

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 (p. 6) 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.

Nondiscrimination Statement

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: aao@psu.edu, Tel (814) 863-0471.

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 (<https://aappm.psu.edu/policy/p-8-program-descriptions-for-the-bulletin/>)

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

May 6, 2024: University Bulletins begins showing course description information that is active for the Summer 2024 semester

August 12, 2024: University Bulletins begins showing course description information that is active for the Fall 2024 semester

December 23, 2024: University Bulletins begins showing course description information that is active for the Spring 2025 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 (<https://senate.psu.edu/curriculum/introduction-to-guide-to-curricular-procedures/section-one-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. Total 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.

Code	Explanation
A	Special topics (course suffix; indicates different versions of the same course, e.g., CAS 100A, CAS 100B, CAS 100C)
A & A	Arts and Architecture (college abbreviation)
AA	Arts and Architecture (college code)
AAPPM	Academic Administrative Policies and Procedures Manual
AB	Abington (campus code)
AB	Abington (college code)
ACUE	Administrative Council on Undergraduate Education
AG	Agricultural Sciences (college code)
AL	Altoona (campus code)
AL	Altoona (college code)
AP	Advanced Placement Program
APPL	Course requires an application with the School of Music (course characteristic)
APPT	By appointment (class meeting time)
AU	Audit, attended regularly (grade reporting symbol)
AUDN	Course requires an audition (course characteristic)
AUU	Audit, did not attend regularly (grade reporting symbol)
B	Special topics (course suffix; indicates different versions of the same course, e.g., CAS 100A, CAS 100B, CAS 100C)
BA	Business, Smeal College of (college code)
BC	Behrend (college code)
BK	Berks (campus code)
BK	Berks (college code)
BR	Beaver (campus code)
BW	Brandywine (campus code)
C	Special topics (course suffix; indicates different versions of the same course, e.g., CAS 100A, CAS 100B, CAS 100C)
CA	Capital (college code)
CALC	Course requires a calculator (course characteristic)
CAMP	College Assistance Migrant Program
CAT	Online catalog, University Libraries
CC	Commonwealth Campuses

CCP	College Contact Person	F	Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297F, HIST 297G)
CCRR	College Contact and Referral Representative	FE	Fayette (campus code)
CCSG	Council of Commonwealth Student Governments	FINL	Course has a final exam (course characteristic)
CE	Continuing Education	FL	Failure under pass/fail option (grade reporting symbol)
CGPA	Cumulative grade-point average	FYS	First-Year Seminar
CIC	Committee on Institutional Cooperation	G	Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297F, HIST 297G)
CLEP	College-Level Examination Program	GA	Arts (General Education code)
CM	Communications (college code)	GA	Greater Allegheny (campus code)
CNCR	Course is scheduled concurrently with another course (course characteristic)	GH	Humanities (General Education code)
CNTL	Course is controlled (course characteristic)	GHW	Health and Wellness (General Education code)
COMM	Communications (college abbreviation)	GN	Graduate non-degree (college code)
CORD	Course is coordinated with other course(s) (course characteristic)	GN	Natural Sciences (General Education code)
COST	Course requires an additional fee (course characteristic)	GPA	Grade-point average
D	Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297D, HIST 297E)	GQ	Quantification (General Education code)
DAA	Dean/Director of Academic Affairs	GR	Graduate (level code)
DF	Deferred grade (grade reporting symbol)	GR ND	Graduate non-degree (college code)
DN	Dickinson School of Law (campus code)	GS	Social and Behavioral Sciences (General Education code)
DS	DuBois (campus code)	GV	Great Valley (campus code)
DU	Division of Undergraduate Studies (college code)	GV	Great Valley (college code)
D U S	Division of Undergraduate Studies (college abbreviation)	GWS	Writing/Speaking (General Education code)
E	Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297D, HIST 297E)	H	Honors course or section (course suffix)
ECoS	Eberly College of Science	HB	Harrisburg (campus code)
ED	Education (college code)	H H D	Health and Human Development (college abbreviation)
EM	Earth and Mineral Sciences (college code)	HH	Health and Human Development (college code)
EM SC	Earth and Mineral Sciences (college abbreviation)	HN	Hazleton (campus code)
EN	Engineering (college code)	HY	Hershey Medical Center (campus code)
ENGR	Engineering (college abbreviation)	I	Incomplete (grade reporting symbol)
EOP	Educational Opportunity Program	I	Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297I, HIST 297K)
EPR	Early Progress Report	I COL	Intercollege programs (college abbreviation)
EPS	Educational Planning Survey	IB	International Baccalaureate Program
ER	Behrend (campus code)	IC	Intercollege programs (college code)
ESL	English as a Second Language		
EVEX	Course has evening exams (course characteristic)		

IL	International Cultures (General Education code)	P	Pass (noncredit course) (grade reporting symbol)
INCP	Incomplete (grade reporting symbol)	P	Practicum (or laboratory) section (course suffix)
INTG	Course is integrated with other courses (course characteristic)	PC	Penn College (Pennsylvania College of Technology; campus code)
IS	Information Sciences and Technology (college code)	PREQ	Course has prerequisites (course characteristic)
IST	Information Sciences and Technology (college abbreviation)	PS	Pass (pass/fail option) (grade reporting symbol)
ITS	Information Technology Services	PSU	Pennsylvania State University
IUG	Integrated undergraduate/graduate degree programs	R	Recitation section (course suffix)
IVID	Course uses interactive video (course characteristic)	R	Research (grade reporting symbol)
J	Individualized instruction (course suffix)	RAP	Recommended Academic Plan
K	Special topics (course suffix; indicates different versions of the same course, e.g., HIST 297I, HIST 297K)	RI	Resident Instruction
L	Lecture section (course suffix)	ROTC	Reserve Officers' Training Corps
LA	Liberal Arts (college code)	S	First-Year Seminar (course suffix)
LEAP	Learning Edge Academic Program	SA	Satisfactory achievement (grade reporting symbol)
LIAB	Course has liability attendance policy (course characteristic)	SATL	Course is offered at multiple locations via satellite uplink (course characteristic)
LV	Lehigh Valley (campus code)	SC	Science, Eberly College of (college code)
LW	Law (level code)	SCIEN	Science, Eberly College of (college abbreviation)
M	Writing Across the Curriculum and Honors (course suffix)	SEGM	Course is segmented (course characteristic)
MA	Mont Alto (campus code)	SGPA	Semester grade-point average
MAC	Morgan Academic Center (for Student-Athletes)	SH	Shenango (campus code)
MD	Medical (level code)	SI	Supplemental Instruction
MD	Medicine (college code)	SITE	Schreyer Institute for Teaching Excellence
MED	Medicine (college abbreviation)	SL	Schuylkill (campus code)
MEP	Multicultural Engineering Program	SLO	Special Living Options
MRC	Multicultural Resource Center	SOTP	Student Orientation and Transition Programs
MS	Military Science (ROTC) (college code)	SRTE	Student Ratings of Teacher Effectiveness
NACADA	National Academic Advising Association	SSSP	Student Support Services Program
NC	Non-credit (level code)	T	First-Year Seminar and Honors (course suffix)
NDEGR/C/H	Nondegree Regular/Conditional/High School (Classification of Undergraduate Students)	TMDT	Course has additional meeting times/dates (course characteristic)
NG	No grade (grade reporting symbol)	U	United States Cultures/International Cultures and Honors (course suffix)
NK	New Kensington (campus code)	UAO	Undergraduate Admissions Office
NR	Nursing (college code)	UC	University College (college code)
NSO	New Student Orientation	UE	Undergraduate Education
OCLC	Course meets at an off-campus location (course characteristic)	UFO	University Fellowships Office
ODS	Office for Disability Services	UG	Undergraduate (level code)
OSA	Office of Student Aid	UG ND	Undergraduate non-degree (college code)
OUR	Office of the University Registrar	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.

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 Summer 2024

- AA 113N: Sustainable Arts and Design
- ACCTG 201: Introduction to Financial Accounting
- ACCTG 202: Introduction to Managerial Accounting
- AE 449: Ultra-High Performance Buildings: Passive House Principles & Design
- AE 477: Material Science for Architectural Engineers

- AERSP 403A: Autonomous Aerospace Vehicle Design - Preliminary
- AERSP 403B: Autonomous Aerospace Vehicle Design - Detailed
- AERSP 462: Aerospace Autonomy
- APLNG 290N: Critical Approaches to Applied Linguistics
- APLNG 320N: Language, Ideology, and Propaganda
- APLNG 450: Conducting Research in Applied Linguistics
- ASTRO 416: Data Science Applications to Astronomy
- ASTRO 442: Astrophysical Fluid Dynamics
- CE 403: Energy Use, Climate Change, and Our Engineered Infrastructure
- CE 455: Construction Cost Estimating
- CE 457: Construction Equipment and Methods
- CED 102Q: Wicked Problems Like Inequality, Sustainability & Climate Change: What's the Right Thing to Do?
- CHEM 491: Instructional Practice
- CMLIT 147N: Displacement and Migration
- CNED 393: Peer Support Counseling
- EBF 404W: The Great Energy Transition: Law, Economics, and New Frontiers
- EMSC 125: Plastics in the Environment
- FOR 370: Watershed Ecohydrology
- FOR 431: Conservation Genetics
- FOR 442: Forest Conservation: Principles and Practices
- FOR 445: Wildlife Habitat Management
- FOR 477: Field Methods in Watershed Ecohydrology
- GEOG 413: Cryosphere and Climate Systems
- GEOG 448: Neighborhoods and Health Equity
- GEOSC 401: Geosciences Entrepreneurship: Embrace Change
- HDFS 109: Community, Connection, and Contemplation
- HHUM 495: Internship
- HIST 493: History of Death and Mourning
- HM 322: Introduction to Brewed Alcoholic Beverages (Beer, Cider, and Mead)
- HRM 494: Research Topics in HRM
- IE 304: Introduction to Service Systems Engineering
- IE 427: Human Systems Networks
- IE 432: Introduction to Healthcare Systems Modeling
- IE 435: Pricing and Demand Management
- IE 475: Modeling and Optimization of Stochastic Service Systems
- ITECH 495: Internship
- LDT 495: Internship in Learning, Design, and Technology
- MATSE 449: Fundamentals of Composite Materials Science and Engineering
- MGMT 345: Cultural Intelligence in Leadership and Management
- MUSIC 188: Chamber Music for Mixed Ensemble
- NUTR 291N: Drugs and Nutrition: Social and Scientific Interactions
- NUTR 409: Addressing and intervening on social determinants of nutrition inequity
- NUTR 495B: Advanced Field Experience in Nutrition
- PT 290W: Professional Issues in Clinical Practice
- PUBPL 471: Economic Inequality and Public Policy
- RLST 109H: What is The Self?
- SC 496: Independent Studies

- STRNG 134: Guitar: Performance I
- STS 313: Global Engineering Fellows Seminar
- SUR 373W: Cadastral and Legal Aspects of Surveying
- TURF 495A: Internship
- VBSC 280N: Current Topics in Veterinary Medicine
- VBSC 415: Research Practice in Veterinary and Biomedical Sciences
- WFS 465: Restoration Ecology

Courses Added: Effective Fall 2024

- A-I 494: Research Project
- A-I 495: Internship
- ACCTG 285: Introduction to Cyber Fraud
- AG 197: Special Topics
- ASTRO 237W: Astronomy Communications
- CAMS 44H: Myth in Egypt and the Near East
- CE 352: Construction Safety and Risk Management
- CMPSC 489: Deep Learning for Computer Vision
- COMM 130: News Literacy Ambassador Institute
- COMM 210: Independent Content Creation
- COMM 262: Podcasting and Digital Media for Entrepreneurs
- EDPSY 395: Internship
- HIST 163: Asian History Through Film
- HM 342: Marketing of Regulated Beverages
- HSS 294: Research Project
- HSS 494: Research Project
- HSS 495: Internship
- KINES 85N: The Art and Science of Balancing Wellness
- KINES 414: Interdisciplinary Study of Street Medicine
- MATH 31: Mathematics of Music
- ME 459: Machine Learning in Mechanical Engineering
- NUTR 310N: Diet Wars: Will there ever be a winner?
- PSYCH 488: Ethics in Behavioral Sciences and Education
- RLST 460Y: Research Seminar in History of Asian Religion & Medicine
- WFS 425: Aquatic Invertebrate Ecology
- WILDL 231: Hawk Identification

Courses Dropped: Effective Summer 2024

- ABSM 309H: Measurement & Monitoring of Hydrologic Systems
- ACCTG 311: Accounting Systems and Control
- AET 101: Building Materials
- AET 102: Methods of Construction
- AET 113: Site Planning
- AET 121: Introduction to Building Environmental Systems
- AET 206: Architectural Presentation
- AG 400: Biometry/Statistics in the Life Sciences
- AMST 400: Early America to 1765
- AMST 439: American Regional Cultures
- ANSC 110: Contemporary Issues in Animal Biotechnology and Society
- ANSC 477: Riding Instructor Training
- ANTH 215: Skin: Evolution, Biology and Culture
- ARAB 51: Elementary Intensive Arabic for Graduate Students I
- ARAB 52: Elementary Intensive Arabic for Graduate Students II

- ARCH 312: Critical Postcolonial and Contemporary Perspectives in South Asian Architecture
- ARCH 443: Architectural Design Analysis Inspection Trip
- ARTH 413: Architecture of the Medieval Monastery
- ARTH 464: French Art and Architecture, 1589
- ASIA 404H: Topics in Asian Literature
- BA 301H: Finance and Financial Services
- BA 303H: Honors Core Marketing
- BESC 407: Small Groups Counseling
- BIOL 200: Introduction to Pharmacological Concepts
- BIOL 419H: Ecological and Environmental Problem Solving
- BIOL 438: Theoretical Population Ecology
- BIOL 464H: Animal Behavior--Sociobiology
- BMB 428H: Physical Chemistry with Biological Applications
- BME 429H: Biomedical Mechanics and Techniques Laboratory
- BME 446H: Polymers in Biomedical Engineering
- BRASS 121H: French Horn: Primary I
- CAS 360: Communication for Teachers
- CHE 480M: Chemical Engineering Laboratory (Honors)
- CHNS 403M: Level Four Chinese A
- CHNS 411: Chinese Written Characters
- CHNS 455: Masterpieces of Traditional Chinese Literature
- CI 387: Education, Culture, and Society in Brazil and Colombia
- CMLIT 197Z: Special Topics - Linked
- CMLIT 480: The International Folktale
- CMLIT 487: Comedy
- CMPET 412: Microcomputers
- COMM 320H: Introduction to Advertising
- COMM 381: Telecommunications Regulation
- CRIM 429: Seminar in Criminal Behavior
- CRIMJ 241: Computer Applications in Public Affairs/Criminal Justice
- CRIMJ 489W: Victimology: Predatory Crime
- DANCE 301: Movement Analysis
- DANCE 270Z: Introduction to Bartenieff Fundamentals
- DANCE 370H: Anatomy for Performers
- DANCE 370Z: Anatomy and Physiology for Performers
- DANCE 385: Leadership Practicum: Dance
- DANCE 462: Advanced Modern Dance II
- DANCE 480: Choreographic Projects
- EDMTH 455: Current Issues in Mathematics Education
- EDTEC 448: Using the Internet in the Classroom
- EDTEC 449: Video in the Classroom
- EDTEC 461: Designing Computer Networks for Education
- EDTEC 462: Coordinating Technology Use in Education
- EDTHP 441: Education, Schooling, and Values
- EDUC 371: Teaching Music in the Elementary School
- EDUC 436: Inclusion Practices in Education
- EET 214H: Electric Machines and Energy Conversion
- EET 215H: Electric Machines and Energy Conversion Laboratory
- EGT 60: 3D Visualization and Spatial Development
- EMSC 101: Resource Wars
- ENGL 310H: Honors Thesis in English

