule?
• The Bulletin Course Description section displays all courses that are currently active at Penn State. Not all of these courses are taught every academic semester or year. To view courses that are available for enrollment by semester, please view the LionPATH Class Search (https://www.lionpath.psu.edu/psc/CSPRD/EMPLOYEE/HRMS/c/SA_LEARNER_SERVICES.CLASS_SEARCH.GBL?Page=SSR_CLSRCH_ENTRY&Action=U).

11. Where can I find information about minors?
• Minors are a specific type of program and may be found through the search process by filtering by minor (https://bulletins.psu.edu/programs/#filter=filter_24).

12. Where can I find the Graduate Bulletin?
• The Graduate Bulletin is located at: https://bulletins.psu.edu/graduate (https://bulletins.psu.edu/graduate/).

Have a question we didn’t include? Please let us know by emailing bulletins@psu.edu.