- ENGL 423: Poetry Writing Workshop
- ENGL 485: Australian and New Zealand Literature and Culture
- ENGR 486H: Business Opportunities in Engineering
- ENT 425: Freshwater Entomology
- ENVE 401: Occupational Safety and Environmental Health
- ENVE 416: Treatment Plant Design
- ENVE 424: Solid Waste Management
- ENVE 425: Hazardous Waste Management
- ENVE 460: Environmental Law
- ENVSE 458: Industrial Hygiene Measurements Laboratory
- ENVST 424H: Creative Writing and the Natural World
- ERM 436: Limnological Methods
- ERM 444: Environmental Biophysics
- FDSC 205: Food Plant Sanitation
- FDSC 206: Improving Food Quality
- FDSC 233: The Science of Winemaking
- FDSC 430: Unit Operations in Food Processing
- FDSYS 490: From Agriculture to Culture: Perspectives on your food from seed to plate
- FIN 414H: Financial Trading and Applications
- FOR 400: Senior Forest Practicum
- FOR 488Y: Global Forest Conservation
- FR 121G: Fundamentals of Reading French
- FR 122G: Practice in Reading French
- FR 440: Teaching of Romance Languages
- GEOG 110: Climates of the World
- GEOG 110H: Climates of the World
- GEOG 422W: Globalization, Migration, and Displacement
- GEOG 424: Geography of the Global Economy
- GEOG 427: Urban Historical Geography
- GEOG 431H: Geography of Water Resources
- GEOSC 310H: Earth History
- HDFS 234: Mathematics and Science Reasoning: Development and Practice in Early Childhood Care and Educat
- HDFS 420: Laboratory in Individual and Family Enhancement
- HDFS 433H: Developmental Transition to Adulthood
- HDFS 477: Analysis of Family Problems
- HEBR 451: Advanced Biblical Hebrew
- HEBR 452: Readings in Biblical Hebrew
- HIST 105H: The Byzantine Empire
- HIST 116H: Family and Sex Roles in Modern History
- HIST 175H: The History of Modern East Asia
- HIST 403: Alexander the Great and the Hellenistic World
- HIST 423: Orthodox Christianity: History and Interpretations
- HIST 427H: Germany Since 1860
- HIST 440H: Colonial America to 1753
- HIST 468H: Mexico and the Caribbean Nations in the Twentieth Century
- HIST 477: American Military History to 1900
- HIST 480: Japan in the Age of Warriors
- HIST 487: American Diplomacy, 1776-1914
- HLHED 406: Human Sexuality
- HUM 461: Selected Periods in the Humanities
- IB 290: International Business Goes to the Movies
- IE 454: Applied Decision Analysis
- IE 467: Facility Layout and Location
- INART 210: Integrative Approaches to Computer-Aided Music Composition
- INSC 480: Software Development Lifecycle
- INSYS 415A: Systematic Instructional Development
- INSYS 441: Design, Development, and Evaluation of Internet Resources
- INSYS 442: Innovative Instructional Applications of Microcomputer Technology
- INSYS 447: Instructional Design for Multimedia Technologies
- INTST 400: Seminar in International Studies
- INTST 493: International Studies
- IST 140H: Introduction to Application Development
- IST 240H: Introduction to Computer Languages
- IST 261H: Application Development Design Studio I
- IST 402H: Emerging Issues and Technologies
- IST 462: Database Modeling and Applications
- JST 116: Jewish Great Books
- JST 410: Jews in the Medieval World
- LANG 51: Elementary Intensive Less Commonly Taught Language for Graduate Students I
- LANG 52: Elementary Intensive Less Commonly Taught Language for Graduate Students II
- LANG 53: Intermediate Intensive Less Commonly Taught Language for Graduate Students
- LARCH 221: Design Theory Seminar
- LARCH 60H: History of Landscape Architecture
- LATIN 402H: Republican Literature
- LATIN 450W: History of Latin
- LDT 415B: Systematic Instructional Development for Teachers
- LLED 400H: Teaching Reading in the Elementary School
- LLED 467: Children's Literature in the Classroom
- LST 370: Research Methods for Law and Government Information Resources
- LST 83: The Twenty-First Century Researcher
- MATH 2: Elementary Geometry With Problem Solving
- MATH 26H: Plane Trigonometry
- MATH 40: Algebra, Trigonometry, and Analytic Geometry
- MATH 418H: Probability
- MATH 422: Wavelets and Fourier Analysis: Theory and Applications
- MATH 467H: Factorization and Primality Testing
- MATSE 259H: Properties and Processing of Engineering Materials
- MATSE 401H: Thermodynamics of Materials
- MATSE 430H: Materials Characterization
- ME 103: HYBRID ELECTRIC VEHICLES
- ME 109S: Explore Mechanical Engineering Research
- ME 360H: Mechanical Design
- ME 402: Power Plants
- ME 410H: Heat Transfer
- ME 421: Viscous Flow Analysis and Computation
- ME 442W: Advanced Vehicle Design I

- ME 443W: Advanced Vehicle Design II
- ME 446: Reliability and Risk Concepts in Design
- ME 453: Powertrain System Modeling, Simulation, and Control
- ME 468H: Engineering for Manufacturing
- ME 471: Noise Control in Machinery
- MET 105: Mechanical Systems
- MET 112: Statics Laboratory
- MET 455: Mechatronics
- METEO 422H: Dynamic Meteorology II
- METEO 473H: Application of Computers to Meteorology
- METEO 480M: Undergraduate Research
- METEO 480W: Undergraduate Research
- MGMT 301M: Basic Management Concepts
- MICRB 421M: Laboratory of General and Applied Microbiology
- MIS 461: Emerging Technologies
- MKTG 422H: Advertising and Sales Promotion Management
- MNG 223: Mineral Land and Mine Surveying
- MNGT 100: Mining Technology Orientation
- MNGT 202: Mining Ventilation
- MNGT 213: Strata Control Methods
- MNGT 215: Mining Management II
- MUED 440: Music Learning and Development
- MUSIC 131H: Music Theory I
- MUSIC 216: Care and Nature of Young Singing Voices
- MUSIC 231H: Music Theory III
- MUSIC 255: Intermediate Theory I
- MUSIC 420H: Vocal Accompanying Techniques
- MUSIC 471: Structural and Sixteenth-Century Counterpoint
- MUSIC 53: Class Voice Practicum
- MUSIC 88H: Campus Choir
- NUCE 403H: Advanced Reactor Design
- NURS 230H: Introduction to the Fundamentals of Nursing
- NURS 452H: Women's Health Issues
- NUTR 120H: Food Preparation
- PADM 401: Introduction to Homeland Security
- PHIL 441: Capstone Course in Philosophy
- PHIL 486: Wittgenstein
- PHIL 490: Dewey
- PHYS 400H: Intermediate Electricity and Magnetism I
- PHYS 410H: Introduction to Quantum Mechanics I
- PHYS 412H: Solid State Physics I
- PLET 206M: Plastic Materials and Properties
- PLSC 418H: International Relations Theory
- PLSC 422: Comparative Urban Politics
- PLSC 439H: The Politics of Terrorism
- PLSC 471H: American Constitutional Law
- PNG 420H: Applied Reservoir Analysis
- PNG 492H: Petroleum Engineering Capstone Design
- PPEM 318H: Diseases of Forest and Shade Trees
- PSU 6T: First-Year Seminar Business
- PT 101: Introduction to Computer Skills for the PTA
- QMM 491: Introduction to Business Concepts for Manufacturing
- RLST 400: Theories of Religion
- RLST 420: Major Christian Thinkers
- RUS 214: Intermediate Russian III
- RUS 304: Readings in Russian III
- RUS 305: Advanced Russian Conversation
- SCIED 410: Using Technology to Enhance Science Teaching
- SCIED 458H: Teaching Science in the Elementary School
- SCM 405H: Manufacturing and Services Strategies
- SCM 421H: Supply Chain Analytics
- SCM 465: Electronic Business Management
- SOC 23H: Population and Policy Issues
- SOC 97Z: Special Topics - Linked
- SOC 381H: Junior Honors Seminar in Sociology
- SOC 406H: Sociology of Deviance
- SOC 452: Spatial Inequality
- SOC 454: The City in Postindustrial Society
- SPAN 100C: Intermediate Grammar and Composition for Students in Communication-related Fields
- SPAN 305H: Spanish for Social Services
- SPLED 403H: Evidence-Based Instruction for Elementary Students with Disabilities in Reading, Math, and Writing
- SPLED 430: Foundational Skills for Working with Students with Special Education Needs in General Education Class
- SPSY 472H: Human Development, Health, & Education From A Global Perspective
- SSED 200: American Heritage
- STAT 418H: Probability
- STS 235: Science and Religion
- STS 470: Technology Assessment and Transfer
- THEA 104: Fundamentals of Theatre Production
- THEA 200: Script Analysis
- THEA 221: Acting III
- THEA 427H: Theatre Makeup
- THEA 434H: Introduction to Directing
- TRDEV 460: Foundations in Training and Development
- VBSC 231: Introduction to Cancer Research and Medicine
- VBSC 439: Mucosal Immunology and the microbiome
- WFS 447M: Wildlife Management
- WILDL 204: Wildlife Mensuration
- WILDL 209: Animal Handling and Care
- WLED 412M: Methods of Teaching World Languages in Grades 6-12
- WMNST 430: Women in American Society

Courses Dropped: Effective Fall 2024

- AG 160S: Introduction to Ethics and Issues in Agriculture
- BMB 1Z: The Science of Sickness - Linked
- VBSC 280: Current Issues in Veterinary Medicine

Course Changes: Effective Summer 2024

AGBM 408: Financial Decision Making for Agribusiness (3 Credits)
 Old Listing Effective Through Spring 2024:

Develop financial management and business analysis skills, integrating previous course work and finance training; principles of financial management, planning, control.

Prerequisite: AGBM 308, FIN 301

Changes Effective Summer 2024:

- Changed Prerequisites

ANSC 488: Biology of germ cells and assisted reproductive technologies (3 Credits)

Old Listing Effective Through Spring 2024:

Germ cells are highly specialized cells that give rise to the next generation. The life history of germ cells from formation of primordial germ cells in the early embryo to formation of mature gametes will be traced in several mammalian species. Gamete maturation, fertilization and early embryo development will be covered in detail to highlight the unique features of these processes and the close relationship between germ cells, early embryonic cells and pluripotent stem cells. Special emphasis will be placed on the processes of meiosis and epigenetic reprogramming that occurs in both germ cells and early embryos. The effect of environmental factors such as diet, stress, endocrine disruptors on germ cell and early embryo reprogramming will be discussed. In the second half of the course, we will discuss how knowledge of germ cell physiology has led to the widespread use of assisted reproductive technologies (ART) which have fundamentally changed the way fertility is managed in animals and humans. ART topics covered include artificial insemination, gamete manipulation, in vitro embryo production, preimplantation genetic testing and control of ovulation. We will discuss how these technologies are used to treat infertility in both men and women. We will also cover the potential benefits and challenges of recent efforts to develop male and female non-hormonal contraceptive methods. Finally, the ethical and societal implications of advanced reproductive technologies will be discussed.

Prerequisites: ANSC 300 or ANSC 431 or BIOL 141 or BIOL 161 or BIOL 177 or BIOL 240M or BIOL 240W or BIOL 431

Changes Effective Summer 2024:

- Changed Prerequisites

ANTH 445W: Ethnographic Film (3 Credits) [WAC]

Old Listing Effective Through Spring 2024:

Comparisons of written and visual ethnography; critical assessment of ethnographic film; cross-cultural variation. ANTH 445W Ethnographic Film (3) Students will be presented with both written and filmed ethnographic material dealing with a number of cultural subsystems (e.g., kinship and family relations, religion, political systems) and with a number of different world cultures. The aim of the course is three-fold: 1) to convey through visual anthropology the complexity and inter-relationships of cultural subsystems, which is often difficult to do in written sources; 2) to develop the skills of critical viewing of ethnographic film; and 3) to provide students with critiques of their written work that will enable them to learn and practice the skills of clear, organized and convincing writing. Towards these ends, students will be expected to read and view weekly assignments for selected topics, to write twelve critical essays that compare the written and filmed sources, and to evaluate the aims, effectiveness, and methods of the films. Essays will be graded for both content and form and will provide a basis for class discussion. Students will also be required to write a term paper focused on a particular

ethnographic film of their choice (one not shown in class) supplemented by additional research. As an aid in the writing of the paper, at least one class period will be devoted to learning how to do library research in Anthropology. This course will complement other courses in Anthropology such as ANTH 045 and ANTH 001. The course can be used to fulfill a requirement in both the major and minor in Anthropology, and will fulfill both a Writing Intensive requirement and a Bachelor of Arts social/behavioral science requirement. It will also provide students in other departments with the opportunity to study aspects of diverse, non-western cultures.

Changes Effective Summer 2024:

- Added Prerequisites
- Changed Course Description

ASM 309: Measurement & Monitoring of Hydrologic Systems (3 Credits)

Old Listing Effective Through Spring 2024:

This course is an introduction to measurement and monitoring equipment/techniques commonly used in analyses and design of hydrologic systems and will provide students the opportunity to learn and apply basic measurement techniques that serve as critical tools in professional practice in water resources. During the first part of the course, the instruments and techniques commonly used in water resources assessment, including rainfall monitoring, flow monitoring, and interest as part of the Sustainability Institute's Sustainable Communities Collaborative. Data generated over the course of the semester are used to develop a report that is shared, along with the data with a community partner. In the second part of the course, mapping development is explored, which serves as a critical aspect of water resources engineering and planning. ArcGIS serves as a primary software tool used in engineering design and water resources planning, and students will learn to develop maps to present and process various watershed - data including land use data, soils data, and hydrography data. Various aspects of the course will coalesce around the concept of the watershed being the basic unit of water resources analyses and design, and students will experience how various measurement techniques and approaches are necessary tools for practicing professionals. This course will be useful to any undergraduates seeking degrees in a major related to water resources planning, engineering, or technology.

Enforced Prerequisite at Enrollment: CHEM 110. Enforced Concurrent at Enrollment: PHYS 211 or PHYS 250

Cross-listed Courses: ERM 309

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

ASM 309H: Measurement & Monitoring of Hydrologic Systems (3 Credits)

Old Listing Effective Through Spring 2024:

Introduction to measurement and monitoring equipment/techniques commonly used in analyses and design of hydrologic systems.

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

ASM 310: Power Transmission in Agriculture (3 Credits)
Old Listing Effective Through Spring 2024:

Selection and maintenance of mechanical, hydraulic, and pneumatic power transmission components and systems. Electric motor principles and controls. ASM 310 Power Transmission in Agriculture (3) After successful completion of ASM 310, students will apply the physical principles, of mechanical power transmission system components such as shafts, belts and sheaves, chains and sprockets, gears, torque limiters, clutches, and universal joints by selecting suitable mechanical drives and specifying proper maintenance procedures. Students will be able to read hydraulic and pneumatic schematics, size fluid power components such as pumps, lines, valves, cylinders, and troubleshoot hydraulic and pneumatic systems. Students will also be able to explain the electrical and physical principles of AC and DC electric motor operation. They will be able to identify torque, speed, voltage, and current operating characteristics and will be able to select controls and circuit protection devices necessary to achieve proper performance. As a required course in the Agricultural Systems Management major, ASM 310 is a prerequisite for other courses.

Enforced Concurrent at Enrollment: BRS 221

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Prerequisites
- Changed Course Description

ASM 320: Combustion Engines for Mobile Equipment (3 Credits)
Old Listing Effective Through Spring 2024:

After successful completion of ASM 320, students will explain and evaluate the theoretical and practical aspects of internal combustion engines. Students will evaluate and compare alternative engine thermodynamic cycles, alternative fuels (gasoline, diesel, biodiesel, compressed natural gas), performance enhancing attachments (turbochargers, intercoolers), and supporting systems (fuel injection, lubrication, starting, cooling, emissions cleansing). Students will be able to properly select engines and related systems for mobile applications. Students will employ important maintenance procedures required for economical useful life and proper operation. Students will be able to troubleshoot engine systems.

Enforced Prerequisite at Enrollment: ASM 310 or BE 306 or ME 360

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Prerequisites
- Changed Course Description

ASM 327: Soil and Water Resource Management (3 Credits)
Old Listing Effective Through Spring 2024:

This course equips students with the ability to understand land measurements, mapping, soils, hydrology, channel flow, erosion control techniques with emphasis on RUSLE2, subsurface drainage techniques, and water impoundments for use in storing water, managing stormwater, and capturing suspended sediment. The class concludes with a 3-week section on irrigation, which teaches water needs and pipe flow. Basic hydrology is presented using both the Soil-Cover-Complex and Rational Methods. Manning's equation is developed and discussed for use in understanding flow in open channels. The various components of the

RUSLE2 soil erosion model are presented with emphasis in agricultural erosion. Irrigation is taught from both a supplemental agricultural and environmental perspective.

Enforced Concurrent at Enrollment: PHYS 250 or PHYS 211

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

ASM 420: Principles of Off-Road Machines (3 Credits)
Old Listing Effective Through Spring 2024:

ASM 420 covers the technical aspects of off-road power machinery, such as tractors, self-propelled harvesters, and military, logging and construction equipment. Upon successful completion, students will understand the many facets of design and management of such vehicles (such as mechanical power generation, power allocation, power transmission, traction, operator enclosures, and electrical and electronic systems). Laboratory exercises will involve full-scale equipment with instrumentation used to measure performance. While ASM 420 is not a prerequisite for any other course, it complements engineering and technology courses related to machinery. This course is a technical selection in the Biological Engineering and BioRenewable Systems majors and is required for the Off-Road Equipment minor. It complements other courses for anyone interested in the off-road machinery industries. ASM 420 covers several aspects of function and design related to off-road machinery.

Enforced Prerequisite at Enrollment: BE 306 or ASM 310 or ME 360

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Prerequisites
- Changed Course Description

ASM 424: Precision Agriculture Technology (3 Credits)
Old Listing Effective Through Spring 2024:

Precision agriculture is a data-based approach to optimize crop production and reduce environmental footprint. This course provides an overview of major concepts in precision agriculture (such as GPS, GIS, remote sensing, and spatial variability) and case studies illustrating decisions and management. In this course, computer processing, data analysis and management, robotics, and other related advancements in technologies will be emphasized to provide necessary technical skills in precision agriculture to students. The first part of the course will cover agricultural machinery combined with GPS such as planters, combines, fertilizer application equipment, and sprayer. Students will learn how to manage these tools efficiently. The second part of the course will emphasize how to manage and analyze field variability data including yield data, soil properties with real-time sensors and create prescriptions based on actual data. The last part of the course will emphasize on how precision agriculture technology can benefit a farm's financial sustainability.

Enforced Prerequisite at Enrollment: BE 301 or ME 330 or STAT 240 or STAT 200 or STAT 250

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Description

Old Listing Effective Through Spring 2024:**BRS 221: Engineering Principles of Biorenewable Systems (3 Credits)****Old Listing Effective Through Spring 2024:**

This course provides an overview of engineering principles to students in non-engineering majors, but who are likely to encounter challenges that require quantitative solutions. Problem solving skills are extremely important to technology. At the end of the course, students will be able to: solve problems related to biorenewable systems using a structured, logical method combining concepts from physics and math; recognize and apply unit factoring and dimensional analysis to problem solving; quantify physical relationships and apply engineering principles to evaluate basic engineering technology problems involving electrical systems, structural members, fluid mechanics, heat transfer, and psychrometrics. Hands-on examples are used throughout the course to tie the course material to applications in agricultural and biorenewable industries. Examples include residential wiring; sizing structural members made of wood, steel, and other materials; non-moving and flowing fluids in bioproduct and agricultural processing; heat transfer through wall, windows, and other materials likely to be found in construction and processing facilities; psychrometrics in environmental growth and drying facilities. This course provides the groundwork for topics explored in more detail later in the BioRenewable Systems curriculum.

Enforced Prerequisite at Enrollment: (MATH 110 or MATH 140) and (PHYS 250 or PHYS 211)

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Number to 301
- Changed Course Title
- Changed Abbreviated Title
- Changed Course Description

BRS 300: Introduction to Biorenewable Products (3 Credits)**Old Listing Effective Through Spring 2024:**

Overview of bioproducts and their related industry sectors, including forest products, biocomposites, biofuels, bioenergy, bio-based adhesives, biochemicals, and bioplastics. BRS 300 Introduction to Biorenewable Products (3) This course provides an overview of the nature and utilization of bioproducts, which are defined as products created from biologically derived, renewable industrial feedstocks. These materials are renewable and can be sustainably produced; as such, they will be increasingly utilized as society recognizes the opportunity cost of mining and using other non-renewable industrial feedstocks. The class focuses on overviewing the relevant industry sectors.

Enforced Concurrent at Enrollment: CHEM 110

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Title
- Changed Abbreviated Title
- Changed Course Description

BRS 350: Introduction to Life Cycle Assessment (3 Credits)**Old Listing Effective Through Spring 2024:**

Life cycle assessment (LCA) is a quantitative approach to assessing the environmental, economic, and/or social impacts associated with the entire supply chain of a product, process, or service. LCA is a systematic and holistic approach that enables designers and planners to identify the most impactful stages of a supply chain so that we might strategically intervene to improve the system. In this course students will learn about the LCA standards developed by the International Organisation for Standardisation (ISO). Students will also develop estimation, data verification skills, how to consider uncertainty in analysis, and learn how materials and energy flows lead to impacts to ecological and human systems. Over the course of the semester students will build their own LCA project by finding appropriate data, developing a life cycle inventory, entering data into LCA software, completing an impact assessment, and finally analysis and interpretation of the results generated. LCA is a flexible methodology and students will be encouraged to focus their project on a topic relevant to their broader learning and career objectives. Learning to complete an LCA also develops critical thinking skills, or life cycle thinking, which enables people to develop the skillset to pay attention to the larger system in which they are working in order to develop the human, materials and energy transactions that can lead to more renewable and sustainable systems. Class projects will allow the students to apply LCA to biorenewable systems, including agricultural and biological processes and product development.

Enforced Prerequisite at Enrollment: 5th Semester standing and (MATH 110 or MATH 140)

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Description

BRS 391: Communication Skills for BE and BRS Students (2 Credits) [GWS]**Old Listing Effective Through Spring 2024:**

BE/BRS 391 is one part of a two-semester experience in discipline-specific communication and leadership skills training. A key facet of this training is contextual approach. To meet the needs of BE and BRS students, the course emphasizes communication skills that are critical for their professional development, appreciating the technical content of students' work and the industries within which the students will ultimately work. The primary focus for BE/BRS 391 is communication skills (oral and written) with a secondary focus on leadership and career skills. Students will be evaluated through various methods, such as writing and speaking projects, professional presentations, written homework and worksheets in class and out, creation of portfolios and reports, and in-class group and individual exercises. BE/BRS 391 provides a foundation in General Education, Writing and Speaking (GWS) for students in the Biological Engineering (BE and BioRenewable Systems (BRS) majors.

Enforced Prerequisite at Enrollment: Fifth semester standing or higher

Cross-listed Courses: BE 391

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Title
- Changed Course Description

BRS 392: Leadership Skills for BE and BRS Students (2 Credits) [GWS]

Old Listing Effective Through Spring 2024:

BE/BRS 392 is one part of a two-semester experience interdisciplinary-specific communication and leadership skills training. A key facet of this training is the contextual approach. To meet the needs of BE and BRS students, the course emphasizes leadership skills that are critical for their professional development, appreciating the technical content of students' work and of the industries within which the students will ultimately work. The primary focus for BE/BRS 392 is leadership skills, supported by training in communication, ethical decision-making, and management. Students will be evaluated through various methods, such as writing and speaking projects, professional presentations, written homework and worksheets in class and out, creation of portfolios and reports, and in-class group and individual exercises. BE/BRS 392 provides a foundation in General Education, Writing and Speaking (GWS) for students in the Biological Engineering (BE) and BioRenewable Systems (BRS) majors.

Enforced Prerequisite at Enrollment: Fifth semester standing or higher

Cross-listed Courses: BE 392

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Title
- Changed Abbreviated Title
- Changed Course Description

BRS 399: Foreign Studies (1-12 Credits: Maximum of 12 Credits) [IL]

Old Listing Effective Through Spring 2024:

Courses offered in foreign countries by individual or group instruction.

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

BRS 402: Foundations of Sustainable Business (3 Credits)

Old Listing Effective Through Spring 2024:

Emphasis on understanding business strategies for enhancing sustainable operations, including issues related to the natural environment and corporate social responsibility. ERM 402 / BRS 402 Foundations of Sustainable Business (3) This course will provide students with an understanding of how environmental and sustainability issues are impacting business strategies and ultimately profits. We will also examine the external stakeholders, such as environmental groups, policy-makers, and "green" consumers, that impact business management. Business students will benefit by a better understanding of environmental/sustainability issues that impact their operations and strategies. Non-business students will benefit by understanding how business decisions can impact the natural environment. An emphasis will be on a thorough understanding of making a business case for sustainability. We will also discuss the triple bottom line and its use. Some Specific Issues to Cover: 1. How are organizations shifting business models to work with sustainability trends? 2. How can we make a business case (justification) for being "green"? 3. Can firms differentiate themselves by being responsible/sustainable? Do consumers and other stakeholders care? 4. Thorough understanding of stakeholders and how they impact operations. 5. How can the "business" side of the world

work with the "environmental" side? 6. Use of packaging as an example of where parts of the supply chain are working together to be more sustainable. 7. How "waste" in its many forms can be seen as a surrogate for unsustainable practices. 8. Pros and cons of metrics used to measure sustainability. 9. Impacts of business operations on the environment.

Enforced Prerequisite at Enrollment: (AGBM 101 or ECON 102 or ECON 104) and 7th semester standing

Cross-listed Courses: ERM 402

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Description

BRS 411: Bioproducts Science and Technology (3 Credits)

Old Listing Effective Through Spring 2024:

This course investigates fundamental aspects of biorenewable polymers (bioproducts) and ties their underlying chemical structure to macroscale properties. These bioproducts are created from biologically derived, renewable industrial feedstocks such as wood, cotton, grasses, and bast fibers (e.g. jute, hemp, kenaf, sisal, etc.). The course begins with an overview of descriptive organic chemistry that is relevant to biorenewable polymers. Students will build on this knowledge to identify, compare, and contrast various industrially relevant plastics. Material science of polymers, including determining molecular weights and measuring mechanical properties of bioproducts is then investigated. These properties are relevant to compare the performance of existing plastics with emerging bioproducts. A survey of the several classes of synthetic and natural polymers, fibers, and composites is the focus of the third unit in the class. Final course subjects include manufacture of soft materials and their decomposition to form recalcitrant waste and microplastics. These will be discussed in the context of 21st-century western culture predicated on the existence of cheap and disposable plastic products, and how design and deployment of new bioproducts could eliminate plastic waste, reduce the environmental impact of plastics, and enhance the economics of industrial biorefining.

Enforced Prerequisite at Enrollment: CHEM 110 and BRS 350

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Prerequisites

BRS 417: Processing and Manufacturing Systems for Bioproducts (3 Credits)

Old Listing Effective Through Spring 2024:

Overview of systems and processes used in the manufacture of bioproducts. This course reviews major bioproducts and details how they are manufactured industrially. A fundamental understanding of petrochemical refining, pulp and papermaking, and sawmill operations is the foundation of the beginning of the course, since the majority of existing and emerging bioproducts are manufactured using these processes or new hybrids of these. Next, thermochemical conversion of biomass is covered, including existing technologies such as torrefaction and barrel production, and emerging technologies such as catalytic fast pyrolysis and biomass gasification. Students will then prepare and deliver presentations on traditional and emerging wood and paper products. The final portion of the course will include biomass fractionation technologies

that provide cellulose, hemicellulose, and lignin to produce fuels and chemicals in a manner analogous to petrochemical refining.

Enforced Prerequisite at Enrollment: BRS 221 and BRS 300

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Prerequisites

BRS 422: Energy Analysis in Biorenewable Systems (3 Credits)
Old Listing Effective Through Spring 2024:

Energy management, energy conversions, renewable energy alternatives, engineering economic analyses, national and international perspectives on energy resources. BRS 422 Energy Analysis in Biorenewable Systems (3) This course focuses upon first understanding the various forms of energy in common use today and then analyzing the energy equivalents of various forms of energy. Forms of energy to be studied most extensively include electricity, fossil fuels, and renewable energy sources. Principles and applications of engineering economic analyses will be emphasized because these principles are needed to evaluate the feasibility of converting from one energy form to another. Specific application areas of emphasis include buildings, motors, and lights. For each application area, there will be discussion of the alternatives available for using energy in a more efficient and economical manner. The infrastructure systems needed for providing electricity and natural gas to a specific location will be described as well as typical rate structures for the energy provided. Alternatives to the conventional energy systems will be identified and the course will conclude with discussion of energy strategies throughout the 21st century. Local, national, and international perspectives on energy resources will be infused throughout this course.

Enforced Prerequisite at Enrollment: BRS 221

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Title
- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

BRS 423: Deterioration and Protection of Bioproducts (3 Credits)
Old Listing Effective Through Spring 2024:

Timber, wood, and bioproduct deterioration from fungi, insects, fire; treatment of bioproducts for in-service protection.

Enforced Prerequisite at Enrollment: BRS 300 Enforced Concurrent at Enrollment: BRS 411

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Prerequisites

BRS 426: Safety and Health in Agriculture and Biorenewable Industries (3 Credits)
Old Listing Effective Through Spring 2024:

BRS 426 explores management aspects of occupational safety and health specifically as it pertains to both the agricultural and biorenewable systems industry sectors. Employers are increasingly demanding students have training in safety and health. Topics to be covered include

principles of safety and health, hazard analysis, hazard prevention and control, human behavior and safety, training and education, safety and health regulations, agricultural emergencies and developing a written safety program.

Enforced Concurrent at Enrollment: 5th Semester standing or higher

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

BRS 428: Electric Power and Instrumentation (3 Credits)
Old Listing Effective Through Spring 2024:

Principles and application of electric circuits for power distribution, motors, automatic controls, and instrumentation used in agricultural and biorenewable industries. BRS 428 Electric Power and Instrumentation (3) Nearly every facet of our modern society relies on electricity and electronics. Whether engaged in product development, manufacturing, production, testing, or management, graduates of technical programs benefit from a fundamental understanding of electrical/electronic systems. This course prepares students to analyze electrical/electronic systems applicable to agricultural and biorenewable industries. Upon completion of this course, the student will be able to: demonstrate correct use of common electronic measurement tools including multimeters, oscilloscopes and others; demonstrate sound electrical construction techniques including cable preparation, soldering, circuit board construction, and others; demonstrate sound troubleshooting skills for electrical and electronic systems; understand common elements of power distribution systems; understand simple measurement and control circuits represented by schematics or ladder diagrams; understand and apply various sensors to measure temperature, pressure, strain, force, proximity, speed etc.; understand the application of dataloggers, programmable logic controllers, and computer software to collect data and/or control simple processes; understand the function of common circuit components such as resistors, capacitors, inductors, diodes, op-amps, transistors, and transformers in simple circuits; understand basic maintenance and safety requirements for facility electrical systems.

Enforced Prerequisite at Enrollment: BRS 221

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Prerequisites
- Changed Course Description

BRS 429W: Biorenewable Systems Analysis and Management (3 Credits) [WAC]
Old Listing Effective Through Spring 2024:

BRS 429W covers systems analysis and optimization techniques including an introduction to systems theory, qualitative and quantitative analysis, linear programming, waiting line models, PERT/CPM, minimal spanning tree, calculus methods, simulation modeling for decision making, inventory, and energy audits. All topics are presented in the form of case studies that require the students to solve problems in realistic production and processing scenarios. The course also provides a writing-intensive structure. The course targets BRS students in their last semester because it integrates knowledge and experiences acquired in prior BRS, business, and agricultural science courses.

Enforced Concurrent at Enrollment: 7th Semester standing or higher

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Number to 429
- Changed Course Title
- Changed Abbreviated Title
- Changed Course Description
- Removed Writing Across the Curriculum (WAC) Attribute

**BRS 430W: Biorenewable Systems Capstone 1 (1 Credit) [WAC]
Old Listing Effective Through Spring 2024:**

Students in Biorenewable Systems learn to apply technology, business, and science to sustainable agricultural and biologically-based product systems development and management. The capstone experience is a two semester, senior year sequence required of all BRS students. This course is the Fall component of the sequence and introduces the student to concepts critical for analyzing real-world biorenewable systems. This includes selecting a capstone topic, technical writing review, team building, systems analysis tool application, project proposal development, and proposal presentations. The course also provides iterative writing experiences to enhance the student's ability to create technically sound and grammatically correct reports. At the end of this course, the student will be able to: Write a technically sound biorenewable systems project proposal; be able to function in teams to address a biorenewable systems problem; be able to assess a system and apply appropriate analysis and/or business tools.

Enforced Prerequisite at Enrollment: BRS 391 and BRS 392 Enforced Concurrent at Enrollment: BRS 429W

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Title
- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

**BRS 431W: BioRenewable Sys Capstone 2 (2 Credits) [WAC]
Old Listing Effective Through Spring 2024:**

Students in Biorenewable Systems learn to apply technology, business, and science to sustainable agricultural and biologically-based product systems development and management. The capstone experience is a two semester, senior year sequence required of all BRS students. This course is the Spring component of the sequence. The students apply quantitative systems and business tools to analyze real-world biorenewable systems, interpret the results, and provide recommendations for management decision making. The course also provides iterative writing experiences to enhance the student's ability to create technically sound and grammatically correct reports. At the end of this course, the student will be able to: Effectively work as a team to manage the time and resources of a biorenewable systems analysis project; execute a systems analysis of a real-world problem; interpret results to provide a management recommendation; effectively present results and recommendations in a technical report.

Enforced Prerequisite at Enrollment: BRS 430W

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Title
- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

**BRS 490: BioRenewable Systems Colloquium (1-2 Credits:
Maximum of 2 Credits)
Old Listing Effective Through Spring 2024:**

This course introduces students to various aspects of the biorenewable systems industries with an emphasis on professional career information and insights. Outside speakers will provide perspectives on current challenges, opportunities, and future trends in bioproduct and related industries.

Enforced Concurrent at Enrollment: 5th Semester standing or higher

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM
- Changed Course Title
- Changed Abbreviated Title
- Changed Course Description

**BRS 494: Undergraduate Research (1-12 Credits: Maximum of 12)
Old Listing Effective Through Spring 2024:**

Supervised student activities on research projects identified on an individual or small group basis.

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

**BRS 494H: Honors Thesis (1-6 Credits: Maximum of 6 Credits) [H]
Old Listing Effective Through Spring 2024:**

Independent study directed by a faculty supervisor that culminates in the production of a BioRenewable Systems honors thesis.

Enforced Prerequisite at Enrollment: Junior or senior standing in the Schreyer Honors College and permission of a BioRenewable Systems honors advisor

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

**BRS 495: Internship (1-18 Credits: Maximum of 18 Credits)
Old Listing Effective Through Spring 2024:**

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

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

**BRS 496: Independent Studies (1-18 Credits: Maximum of 18 Credits)
Old Listing Effective Through Spring 2024:**

Creative projects, including research and design, which are supervised on an individual basis and which fall outside the scope of formal courses.

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

**BRS 497: Special Topics (1-9 Credits: Maximum of 9 Credits)
Old Listing Effective Through Spring 2024:**

Formal courses given infrequently to explore, in depth, a comparatively narrow subject which may be topical or of special interest.

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

**BRS 499: Foreign Studies (1-12 Credits: Maximum of 12 Credits)
[IL]****Old Listing Effective Through Spring 2024:**

Courses offered in foreign countries by individual or group instruction.

Changes Effective Summer 2024:

- Changed Course Abbreviation to ABSM

ENGL 428: Asian American Literatures (3 Credits: Maximum of 6 Credits) [BA] [US]**Old Listing Effective Through Spring 2024:**

A seminar on the literatures and cultures of Asian America, with attention to forms of geographic, historical, and ethnic diversity.

Cross-listed Courses: AAS 428

Changes Effective Summer 2024:

- Changed Cross-Listed Course Abbreviation to ASIA
- Changed Course Description

**ERM 448: Rural Road Ecology and Maintenance (3 Credits)
Old Listing Effective Through Spring 2024:**

Roads are ubiquitous throughout the landscape and this course is intended for students who anticipate working in natural resource management fields. This course provides students with the fundamental understanding of the interaction of natural systems with unpaved and low volume paved roads in order to economically maintain roadways with minimum impact on the environment. The major focus area will be the road/stream interface, including the fundamentals of hydrology, geology, soils, and erosion processes as they pertain to roads and streams. It is expected that the student will gain a practical understanding of rural road maintenance in order to provide a foundation for real-world application. Emphasis is placed on Environmentally Sensitive Maintenance (ESM) practices for rural roads that are used throughout Pennsylvania. The goal of ESM practices is to minimize the environmental impact of the existing road network by maintaining proper road drainage in order to keep road materials out of the adjacent streams and surrounding landscape. Upon completion the student will be ESM certified under Pennsylvania's Dirt, Gravel and Low Volume Road Maintenance Program.

Prerequisites: MATH 22 AND MATH 26; OR MATH 41; OR MATH 110 OR MATH 140
Concurrent Courses: ASM 327 OR BE 307 OR CE 335 OR CE 370 OR FOR 308 OR FOR 470

Changes Effective Summer 2024:

- Changed Prerequisites

**FOR 201: Global Change and Ecosystems (3 Credits)
Old Listing Effective Through Spring 2024:**

This course will provide students with an understanding of the climate system, ecosystems, and feedbacks between the two. FOR 201 Global Change and Ecosystems (3) (GN) Ecosystems across the planet are facing unprecedented pressures and changes as society seeks to support continued population growth and increasing standards of living. Understanding how ecosystems in Earth's biosphere interact with the climate system and how feedbacks alter the services that ecosystems provide is necessary to meet society's demands. Global Change and Ecosystems is designed to provide students with a general understanding of the climate system, ecosystems, and feedbacks between the two. The goal of this course is to develop critical thinking skills related to understanding the many relationships between society and natural systems. In this course students are encouraged to think critically about these relationships and the information used to develop assessments. This course broadly covers: 1) global change factors, including climate change, land-use change, and pollution, 2) life on land, where we will explore the diversity of Earth's ecosystems, 3) global change impacts, where we will identify how global change factors are impacting our ecosystems, and 4) ecosystem services, where we will examine the coupling of human and natural systems. Students will complete this class with the ability to: 1) interpret scientific figures, 2) critically evaluate information about global change and ecosystems, 3) define what constitutes an ecosystem and the controlling factors, 4) describe Earth's biomes and major ecosystems, and 5) describe the impacts of global change factors on ecosystems.

Prerequisite: 3 credits of science

Changes Effective Summer 2024:

- Changed Course Number to 201N
- Changed Abbreviated Title
- Removed Prerequisites
- Added Recommended Preparation
- Changed Course Description
- Added General Education Inter-Domain, Natural Sciences (GN), and Social & Behavioral Sciences (GS) Attributes

**FORT 170: Forest Harvesting and Operations (3 Credits)
Old Listing Effective Through Spring 2024:**

Forest harvesting and intermediate operations: forest worker safety, hand and power tools, harvest planning, and best management practices. FORT 170 Forest Harvesting and Operations (3 Credits) FORT 170 is a three-credit, applied field-oriented course in the Forest Technology curriculum. The course is offered in the four-week summer intersession following completion of the second semester. Students will be introduced to woods safety and the identification of hazards; the safety and use of hand and power tools used in forest harvesting and intermediate operations; and logging equipment safety, maintenance, and operation. Axes, crosscut saws, chain saws, heavy logging equipment including logging skidder, bulldozer, and woods tractor will be used. Students will work in crews to complete a forest harvest or thinning operation from beginning to end including: forest inventory and stand analysis; the use of best management practices; the development of an erosion and sedimentation plan; harvest planning and layout; forest stand marking; and the harvest of the marked forest stand. Daily performance is evaluated based upon safety, effort, and motivation, skill improvement,

cooperation, and attendance. Course grades will be based on quizzes, assignments, and daily performance.

PreRequisite: FORT 110 , FORT 160 , American Red Cross Standard First Aid and CPR

Changes Effective Summer 2024:

- Removed Prerequisites
- Added Concurrents
- Changed Course Description

HM 407: The Sustainable Fork: Food Systems Decisions for Away-From-Home Eating (3 Credits)

Old Listing Effective Through Spring 2024:

The course will incorporate economic and managerial dimensions to the discussion of food decisions in foodservice away-from-home eating contexts, particularly emphasizing the behavioral aspect of decisions - how individuals (consumers, providers, managers) make choices in the food system, and what might be the consequences of these choices. The course will use evidence from multiple farm-to-fork perspectives to allow students to analyze food systems problems and solutions. It will also require students to engage directly with the local food service system through course projects and tours. The major topics of discussion will be organized under each of the value chain components of the farm-to-fork continuum: production, distribution, purchasing, preparation, and consumption. Specific topics under each of these value chain components will include: nutrition, food safety, food waste, sustainable practices, social justice, consumer utility, economic profits, ethics, government policy, and decision-making. In particular, the course will be motivated by economic theories such as: agency relationship, information asymmetry, transaction cost economics, and behavioral economics topics such as self-rationing, and time discounting.

Enforced Prerequisite at Enrollment: A grade of C or better in HM 201 or AGBM 170 or AGBM 170Z

Cross-listed Courses: FDSYS 407

Changes Effective Summer 2024:

- Changed Prerequisites

IT 20: Intensive Intermediate Italian (6 Credits) [BA]

Old Listing Effective Through Spring 2024:

Continuation of Intensive Elementary Italian, building on grammar and communication skills (reading, writing, listening, and speaking). IT 020 Intensive Intermediate Italian (6)(BA) This course meets the Bachelor of Arts degree requirements. This course is for students who have successfully completed IT 010 Intensive Elementary Italian, and who seek an Intensive learning environment of Italian grammar (all aspects: reading, writing, listening, and speaking). Students learn intermediate Italian in an intensive language-learning environment. Extensive reinforcement of elementary Italian grammar (reading, writing, speaking, listening) and introduction to intermediate Italian grammar, speech, and culture through a variety of written and oral exercises. All work is done in Italian. Homework in the accompanying workbooks is assigned each week. Pronunciation practice in the language lab is also required weekly. There are also supplementary grammatical and cultural activities on the course web page. Equivalent to last half of IT 002 and all of IT 003.

PreRequisite: IT 010

Changes Effective Summer 2024:

- Changed Abbreviated Title
- Changed Course Description

LING 404: Phonology I (3 Credits) [BA]

Old Listing Effective Through Spring 2024:

The analysis of the sound systems of human languages; focus on common phonological processes across languages and on phonetics-phonology interface. LING 404 Phonology I (3)(BA) This course meets the Bachelor of Arts degree requirements. This course is about sound patterning in language. In particular, we will learn how human speech sounds are produced and how they function together as a system. We will learn the International Phonetic Alphabet applied to English. We will discuss phonological data from many different languages to seek common phonological processes that occur despite the apparent surface diversity of languages. We will do extensive work on phonological problems in order to master basic phonological analysis.

Changes Effective Summer 2024:

- Added Prerequisites
- Changed Course Description

LING 449: Semantics I (3 Credits) [BA]

Old Listing Effective Through Spring 2024:

The study of meaning in human language; methods of analysis; study of sense, reference, compositionality, quantification, presupposition, and sentence-level meaning. LING 449 Semantics I (3)(BA) This course meets the Bachelor of Arts degree requirements. This course examines our best understanding of how humans produce and understand utterances to have particular meanings. This course examines lexical semantics, which is concerned with word meaning, phrasal semantics, which examines phrase meanings and with pragmatics, the study of meaning in contexts. Because meanings cannot always be built up or deduced from the combined meaning of smaller elements, students will attempt to divulge the semantic principles at work in human language through a wide variety of problems and activities.

Changes Effective Summer 2024:

- Added Prerequisites
- Changed Course Description

LING 493: Field Methods (3 Credits) [BA]

Old Listing Effective Through Spring 2024:

Primary linguistic investigation of a language different from English; field work with a native speaker; data gathering; linguistic analysis. LING 493 Field Methods (3)(BA) This course meets the Bachelor of Arts degree requirements. In this course, students work directly (in groups) with a native speaker of a foreign language with which no one in the class has any prior familiarity. The students will work to uncover the set of sounds relevant to the language in question by winnowing down possible sound contrasts made in human languages. They will begin to construct a lexicon (vocabulary) built with a phonetic alphabet to discover how words are formed in the language. They will refine their techniques of questioning their research participant based on principles of linguistic field work. Finally, groups will present their findings for discussion and revision.

Changes Effective Summer 2024:

- Added Prerequisites
- Added Concurrents
- Added Recommended Preparation
- Changed Course Description

**PLSC 114Z: Winning Political Support (3 Credits)
Old Listing Effective Through Spring 2024:**

The purposes of this course are to introduce students to the comparative study of political systems, some of their parts, and the functioning of those parts, and to develop a capacity for effective, ethical citizenship. Real-world attempts to convince various audiences will be analyzed with respect to their appeals to the emotions of their respective audiences, often through framing the candidacy or policy under consideration in ways intended to stimulate fear, hope, or anxiety in order to command the attention of audiences. The use of words, other symbols, and non-verbal stimuli with strong emotional and normative content will be highlighted. The class will also evaluate efforts to establish credibility with audiences through references to endorsements, demonstrations or claims of expertise, goodwill, and good sense. Lastly, the logical validity of inferences and deductions made in the attempts to convince will be considered so that flattery, manipulation, bargaining, deception, and intimidation can be distinguished from genuine persuasion. Materials presented in Philosophy 10 (GH), "Critical Thinking," to which PLSC 114 is linked, will provide students with the tools to do this.

So that students might see how characterizations of attempts to convince might be placed into a provisional context, the study is comparative. It will look at attempts in the U.S. as well as some other country. In general, so that the attempts at winning over audiences might be as comparable and as comprehensible as possible, the issue should be as similar as possible and the other country should be Anglophone. Although systems of elections and governance and controversial issues inevitably vary within and between countries, it is possible to find elections and policy controversies with sufficient similarities to make cross-national comparisons of attempts at convincing their respective audiences a fruitful exercise. For example, one might build the course around the televised debates and campaign ads for the mayoral elections in Vancouver and Seattle and the efforts to generate support and opposition to oil pipelines in the two countries. By looking at the different strategies used in attempts to convince elites, the citizenry and parts of the citizenry in the two countries, it is possible to raise questions about the workings of the political systems in the two countries. Specifically, students can examine some of the ways that historical geopolitical, constitutional, economic, and demographic differences between and within the two countries are manifested in the political processes of the two countries. By leading students to consider such questions, this course can induce them to undertake further study that will equip them with the methodological tools to investigate these issues in greater depth. Moreover, by providing students with the basic outlines of well-supported valid inference and challenging them to detect of the most common informal fallacies in efforts to convince and create an outline for their own attempt at political persuasion, PLSC 114 (GS) will help build capabilities that are necessary for responsible and effective and ethical citizenship.

Changes Effective Summer 2024:

- Changed Course Number to 114
- Changed Abbreviated Title

- Changed Course Description
- Removed General Education Linked Attributes

**RPTM 494: Senior Honors Thesis (1-6 Credits: Maximum of 6 Credits) [H]
Old Listing Effective Through Spring 2024:**

Senior Honors Thesis

Changes Effective Summer 2024:

- Changed Course Title
- Changed Abbreviated Title
- Changed Course Description

**SOC 5: Social Problems (3 Credits) [GS] [BA]
Old Listing Effective Through Spring 2024:**

Current social problems such as economic, racial, and gender inequalities; social deviance and crime; population, environmental, energy, and health problems. SOC 5 Social Problems (3) (GS)(BA) This course meets the Bachelor of Arts degree requirements. This course is designed to introduce students to the main societal issues facing humanity at the present time and in the foreseeable future. Although the course examines a number of social issues in the United States (such as crime and poverty), the course generally takes an international and intercultural perspective. The primary social issues that affect individuals and their children today are global, rather than national, in scope. For this reason, globalization is a recurring theme in the course. Discussion and questions are encouraged in all sections. This course meets a General Education requirement in the Social and Behavioral Sciences.

Changes Effective Summer 2024:

- Changed Course Description

**SOC 19: Sociology of Popular Culture (3 Credits) [GS] [BA]
Old Listing Effective Through Spring 2024:**

In this course students will be introduced to the theories, concepts, and research techniques sociologists use by applying them to study popular culture. Popular culture is pervasive in modern societies and comes in many forms both in and out of the mainstream from pop songs, TV series, and fashion trends to Manga, Burning Man, and Furries. Thanks to social media and the Internet pop culture morphs and spreads rapidly from person to person, across time and space, making it a global culture. As a scientific approach to studying the moving parts that make societies tick, sociology is well suited to helping us make sense of a topic this diverse and complex. To make the topic of pop culture more manageable for a single course, students will explore how popular culture is shaped by the social dividing lines commonly found in modern societies and in turn helps to shape how factors such as race, social class, gender, sexuality, and nationality affect people's lives. The course is organized to meet two instructional goals. First, to demonstrate to students how questions about pop culture stemming from varied sociological perspectives can be answered using different research methods. Second, to help students think sociologically about pop culture by helping them to conduct their own investigations of types and aspects of pop culture that they are curious about. Along the way the class will discuss such issues as creativity and innovation in culture production; the commercialization of popular culture; cultural capital and social distinctions; popular culture as an identity resource; the political uses of pop culture; subcultural deviance; music scenes; cultural colonialism and hybridization; YouTube stars, "binge-watching," and the

latest pop culture trends and developments. The hope is that by studying popular culture as part of social processes and human relationships students become more sociologically savvy observers of their cultural environment and gain a richer awareness of the significance of popular culture in their own lives. Practically speaking, the course offers students a foundation for further study in sociology and related social sciences, as well as academic and applied disciplines that focus on popular culture and other types of art and culture.

Changes Effective Summer 2024:

- Changed Course Description

SOC 409: Racial and Ethnic Inequality in America (3 Credits)

Old Listing Effective Through Spring 2024:

The impact of inequality and discrimination on individual and group identity among various racial and ethnic groups.

SOC 409 / AFAM 409 Racial and Ethnic Inequality in America (3) (US) (BA) This course meets the Bachelor of Arts degree requirements. This course explores the impact of inequality and discrimination on individual and group identity for a wide range of social groups with special focus on racial and ethnic majorities and minorities. Using an extensive list of readings, writing assignments, small group activities, and journals (for personal reflection and scholarly critique) the students join the instructor in exploring the effects of inequality and discrimination. While emphasis is given to the inequality and discrimination experienced by local and national populations, a significant portion of the class will address issues rooted in international structures and institutions. Students are evaluated on quizzes, reaction papers, and analysis journals. AFAM 409 / SOC 409 is not a required course in Sociology; it is, however, an optional 400-level course for all majors and minors that fulfills one of their upper-level course requirements. AFAM 409 / SOC 409 is not required for the major or minor, but it is one of several optional courses from which they can choose to fulfill major and minor requirements.

Enforced Prerequisite at Enrollment: 3 credits in SOC

Cross-listed Courses: AFAM 409

Changes Effective Summer 2024:

- Changed Course Description

SOC 470: Intermediate Social Statistics (4 Credits) [BA]

Old Listing Effective Through Spring 2024:

Descriptive and inferential statistics in social research: central tendency and variation, normal distribution, measures of association, confidence intervals, hypothesis testing.

Enforced Prerequisite at Enrollment: SOC 207

Changes Effective Summer 2024:

- Changed Course Description

SUR 241: Surveying Measurement Analysis (3 Credits)

Old Listing Effective Through Spring 2024:

Statistical error analysis of surveying measurements; propagation of random errors; confidence intervals and statistical testing. Lab. SUR 241 Surveying Measurement Analysis (3) Surveying Measurement Analysis explores the fundamental concepts of statistical error analysis with applications to surveying measurements. It covers the normal

distribution function and theories describing the fundamental procedures in data including measures of central tendency and measures of data variation. It then explores sampling distribution theory and develops statistical confidence intervals and testing using the χ^2 , students t, and F distributions. Fundamental concepts in the propagation of variance are developed and applied to the traditional surveying observations of angles, distances, azimuths, elevation differences. These error propagation techniques are further used to explore the propagation of variance in traditional traverse computations. The accompanying lab exercises help reinforce and validate the theoretical foundations of this class.

Enforced Prerequisite at Enrollment: SUR 111 Enforced Concurrent at Enrollment: MATH 83 or MATH 140

Changes Effective Summer 2024:

- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

SUR 313: Integrated Surveying (3 Credits)

Old Listing Effective Through Spring 2024:

Control, boundary, mapping and construction surveys; survey planning, coordinating; report and record map preparation. SUR 313 Integrated Surveying (3) SUR 313 is intended for SRT and SUR E students in their last year in the programs. Objectives of SUR 313 are directed toward providing instruction and practical experience in activities common in surveying practice, experience requiring the integration of virtually all abilities gained in previous surveying courses. The class is organized as a student surveying company with the instructor as general supervisor. Objective 1 of the student surveying company is to analyze a letter from a client (the instructor) requesting a survey. The letter will request a survey (typically ALTA boundary or construction). The client letter will specify standards (ALTA and other) the survey is to meet, standards commonly required in survey practice. The client letter will specify products to be delivered, typically a report of record of survey maps and analyses showing the degree to which required survey standards have been met. In addressing objective 1, students determine exactly what work needs to be done to satisfy client requirements. Typically these include several sub-surveys: (1) a relatively long-range satellite (GNSS) survey to bring control into the project area, (2) a traditional local control survey to create a control network to control subordinate surveys and the surveys producing what the client has requested, typically boundary retracement and mapping surveys. The result of work on objective 1 is the organization of the class into coordinating groups, one per sub-survey plus two additional groups for report compilation and editing and map production and editing. Objective 2 of the student surveying company is to develop detailed work plans for sub-surveys, report preparation and map production. The result of work on objective 2 is the set of work plans. A written contract (as a letter of understanding) between the student surveying company and the client is prepared. Objective 3 is to perform that record search, field work, data analysis, mapping and preliminary report writing for the sub-surveys necessary to meet client requirements. Objective 4 is to compile the final report of survey.

Enforced Prerequisite at Enrollment: SUR 162 Enforced Concurrent at Enrollment: SUR 212 and SUR 272

Changes Effective Summer 2024:

- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

SUR 341: Adjustment Computations (3 Credits)

Old Listing Effective Through Spring 2024:

Matrix methods in least squares; random error propagation; observation equation model; conditions between parameters; basic post-adjustment statistical analysis. SUR 341 - Adjustment Computations (3) Adjustment computations covers the basic theory and mechanics of a least squares adjustment using the traditional surveying observations of distances, angles, azimuths, and elevation differences. It explores the theory of error propagation, and uses this theory to determine the precision of indirectly measured quantities. It explores post-adjustment analysis through the use of various statistical tests, and error ellipse computation and analysis. This course primarily focuses on the least squares adjustment and analysis of differential leveling, triangulation, trilateration, traverse and network observations.

Enforced Prerequisite at Enrollment: SUR 262 Enforced Concurrent at Enrollment: CMPSC 201 and STAT 200 and SUR 241

Changes Effective Summer 2024:

- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

SUR 362: Introduction to Geospatial Information Engineering (3 Credits)

Old Listing Effective Through Spring 2024:

Basic concepts in geographic information engineering; spatial reference frame-works; map and text data; digital environments; software and hardware plat-forms. SUR 362 Introduction to Geospatial Information Engineering (3) Land has varied meaning and value to different cultures and generations. There is a need to manage land and its resources in order to sustain life and meet the demands of competing interests. Geospatial information technology provides a means through which data about land can be analyzed to obtain information that may be used to support land management decisions. The geospatial information engineering course is the foundation course in the surveying engineering program that introduces students to the technology. The objective of this course is course is to teach students to collect and process spatial data, analyze and make decisions, and to communicate the results using maps and other information delivery formats. This course begins with the introduction of geospatial technology and its application in decision making, resource allocation and management, a socio-economic development. Students learn the different types of data that are used in geospatial information technology. They learn about graphical data structures as well as descriptive databases and how to build them. Three spatial data models are discussed together with their advantages and drawbacks, as well as descriptive databases. Students capture various datasets from the field, convert them into usable formats, and process them using the models that have been discussed so as to reinforce the knowledge. Spatial reference systems and map projections are discussed. Procedures for performing geospatial analyses and querying databases are discussed and students conduct laboratory exercises using the field data that they captured. Map making techniques are discussed and students learn to communicate the results of analysis through maps.

Enforced Prerequisite at Enrollment: SUR 162 and SUR 272 Enforced Concurrent at Enrollment: (MATH 110 or MATH 140) and SUR 222

Changes Effective Summer 2024:

- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

SUR 381: Stormwater Hydraulics and Hydrology (4 Credits)

Old Listing Effective Through Spring 2024:

Hydraulics: statics, continuity, energy, friction; hydrology: rainfall, abstractions, travel time, runoff; stormwater design: sewers, culverts, basins, erosion; municipal regulations. SUR 381 Stormwater Hydraulics and Hydrology (4) Stormwater Management Hydraulics and Hydrology is an elementary treatment of common design practices used to create stormwater management plans for small to medium sized land development projects. Erosion and sedimentation design is also addressed within the context of a stormwater management plan. The course is intended for engineering students who are not required to take formal fluid mechanics or hydrology courses, yet have a need to understand or complete the design aspects of stormwater management as it relates to their professional practice. Some state professional registration laws refer to this type of engineering design as "minor engineering" which is engineering design as it relates to land surveys connected to land development activities. Other types of "minor engineering" include street alignment, sanitary sewers, water lines, utilities and site grading. The course contains three segments. The first segment covers the elementary hydraulics necessary to design drainage structures and storm water detention facilities. These topics include fluid statics, continuity, conservation of mass, conservation of energy, friction losses, minor losses, energy grade line, open channel flow, weirs and orifices. The second segment covers elementary hydrology methods used to analyze runoff from land development sites and small to medium watersheds. The hydrology topics include watershed characteristics, rainfall, abstractions, runoff, time of concentration, peak flow methods, hydrograph methods, basic channel routing and detention basin routing. The third segment covers government regulations and common design methods used to design storm sewers, detention basins and erosion control plans. A project includes the design of a multiple-element storm sewer system, a stable open channel, a detention facility with a multiple outlet structure, and some erosion control measures.

Enforced Prerequisite at Enrollment: MATH 141 and Sixth Semester standing

Changes Effective Summer 2024:

- Changed Abbreviated Title
- Changed Course Description

SUR 455: Precise Positioning Systems (3 Credits)

Old Listing Effective Through Spring 2024:

Stellar coordinate systems; geodetic reference coordinate systems; satellite orbital theory; global positioning systems; pseudo-ranging; GPS vector adjustments.

Enforced Prerequisite at Enrollment: SUR 351 Enforced Concurrent at Enrollment: SUR 441

Changes Effective Summer 2024:

- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

SUR 482: Land Development Design (3 Credits)

Old Listing Effective Through Spring 2024:

The land development process; geometric, environmental, aesthetic aspects of development; local regulatory requirements; preparation of final plat and report. SUR 482 Land Development Design (3) Land development design is designed for seniors in Surveying Engineering and covers the basic principles of residential design and development. The objective of the course is to provide students with exposure to elements of the land development process from an engineering perspective. Topics covered include land development regulations, site analysis of soils, site evaluation in terms of opportunities and constraints, sketch design, site layout, preliminary design, street layout including horizontal and vertical design, grading plan, drainage design, stormwater management, sewer and water, and erosion and sedimentation controls. Students work in teams of two or three on a design project for a local property. Students will utilize AutoCAD Civil 3D (or similar software) and the Virginia Tech/Penn State Urban Hydrology Model (VTPSUHM) (or similar) in the project design. A site visit to the design property is included in the course. At the end of the course, student teams will exchange their project designs and critique each other's work from the view point of a township engineer. Designs are evaluated for adherence to a pre-selected municipal subdivision and land development ordinance (SALDO). Students are required to present their final designs to the class. They must be prepared to explain their work and defend any design elements that are questioned during the presentation. After completion of this course, students will be able to: 1) evaluate a site for land development potential, 2) prepare sketch designs for a proposed land development site, incorporating opportunities and constraints, 3) prepare a preliminary design including street alignment for a residential subdivision, sanitary sewer for a residential subdivision, storm sewer with inlets and inverts and a grading plan; and 4) prepare a mock final plan for public review and presentation.

Enforced Prerequisite at Enrollment: SUR 212 and SUR 372W Enforced Concurrent at Enrollment: SUR 381

Changes Effective Summer 2024:

- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

WILDL 208W: Terrestrial Wildlife Management (3 Credits) [WAC]

Old Listing Effective Through Spring 2024:

This course provides an overview of ecological characteristics of terrestrial habitats and the influence of those characteristics on wildlife populations. Course goals include (1) acquisition of knowledge related to how wildlife (at the individual and population level) interact with and are influenced by changes in their environment, (2) application of management and survey techniques (emphasized in the laboratory component of course), (3 Credits) understanding the application of techniques and principles learned in this class and others to wildlife management scenarios at the local, state, federal, and international level, (4) acquisition of critical thinking, reading, writing, and research skills, and (5) collecting and organizing data and presenting it in a professional format. Writing, editing, and peer review are emphasized.

PreRequisite: FORT 150 , FORT 160 , WILDL101 , WILDL103 , WILDL106 , WILDL204

Changes Effective Summer 2024:

- Changed Prerequisites
- Added Recommended Preparation

WILDL 213: Wetlands and Fisheries Management (4 Credits)

Old Listing Effective Through Spring 2024:

Introduction to basic limnology. Ecology and management of swamp, marsh, pond, and stream habitats and their animal populations.

PREREQUISITES: WILDL 101, WILDL 103, WILDL 106S, WILDL 204

Changes Effective Summer 2024:

- Removed Prerequisites
- Added Recommended Preparation

Course Changes: Effective Fall 2024

AE 483: Comprehensive Architectural Engineering Senior Project II - IUG (1 Credit)

Old Listing Effective Through Summer 2024:

Continuation of A.E. 482. Design of engineering systems of building; comparative analysis of systems. Formal project presentation and critique.

Changes Effective Fall 2024:

- Changed Course Title
- Changed Abbreviated Title
- Changed Credits
- Added Prerequisites
- Added Corequisites
- Changed Course Description

AEE 400: Global Agriculture Education (3 Credits)

Old Listing Effective Through Summer 2024:

Development and implementation of educational programs in agriculture in developing countries. AEE 400 Educational Programs in Agriculture for Developing Countries (3) The purpose of the this course is to develop the global competency of future change agents in agricultural education so that they, in turn, can guide future learners to gain knowledge, develop skills, and acquire dispositions for living in a globally interdependent and culturally diverse world. The course is designed for all learners who wish further their ability to engage in formal and non-formal systems of agricultural education in all settings. As the enduring understandings of this course, students will develop 1) a knowledge of global agricultural education programs, 2) critical and comparative thinking skills, including the ability to think creatively and integrate knowledge, rather than unquestioning acceptance of knowledge, and 3) an ongoing willingness to seek out international or intercultural opportunities. The course is organized around five essential themes: 1) education as innovation, 2) access to education and employment, 3) program planning and evaluation, 4) types of agricultural education and 5) spaces of innovation. Learners in the course will be encouraged to develop their 21st century learning skills of communication collaboration, critical thinking, and creativity through authentic, experiential assessments curated around

dynamic world issues in education related to agriculture, food, fiber and natural resources.

PreRequisite: INTAG100 or INTAG481

Changes Effective Fall 2024:

- Changed Prerequisites
- Changed Course Description

ANSC 300: Integrated Animal Biology (3 Credits) [BA]
Old Listing Effective Through Summer 2024:

An integrated study of the biology of domestic animal growth and the underlying cellular, endocrine and immune systems involved.

Enforced Concurrent at Enrollment: (BIOL 11 and BIOL 12) or BIOL 110 or at least third-semester standing

Changes Effective Fall 2024:

- Changed Course Title
- Changed Abbreviated Title
- Changed Course Description
- Removed Bachelor of Arts: Natural Sciences Attribute

ANTH 414: Microbial Anthropology: A microbial lens on the human experience (3 Credits)
Old Listing Effective Through Summer 2024:

The human body contains more microorganisms than it does its own cells, yet these complex communities of microorganisms are largely absent from Anthropology textbooks. This course investigates the interplay between microbiology and anthropology, exploring the roles that microbes play in human evolution, adaptation, health, and culture. We will first review basic concepts in microbiology (what are microbes?) and microbiome science (how is DNA useful?) and apply this understanding to core concepts in anthropology, including those that guide our understanding of living, ancient, and extinct humans. For example, what human activities or practices influenced the origins of disease, both infectious and non-infectious? How are microbes shared or transmitted during human interactions? Can microbes provide information about past human behavior or culture? How do microbes help or hinder human adaptation to new environments? This examination will be done through lectures and in-class discussions based on primary literature from different scientific fields of study. This understanding will be used to apply new interdisciplinary research approaches and see anthropology in a new light.

Recommended Preparation: ANTH 21 and ANTH 461

Changes Effective Fall 2024:

- Changed Course Title
- Changed Abbreviated Title

ART 144Z: Climate Change: Arts, Agency and Activism (3 Credits) [GA]
Old Listing Effective Through Summer 2024:

This course introduces students to contemporary art activism and environmental and humanitarian issues through research presentations, discussions and the production of artwork. It encourages students to imagine the effects of climate change and investigate how art can bring new ways of thinking about and bring a greater awareness to

global issues. Media will vary depending on student ideas, it may include drawing, painting, video, sculpture, photography or installation art. Coursework integrates written, oral and visual communication. As an introductory course, assessment will be based equally on class discussion, research presentations, the content of art works produced and student's ability to articulate the synthesis of their work within the theme of climate change. ART 144Z fulfills 3 credits of the GA Domain General Education requirements. ART 144Z may also be used in combination with either BIOL 144Z or PSYCH 144Z as linked courses to fulfill 6-credits of Integrative Studies.

Changes Effective Fall 2024:

- Changed Course Number to 144
- Changed Course Description
- Removed General Education Linked Attribute

BBH 368: Neuroanatomy, Behavior, and Health (3 Credits)
Old Listing Effective Through Summer 2024:

The neuroanatomical bases of behavior, health, and disease. BBH 368 Neuroanatomy, Behavior, and Health (3) BBH 368 will examine, in detail and in depth, the relationships between the multitudinous structures of the human nervous system and their roles in monitoring and controlling all functions of the body, in behavior and in health and disease. Because of the complexity of the anatomy of the nervous system, of necessity there will be an emphasis on each student developing a three-dimensional understanding of the brain's structures and their geographic relationships to each other. For students majoring in BBH, this course provides a foundation and preparation for BBH 469 & 470, the two semester Neurobiology/Integrative Neuroscience course sequence, which assumes that the student has a basic, but detailed knowledge of the nervous system. This course will count toward fulfilling the BBH major requirement, "Take 15 credits in Biobehavioral Health." It will also count toward fulfilling the requirement of 9 credits of additional courses in the Neuroscience Minor. Upon successful completion of the course, the student should be able to: a) Identify on gross specimens and in slides of sections of the human nervous system the important nuclei, tracts and supporting structures. b) Describe the important pathways and circuits between the different components and nuclei of the human nervous system. c) Describe the role of each nucleus, tract, and circuit in controlling functions and behavior. d) Describe the expected deficits in function and behavior resulting from injury or disruption of each nucleus and tract.

Enforced Prerequisite at Enrollment: BBH 101 and (BISC 4 or BIOL 141 or PSYCH 260)

Changes Effective Fall 2024:

- Changed Prerequisites
- Changed Course Description

CE 342: Design of Steel Structures (3 Credits)
Old Listing Effective Through Summer 2024:

Design of steel tension members, beams, columns, beam-columns, and connections; elastic and plastic methods; design applications. CE 342 Design of Steel Structures (3) This is a first course in design of steel structures intended to develop a fundamental ability to evaluate and design steel tension members, beams, columns, beam-columns, composite beams, and connections. Discussion of design requirements focuses on failure mechanisms and behavior, evaluation of existing components, and the process to develop economical steel member

designs. All discussions are based on the current American Institute of Steel Construction steel design specifications with an overview of historical requirements as appropriate. Students complete a design project of a multi-story, steel, commercial building that is intended to synthesize the course material and create a realistic context for the course. Weekly assignments are typically derived from the course project. Computer applications are an important component of these assignments.

Enforced Prerequisite at Enrollment: CE 336 and CE 340

Changes Effective Fall 2024:

- Changed Abbreviated Title
- Changed Prerequisites
- Added Concurrents
- Changed Course Description

CE 448W: Structural Design Capstone (3 Credits) [WAC]

Old Listing Effective Through Summer 2024:

Wind, snow, seismic, bridge loads; building design using steel, concrete, and prestressed concrete; advanced steel connections; capstone project; computer applications. C E 448W C E 448W Advanced Structural Design (3)The objectives of the course are to develop an understanding of advanced structural engineering design issues in a capstone context that will merge knowledge gained in prerequisite structural design and analysis courses. Building on concepts introduced in introductory steel building, concrete building, and foundation design, students will gain proficiency in structural conceptualization, environmental and induced load determination, modeling and analysis, detailed design of steel and concrete structures, and graphical communication.

Enforced Prerequisite At Enrollment: CE 341 and CE 342

Changes Effective Fall 2024:

- Changed Abbreviated Title
- Changed Prerequisites
- Added Concurrents
- Changed Course Description

CED 409: Land Use Planning and Procedure (3 Credits)

Old Listing Effective Through Summer 2024:

This course provides students with an understanding of the legal and procedural aspects of land use planning as found in the United States. The emphasis of the course is to explain the sources of land use planning authority, the processes by which it is applied and the potential conflicts that arise in the application of this authority. As a result of taking this course, students will be expected to learn and explain a) the objectives of land use planning systems and a comparative analysis of these systems; b) the bases on which land use planning law and procedure is applied across the U.S.; c) policies, strategies and principles that can be applied to land use planning decisions; d) several land use planning models currently applied in American jurisdictions, including the structure of each land use planning system; e) the procedural steps used to engage the land use planning system by property owners and government officials; f) typical conflicts that arise in creating, changing or enforcing land use planning measures; g) how land use planning conflict is resolved in various systems. Student performance will be measured in two midterm exams and a final exam. The instructor reserves the right to give additional exams to aid in measuring student knowledge

and understanding of course material. Each test will primarily be short essays questions that ask for an explanation, discussion, comparison or application of specific concepts and principles. Case studies also will be used to present students with situations to hone their analytical, organizational and problem solving skills on specific problem situations. This will ask students to analyze a given set of facts, assess the issues raised by the facts from the perspectives of individuals who are described in the situation and form and present a response that addresses a specific question posed to the student.

Prerequisite: 6 credits of CED

Changes Effective Fall 2024:

- Changed Prerequisites
- Changed Course Description

CEDEV 430: Principles of Local Economic Development (3 Credits)

Old Listing Effective Through Summer 2024:

Concepts, strategies, and techniques of local economic analysis, planning, and development; case studies and decision-making exercises. CEDEV 430 CEDEV (AG EC) 430 Principles of Economic Development Planning (3)This course is designed to introduce the issues giving rise to concern for rural and regional economies, and the theories, concepts and tools of rural and regional economic development. The goal is to integrate theory and practice and apply them to economic development problems. Tools are presented in a "how to" manner. Topics include current issues in rural economies, the economic view of rural development; business retention, expansion and location; entrepreneurship and its role in the economy; understanding the local economic structure and the forces of change; introduction to economic growth theories; export base theory and economic base analysis; the role of labor and capital in development; techniques of market area, central place, shift-share and input-output analysis; policies of local economic development and growth.

PreRequisite: introductory course in economics

Changes Effective Fall 2024:

- Changed Prerequisites
- Changed Course Description

COMM 118H: Introduction to Media Effects (3 Credits: Maximum of 3 Credits) [GS] [H]

Old Listing Effective Through Summer 2024:

Examination of individuals' selection, uses and perceptions of media and the effects of media on individuals' attitudes, beliefs, and behaviors.

Changes Effective Fall 2024:

- Changed Course Description

COMM 292: Introduction to Media & Politics (3 Credits)

Old Listing Effective Through Summer 2024:

This course explores the intersection of media and politics, introducing students to the critical analysis of mediated political discourse. COMM 292 Introduction to Media & Politics (3) (GH)COMM 292 examines how mass media and political institutions interact to shape public thinking and debates around social goals, priorities, and policies. The course explores how media structures, routines, and practices shape political decision making; how political forces influence mass media institutions; and how public opinion and media audiences are formed. Students will

gain an understanding of these issues through in-depth case studies, class discussions, and written assignments, helping students to develop their own informed views and to learn to express them constructively. The course is designed for both Communications majors and other students with an interest in media and politics.

Changes Effective Fall 2024:

- Added General Education: Humanities (GH) Attribute

**CSD 101: Preventing Hearing Loss (1.5 Credits) [US]
Old Listing Effective Through Summer 2024:**

Assessment, intervention, and prevention of hearing loss caused by loud music and recreational and industrial noise.

Changes Effective Fall 2024:

- Changed Course Number to 111
- Changed Abbreviated Title
- Changed Credits
- Changed Course Description
- Removed United State Cultures (US) Attribute
- Added General Education Health and Wellness (GHW) Attribute

**DS 340W: Applied Data Sciences (3 Credits: Maximum of 3 Credits)
[WAC]
Old Listing Effective Through Summer 2024:**

This course builds up the students' understanding of data sciences by discussing the fundamental principles in the context of real-world examples, and then shows specifically how the principles can provide understanding of many of the most common methods and techniques covered in previous data science courses. The course features three individual projects as well as a team project spanning the entire course. After taking this course, the students should be able to cover the entire pipeline of a data science project, from problem formulation to data science solutions. That is, start from a data driven problem, identify pertinent datasets to the problem and collect data, reason about the best techniques that should be used to solve the problem, implement algorithms and models, assess performance, and communicate actionable insights through both written reports and oral presentations. As one example, a fundamental principle of data science is that solutions for extracting useful knowledge from data must carefully consider the problem in the real world scenarios. This may sound obvious at first, but the notion underlies many choices that must be made in the process of data analytics, including problem formulation, method choice, solution evaluation, and general strategy formulation. Another fundamental principle is that predictive modeling can both inform and be informed by relevant knowledge (including theories, models, frameworks) of the relevant domains. This principle manifests itself throughout data science: in the specific design of many particular data sciences applications, and more generally as the basis for all intelligent solutions. In this course, this principle will be highlighted by case studies from multiple domains so that students can be inspired to apply this principle to their term projects. Lastly, as most data science projects are delivered as solutions as opposed to software deliverables, the ability for data scientists to communicate their results through concise and actionable insights plays a critical role in a data science project. This course places a particular focus on developing student writing abilities, through formal project reports and presentations. The individual projects will offer an interactive experience for students through feedbacks on their reports provided by

the instructor. The term-long project will also train students in writing in a collaborative environment.

Enforced Prerequisite at Enrollment: DS 300 and (DS 310 or CMPSC 448).
Recommended Preparation: DS 330.

Changes Effective Fall 2024:

- Changed Prerequisites

**EMET 326: Mechanical Drives (3 Credits)
Old Listing Effective Through Summer 2024:**

Transmission of force and motion using linkages, cams, gears, belts, and hydraulic and pneumatic drives. EMET 326 Mechanical Drives (3)EMET 326 is designed to provide the students with the knowledge of various mechanical drives used in engineering. The course introduces the concepts displacement, velocity and acceleration analysis of linkages, cams, gears and belts. Instructor may employ purely geometric methods or combine it with vector approaches. Differential and integral calculus for some of the topics and may considering using techniques of optimizations for mechanism synthesis. Static and dynamic force analysis of linkages is studied.

Enforced Prerequisite at Enrollment: EMET 222

Changes Effective Fall 2024:

- Changed Prerequisites

**EMET 403: Electromechanical Design Project Preparation (1 Credit)
Old Listing Effective Through Summer 2024:**

This course involves the planning and preliminary design activities for the capstone electro-mechanical design project. EMET 403 Electromechanical Design Project Preparation (1) EMET 403, Electromechanical Design Project Preparation, involves the planning and development of a design plan for a project to be completed in the capstone electro-mechanical project design course, EMET 440, which is required for all Electro-Mechanical Engineering Technology baccalaureate degree students. Both EMET 403 and EMET 440 require formal report writing, project documentation, and group presentations. In EMET 403, students will present design plans to a faculty panel for review and approval. In this planning and design development process, students will be required to follow a rigorous design methodology. To support the process, EMET 403 will include instruction in the use of project management software, and students will undergo the typical process of periodic design reviews and critiques as their plans evolve. Finally, EMET 403 is a team-based course. All project designs will be prepared by teams of two or more students. Generally, these same teams will be maintained through actual completion of the project in the following project design course, EMET 440. Because of this linkage of EMET 403 and EMET 440, both in design plans and team structure, it is essential that students schedule EMET 403 in the semester immediately prior to the semester in which they will register for EMET 440.

Enforced Prerequisite at Enrollment: Seventh semester standing

Changes Effective Fall 2024:

- Changed Prerequisites
- Added Concurrents

**EMET 440: Electro-Mechanical Project Design (3 Credits)
Old Listing Effective Through Summer 2024:**

Planning, development, and implementation of electro-mechanical design project; includes formal report writing, project documentation, group presentations, project demonstrations. EMET 440 Electro-Mechanical Project Design (3) Electro-Mechanical Project Design is to provide students with theoretical and practical experience associated with the integration of the various disciplines within the field of electromechanical engineering technology. Students working in teams will employ previously developed and approved design plans to construct, demonstrate, and document an integrated, electromechanical system. Plans for designs will come from the results of the project design preparation course, EMET 403, conducted in the immediately preceding semester. Thus students in EMET 440 are expected to have participated in the design development process that occurred in that same offering of EMET 403. Projects will be required to use a variety of electromechanical equipment, including such items as robots, machine vision systems, programmable logic controllers, personal computers, electric motors, CNC equipment, etc. Appropriate project documentation exercises, project presentations, progress reporting, budgeting and scheduling, system performance to specifications, and development of final design reports will be required elements of the course.

Enforced Prerequisites at Enrollment: EMET 325 and EMET 326 and EMET 410 and EMET 403

Changes Effective Fall 2024:

- Changed Prerequisites

ENGL 282: TV Script Writing 2 (3 Credits)

Old Listing Effective Through Summer 2024:

This creative writing course will further explore the specialized techniques and requirements of television script writing. Students will complete a first draft of a pilot episode (begun in ENGL281) and then revise the draft, focusing especially on the main character's story arc, plot structure, adding multiple narrative lines, scene and dialogue revision, and developing larger narrative lines for future episodes. Through script readings, discussions, writing exercises, and workshoping, students will come to understand the revision process and develop skills that can be applied to future scriptwriting.

Changes Effective Fall 2024:

- Changed Course Number to 410
- Changed Course Title
- Changed Abbreviated Title
- Added Prerequisites
- Changed Course Description

ENGL 452: The Victorians (3 Credits) [BA]

Old Listing Effective Through Summer 2024:

Poets such as Tennyson, Browning, Arnold, and Hopkins; also prose by writers such as Carlyle, Mill, Ruskin, and Arnold.

Enforced Prerequisite at Enrollment: ENGL 15 or ENGL 15A or ENGL 15S or ENGL 15E or ESL 15 or ENGL 30H or ENGL 30T or ENGL 137H or CAS 137H

Changes Effective Fall 2024:

- Changed Course Description

ERM 450: Wetland Conservation (3 Credits)

Old Listing Effective Through Summer 2024:

Wetland types, classification, functions and values; hydrology, soils, and plants; introduction to wetland identification and delineation; wetland regulations. E R M (W F S) 450 Wetland Conservation (3) Wetlands are unique ecosystems, differing in many ways from both terrestrial and aquatic environments. They provide recognized values and functions to society, although these values and functions remain difficult to quantify. The study of wetlands is interdisciplinary, requiring background knowledge in science, management and policy disciplines. This course will explore the variety of wetland types and functions, and emphasize the diverse hydrological, biological, chemical, and physical interactions that occur within wetlands. Because wetlands are recognized as valuable assets in the landscape, issues surrounding wetland management and regulation have taken on increased importance; we will address these issues as well. Topics will also include the restoration of degraded wetlands and wetland creation, along with the construction of wetlands for pollution abatement. Students will become familiar with different wetland types and how they are classified, and will develop skills in understanding the interactions between wetland hydrology, hydric soils and hydrophytic vegetation. They will also develop an understanding of important national and state policies and regulations pertaining to wetlands and their protection and delineation. Classroom assessment will be based on three cumulative exams, homework assignments, and a final project. The course will fulfill 3 credits of electives or technical selections in the Wildlife and Fisheries Science major. Other students university-wide may be interested in the course, and the intention is to develop a course that is accessible to a wide variety of traditional and non-traditional students. For proper instruction, a technology classroom with computer projection equipment will be required. E R M 450 will be offered each fall semester. Enrollment will be limited to 60-80 students.

Enforced Prerequisite at Enrollment: ERM 300 or WFS 209

Cross-listed Courses: WFS 450

Changes Effective Fall 2024:

- Changed Course Title
- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

HDFS 490: Introduction to Internship Experience (2 Credits)

Old Listing Effective Through Summer 2024:

Planning and preparation for field experience in human service setting. Analysis of human service system and arrangement of site.

Enforced Prerequisite at Enrollment: HDFS 312W and approval by internship coordinator. Prerequisite or concurrent: HDFS 411

Changes Effective Fall 2024:

- Changed Course Title
- Changed Credits
- Changed Prerequisites
- Added Recommended Preparation
- Changed Course Description

HM 304: Institutional Food Service Management (3 Credits)

Old Listing Effective Through Summer 2024:

Institutional food service management systems in the hospitality field. HM 304 Institutional Food Service Management (3) Institutional and contract food service management is in the growth stage of the hospitality industry life cycle. The objective of this course is to provide an overview of the various segments of institutional food service, including health care, life care, education, business, transportation (i.e., airlines, cruise ships), correctional and recreational services. Main topics typically include: historical overview of institutional/non-commercial food service management, exploring key markets where institutional food service management exists, key systems used in the fundamental areas of quantity food production, current and future trends effecting institutional food service management, career opportunities in the institutional food service management sector, and managed services and multi-department management. This course is an elective in the Hospitality Management program.

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

Changes Effective Fall 2024:

- Changed Prerequisites

KINES 465: Neurobiology of Sensorimotor Stroke Rehabilitation (3 Credits)

Old Listing Effective Through Summer 2024:

This course is designed to expose students to the recent topics in motor stroke rehabilitation research through literature. KINES 465 Neurobiology of Sensorimotor Stroke Rehabilitation (3) This 3-credit course is designed to expose students to the most recent topics in motor stroke rehabilitation research through reading of current literature. The course addresses the neurobiological foundations of motor deficits in stroke, including contralesional and ipsilesional effects, current research on mechanisms of motor recovery, and the most current research on intervention strategies, such as constraint induced therapy, robot aided rehabilitation, virtual reality therapy, and sensory motor interventions. The purpose of the course is to provide an understanding of the neurophysiological and biomechanical foundations of motor deficits that occur with stroke, and of current treatment approaches. Stroke presents a significant social problem that is emphasized in current statistics reported by the American Heart Association indicating that each year, about 780,000 people in the United States experience a new or recurrent stroke. While stroke can produce deficits in perceptual, cognitive, and motor processes, this course is focused on sensorimotor deficits and associated rehabilitation interventions that tend to be employed by physical and occupational therapists in the rehabilitation environment. Sensory-motor strokes often result in weakness and deficits in voluntary movement of the limbs on the opposite side of the body as the damaged hemisphere (Contralesional). These motor deficits currently receive primary focus in occupational and physical therapy treatment for stroke. However, regardless of improvements in contralesional arm function, most patients also show deficits in coordination of the ipsilesional arm that is on the same side of the body as the damaged hemisphere. For many hemiparetic patients, functional recovery relies heavily on this arm. This class will focus on understanding both ipsilesional and contralesional motor deficits in stroke. Physiological and biomechanical mechanisms of dysfunction will be emphasized. Recovery of function will be addressed through analysis of physiological and biomechanical measures that are used to track changes in neural function. In addition, current research that is focused on developing rehabilitation intervention protocols that systematically address remediation of dysfunction, and facilitation of recovery will be discussed. Students will be guided in

reading, critiquing, and presenting primary scientific manuscripts and review articles. Active discussions of presented material are encouraged, and grades are based on presentations, quizzes, and participation in class.

Enforced Prerequisite at Enrollment: KINES 360 and KINES 384

Changes Effective Fall 2024:

- Changed Prerequisites

KINES 495C: Exercise Science Practicum (3-6 Credits: Maximum of 6 Credits)

Old Listing Effective Through Summer 2024:

This course places students in the work place with the expectation that the experience will allow them the opportunity to apply and integrate content from all the courses in the program. They will be placed at professional fitness centers, rehab facilities, senior centers, and wellness centers. They will learn the day-to-day requirements of being "on the job" such as time management, record keeping, client interactions, feedback delivery, fitness program establishment and implementations, business and management practices as well as ethical considerations. Their field experience will be focused on four in-class days during which students will collectively explore work place issues. Practicum work will be evaluated on an ongoing basis with the student intern, work place supervisor, and faculty member involved in the process. The course will take place off campus as work sites and no special on-campus facilities are required. It will be offered annually as the last course in the major.

Enforced Prerequisite at Enrollment: KINES 100 and KINES 101 and KINES 200 and KINES 202 and fifth semester standing

Changes Effective Fall 2024:

- Changed Credits

LHR 304: Labor and Employment Relations Fundamentals (3 Credits)

Old Listing Effective Through Summer 2024:

The course surveys the main elements of modern labor and employment relations systems in the U.S. and beyond. The course encourages students to use a framework for evaluating workplace outcomes according to three yardsticks: efficiency; equity; and voice. Focusing primarily on employee voice, the course introduces students to a variety of mechanisms that bring democracy, worker engagement, and worker influence to the workplace. Among these mechanisms are U.S.-style collective bargaining, non-union systems of worker involvement, European works councils, and a new variety of "alt-labor" initiatives from around the world. In its single largest unit, the course focuses on U.S. workplaces, beginning with the historical and legal foundations of the modern U.S. labor relation system. This includes units examining union organizing campaigns, collective bargaining, and dispute resolution systems. Concluding weeks of the course look at issues surrounding the push for workplace flexibility, a comparative labor relations look at other country practices (include European works councils), emerging issues in global supply chains, "alt-labor" institutions and practices, the role of gender, race, and diversity initiatives at work, and the impact of automation and artificial intelligence on the future of work.

Prerequisite: LHR 100

Changes Effective Fall 2024:

- Removed Prerequisites
- Added Bachelor of Arts: Social and Behavioral Sciences Attribute
- Added General Education Social & Behavioral Sciences (GS) Attribute

LHR 472: Work-Life Practices and Policies (3 Credits) [BA] **Old Listing Effective Through Summer 2024:**

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.

Enforced Prerequisite at Enrollment: 3 credits in LER or LHR

Cross-listed Courses: SOC 472, WMNST 472

Changes Effective Fall 2024:

- Changed Prerequisites

LHR 475H: Labor in the Global Economy (3 Credits: Maximum of 3 Credits) [H] **Old Listing Effective Through Summer 2024:**

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.

Prerequisite: 6.0 credits of LHR and 6th Semester standing

Changes Effective Fall 2024:

- Changed Prerequisites
- Changed Course Description

LHR 480: Current Issues in Human Resources (3 Credits) **Old Listing Effective Through Summer 2024:**

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 434.

Prerequisite: LHR 305

Changes Effective Fall 2024:

- Changed Prerequisites

LLED 402: Teaching Children's Literature (3 Credits) **Old Listing Effective Through Summer 2024:**

The purpose of LLED 402 is to familiarize teacher candidates with different theories and practices of teaching literature. Candidates are immersed in the study and experiences of literature and strategic models of literature instruction. Understanding that belief systems inadvertently determine the models of literature instruction educators adopt. LLED 402 asks candidates to be mindful of the diverse nature of our communities, and encourages them to strive to create literary communities that respect, value, and encourage multiple modes of expressions. The basic course goals are to help candidates to understand the importance of story in all human lives; to exhibit a wide repertoire of flexible strategies for interpreting literature; to understand socio-cultural influences upon writing and literature; to know and be able to use basic reference tools and selection guides for research; to become familiar with different genres, diverse texts, and styles; to read for sequence and for secrets; to articulate responses to literature across a variety of media; to weave into the exploration of each of these goals a struggle to understand and

to accept human difference; and to understand the role that literature plays in the school curriculum. The course presents theories of teaching literature and models of literature instruction that place at the center socio-cultural practices typical of democratic literary communities. This requires knowledge of how literature and texts work in real life and in a variety of social and cultural contexts. Informed by research, standards and current practices, LLED 402 exhibits the power of literature, the complexities of students' learning and experiences with texts, and the problem solving character of teaching.

Prerequisite: 4th Semester Standing

Changes Effective Fall 2024:

- Changed Course Number to 302
- Removed Prerequisites
- Changed Course Description

MUSIC 40: First-Year Seminar in Music Education (1 Credit) [BA] [FYS]

Old Listing Effective Through Summer 2024:

Introduction to the University, the School of Music, the music education degree program, and the music teaching profession. MUSIC 040S First-Year Seminar in Music Education (1)(BA) This course meets the Bachelor of Arts degree requirements. This course is offered to music majors during their first semester who are intending to apply to the Teacher Certification Degree Program in Music Education. It provides prospective music teachers with an opportunity to: - learn about aspects of and opportunities available at the University in general. - learn about aspects of and opportunities available specifically at the PSU School of Music. - learn about the PSU music education curriculum and program. - gain a general understanding of the music teaching profession. - begin and develop a professional relationship with his/her advisor.

Changes Effective Fall 2024:

- Changed Course Title
- Changed Abbreviated Title
- Changed Course Description

MUSIC 458: Electronic Music Composition I (3 Credits) [BA]

Old Listing Effective Through Summer 2024:

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.

Enforced Prerequisite at Enrollment: INART 258A

Changes Effective Fall 2024:

- Changed Prerequisites

SOC 1: Introductory Sociology (3 Credits) [GS] [BA]

Old Listing Effective Through Summer 2024:

The nature and characteristics of human societies and social life. SOC 1 Introductory Sociology (3) (GS)(BA) This course meets the Bachelor of Arts degree requirements. Introductory Sociology provides perspectives and information useful in understanding all societies. The major theories (functionalism, conflict, and symbolic interactionism) and concepts provide the foundation upon which the remaining material rests. Learning how sociologists do research provides the tools for understanding the production of knowledge and for evaluating the validity of sociological assertions. Familiarity with systematic theorizing and conceptual development, along with some comprehension of the nature of the scientific method as it is applied in sociology, enhances critical reasoning. To promote a more complete understanding of human social life, both in its inherent constraints and in the opportunities it provides; the nature and reality of culture and social structure are explored. The study of socialization provides perspectives on how one becomes a member of society. Exploring social interaction adds insight into the formation of the social self and the salience of group identities and norms. Ending this first section with a discussion of social control highlights the forces of stability and change in society. The course then progresses to considerations of social stratification and inequality. The nature of privilege and oppression are discussed and considered in the specific contexts of race, ethnicity, gender, and age. The focus then shifts to social institutions. The essential work of society is accomplished via its major institutions: family, education, health care, economy and work, religion, and politics. Applying theoretical perspectives to the form and function of these institutions enhances an understanding of how different social structures provide varying constraints and opportunities to their inhabitants. Finally, considering large-scale forces for change provides a platform to comprehend where human societies have been, are now, and might be headed. Throughout the course, the lectures as well as the textbook draw amply on cross-cultural and cross-national material. In addition, the course emphasizes the complexity of human social life and describes the many variables (social structural, cultural, interpersonal, and psychological) that influence behavior. A special component of the course deals with topics pertinent to the social behavior and norms of students of the ages typically taking this course. Depending on the faculty member, these topics could include sexual behavior, alcohol use, and problems in interpersonal relationships. Discussion and questions are encouraged in all sections. Sections of this course may include group research projects, debates, and library or internet-based research. Along with personal contact, students have the opportunity to communicate with teaching assistants and faculty members via e-mail. Writing assignments, along with in-class examinations, are required in all sections. This course meets a general education requirement in the social and behavioral sciences.

Changes Effective Fall 2024:

- Changed Course Description
- General Education Recertification

SOC 1W: Introductory Sociology (3 Credits) [GS] [BA] [WAC]

Old Listing Effective Through Summer 2024:

The nature and characteristics of human societies and social life. SOC 1W Introductory Sociology (3) (GS)(BA) This course meets the Bachelor of Arts degree requirements. Introductory Sociology provides perspectives and information useful in understanding all societies. The major theories (functionalism, conflict, and symbolic interactionism) and concepts provide the foundation upon which the remaining material rests. Learning how sociologists do research provides the tools for understanding the production of knowledge and for evaluating the validity of sociological assertions. Familiarity with systematic theorizing and

conceptual development, along with some comprehension of the nature of the scientific method as it is applied in sociology, enhances critical reasoning. To promote a more complete understanding of human social life, both in its inherent constraints and in the opportunities it provides; the nature and reality of culture and social structure are explored. The study of socialization provides perspectives on how one becomes a member of society. Exploring social interaction adds insight into the formation of the social self and the salience of group identities and norms. Ending this first section with a discussion of social control highlights the forces of stability and change in society. The course then progresses to considerations of social stratification and inequality. The nature of privilege and oppression are discussed and considered in the specific contexts of race, ethnicity, gender, and age. The focus then shifts to social institutions. The essential work of society is accomplished via its major institutions: family, education, health care, economy and work, religion, and politics. Applying theoretical perspectives to the form and function of these institutions enhances an understanding of how different social structures provide varying constraints and opportunities to their inhabitants. Finally, considering large-scale forces for change provides a platform to comprehend where human societies have been, are now, and might be headed. Throughout the course, the lectures as well as the textbook draw amply on cross-cultural and cross-national material. In addition, the course emphasizes the complexity of human social life and describes the many variables (social structural, cultural, interpersonal, and psychological) that influence behavior. A special component of the course deals with topics pertinent to the social behavior and norms of students of the ages typically taking this course. Depending on the faculty member, these topics could include sexual behavior, alcohol use, and problems in interpersonal relationships. Discussion and questions are encouraged in all sections. Sections of this course may include group research projects, debates, and library or internet-based research. Along with personal contact, students have the opportunity to communicate with teaching assistants and faculty members via e-mail. Writing assignments, along with in-class examinations, are required in all sections. This course meets a general education requirement in the social and behavioral sciences.

Changes Effective Fall 2024:

- Changed Course Description
- General Education Recertification

SOC 13: Juvenile Delinquency (3 Credits) [GS]

Old Listing Effective Through Summer 2024:

Juvenile conduct, causes of delinquency, current methods of treatment; organization and function of agencies concerned with delinquency.

Cross-listed Courses: CRIMJ 13

Changes Effective Fall 2024:

- Changed Course Description

SOILS 102: Introductory Soil Science Laboratory (1 Credits)

Old Listing Effective Through Summer 2024:

Laboratory exercise and field trips designed to develop student competency in soil description, analysis, and assessment. SOILS 102 Introductory Soil Science Laboratory (1) This laboratory course is designed for students who plan to work directly with soils, make land use and management decisions, or to be involved in projects requiring practical application of soil science principals. By conducting weekly laboratory and field exercises and writing reports on their work, students

will deepen their understanding of, and learn to apply, the fundamental soil properties and processes introduced in SOILS 101. This laboratory course, in conjunction with the SOILS 101 lecture course, will provide foundational learning in soil science and prepare students for upper level soil science courses. This laboratory course is also designed to provide students with hands on experience in analytical procedures for soil assessment, testing, and interpretation, as well as field experience in observing, characterizing and describing soils.

Enforced Prerequisite at Enrollment: SOILS 101

Changes Effective Fall 2024:

- Removed Prerequisites
- Added Concurrents

SPAN 215: Introduction to Spanish Linguistics (3 Credits)

Old Listing Effective Through Summer 2024:

Introduction to the fundamental components of linguistics using data from the Spanish language. SPAN 215 Introduction to Spanish Linguistics (3) Spanish 215 will introduce students to the fundamental components of linguistics (phonology, morphology, syntax, lexicon, and semantics) using data from the Spanish language. The course requires no previous knowledge of linguistics, but presupposes familiarity with Spanish at the 15 credit level or higher. The underlying purpose is to awaken students' interest in Spanish linguistics; to provide them with a foundation in the terminology and concepts necessary for studying higher level courses that are part of Spanish major and minor curricula; and to help them to decide which of the upper level classes they would be most interested in taking. Student performance in the course will be evaluated by (a) exams designed to verify their familiarity and understanding of linguistic terminology and concepts, their skill in doing phonetic transcription, and their ability to solve problems in phonology, morphology, syntax, and semantics, and (b) their preparedness and participation in classroom activities.

PreRequisite: SPAN 100

Changes Effective Fall 2024:

- Changed Number to 215Q
- Changed Course Title
- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description
- Added Honors Attribute
- Added Bachelor of Arts: World Language (All), Bachelor of Arts: Humanities, Bachelor of Arts: World Cultures, Bachelor of Arts: Social and Behavioral Sciences Attributes
- Added General Education Inter-Domain, Humanities (GH), and Social & Behavioral Sciences (GS) Attributes

SPAN 411: The ABCs of Bilingualism: Acquisition, Brain, and Community (3 Credits) [BA]

Old Listing Effective Through Summer 2024:

In SPAN 411, students will learn to understand the bilingual landscape of the Spanish-speaking world and its consequences for communities and individuals. SPAN 411 the ABCs of Bilingualism: Acquisition, Brain, and Community will showcase the fundamental components of bilingualism (first language acquisition, language mixing, language and society, language contact, and cognitive consequences of bilingualism) situating

them in the Spanish speaking world. The course requires an introductory level understanding of linguistics and presupposes familiarity with Spanish at the 15-credit level or higher. The purpose of this course is to adopt an understanding of the underlying mechanisms of bilingualism and what it means to be a bilingual speaker, as well as understand the community-level impact of speaking multiple languages. Students will learn theories surrounding the study of bilingualism and apply linguistic knowledge to better understand bilingual communities that are new to them.

Prerequisites: SPAN 215

Changes Effective Fall 2024:

- Added Bachelor of Arts: Social and Behavioral Sciences, Exceeds 12th Unit of World Language Attributes

SPAN 417: How Languages Are Learned (3 Credits)

Old Listing Effective Through Summer 2024:

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.

Prerequisite: (SPAN 100A or SPAN 200) and SPAN 215

Changes Effective Fall 2024:

- Added Bachelor of Arts: Social and Behavioral Sciences, Bachelor of Arts: World Language (All) Attributes

STRNG 474: Guitar: Primary VIII (2 Credits)

Old Listing Effective Through Summer 2024:

STRNG 474J Guitar:Primary VIII (2) Individual instruction in guitar one hour per week.For music majors in the BA program.

Changes Effective Fall 2024:

- Changed Course Description

SUR 222: Photogrammetry (3 Credits)

Old Listing Effective Through Summer 2024:

Basic principles of metric photogrammetry with single and stereopair photos; coordinate transformations; map production with stereo imagery; flight planning. Lab. SUR 222 - Photogrammetry (3) Photogrammetry covers the basic principles of aerial photography and the geometry of the optics in relation to aerial cameras. Mathematical theories for refining and processing measurements from single aerial photographs are developed. Such measurements are transformed to obtain real world coordinates of features on the surface of the earth. Two-dimensional

conformal, affine, and projective coordinate transformation equations and the three-dimensional conformal coordinate transformation equations are developed and applied to the measurements on the photographs. In addition, the theory underlying the geometry of stereopairs of photographs are developed and used to determine elevations of features on the photograph. Stereographic equipment and software are used to produce accurate topographic maps of the overlap areas between stereopairs. The course also covers procedures and considerations for planning an aerial photography mission which include flight planning, cost analysis, equipment selection, placement of photo controls, and overall project management.

Enforced Concurrent at Enrollment: SUR 162

Changes Effective Fall 2024:

- Added Prerequisites
- Changed Concurrents
- Changed Course Description

SUR 441: Data Analysis and Project Design (3 Credits)

Old Listing Effective Through Summer 2024:

Post least squares adjustment analysis of control networks, statistical testing, blunder detection, network design considerations, and computer optimization techniques.

Enforced Prerequisite at Enrollment: STAT 200 and SUR 341

Changes Effective Fall 2024:

- Changed Abbreviated Title
- Changed Prerequisites
- Changed Course Description

SUST 150N: The Science of Sustainable Development (3 Credits) [GN] [GS]

Old Listing Effective Through Summer 2024:

This course will focus on how human society depends on the environment for its continued existence. It will examine several major topics relating to environmental and social sustainability including ecosystem conservation, sustainability of food systems with special reference to the water-food-energy nexus, and current and future trends in urbanization. Within each of these topics, students will learn fundamental scientific principles and use this information to gain a better understanding of what human behaviors have led to our current resource production and consumption crisis. This class will explore ways people can modify behavior to relieve poverty in developing nations and meeting basic human needs while still affording economic growth, environmental protection, and social equality to all peoples around the world.

Changes Effective Fall 2024:

- Added SC 150N as Cross-Listed Course

Program Changes

Accounting, B.S. (Capital, Abington, Altoona, Berks) (ACCT_BS, ACCAB_BS, ACCAL_BS, ACCBK_BS)

Effective Fall 2024:

- Changed Prescribed Courses for the Major from 55 credits to 52 credits
- Removed MIS 204 from Prescribed Courses for the Major

- Changed Additional Courses for the Major from 18 credits to 21 credits
- Added MIS 204, MIS 250, ACCTG 423, ACCTG 483 to Additional Courses for the Major

Agricultural Science, B.S. (AGSC_BS)

Effective Summer 2024:

- Added C or better requirement to ENGL 15 and CAS 100 in Prescribed Courses for the Major
- Added CHEM 130 to Additional Courses for the Major
- Added C or better requirement to ENGL 202C and ENGL 202D in Additional Courses for the Major

Animal Science, B.S. (ANSC_BS)

Effective Summer 2024:

- Revised Program Description
- Changed total requirements for degree completion from 124 credits to 120 credits
- Changed General Education credits included in Requirements for the Major from 18-24 credits to 9-12 credits
- Changed Electives from 0-13 credits to 0-6 credits
- Changed Prescribed Courses for the Major from 24 credits to 27 credits
- Added ANSC 331 to Prescribed Courses for the Major
- Added C or better requirement to ANSC 100 and ANSC 290 in Prescribed Courses for the Major
- Changed Additional Courses for the Major from 21-25 credits to 18-21 credits
- Added CHEM 101, CHEM 110, CHEM 130, MICRB 106, MICRB 201, MICRB 107, MICRB 202 to Additional Courses for the Major
- Removed MATH 21, MATH 22, MATH 26, MATH 41, MATH 110, MATH 140, CMPSC 101, CMPSC 203, MATH 111, MATH 141, STAT 200, STAT 250
- Changed Supporting Courses and Related Areas for the Major from 3-5 credits to 36 credits
- Removed Business and Management Option
- Removed Science Option

Anthropological Science, B.S. (ANTHS_BS)

Effective Fall 2024:

- Added new Integrated B.S. in Anthropological Science and M.A. in Anthropology

Archaeological Science, B.S. (ARSCI_BS)

Effective Summer 2024:

- Program phased out

Architectural Engineering, B.A.E. (AE_BAE)

Effective Fall 2024:

- Changed Electives from 3 credits to 0 credits
- Changed Requirements for the Major from 145-149 credits to 148-151 credits
- Changed Common Requirements for the Major from 109-113 credits to 113-116 credits
- Changed Prescribed Courses for the Major from 85-86 credits to 89 credits

- Added ARCH 130B to Prescribed Courses for the Major
- Changed MATH 220 from 2-3 credits to 3 credits in Prescribed Courses for the Major
- Changed Construction Option from 36 credits to 35 credits
- Removed CE 336, vcE 337 from Prescribed Courses for the Construction Option
- Added Additional Courses section to Construction Option
- Changed Supporting Courses and Related Areas for the Construction Option from 8 credits to 7-8 credits
- Changed Lighting/Electrical Option from 36 credits to 35 credits
- Added AE 462 to Prescribed Courses for the Lighting/Electrical Option
- Changed Supporting Courses and Related Areas for the Lighting/Electrical Option from 15 credits to 11 credits
- Changed Mechanical Option from 36 credits to 35 credits
- Changed Supporting Courses and Related Areas for the Mechanical Option from 9 credits to 8 credits
- Changed Structural Option from 36 credits to 35 credits
- Changed Supporting Courses and Related Areas for the Structural Option from 12 credits to 11 credits

Biological Anthropology, B.S. (BANTH_BS)

Effective Summer 2024:

- Program phased out

Biological Engineering, B.S. (BE_BS)

Effective Summer 2024:

- Revised Program Description
- Changed General Education credits included in Requirements for the Major from 27 credits to 24 credits
- Changed Requirements for the Major from 110-111 credits to 107-108 credits
- Changed Common Requirements for the Major from 77 credits to 74 credits
- Added BE 404 to Prescribed Courses for the Major
- Removed BE 304 from Prescribed Courses for the Major
- Removed C or better requirement from PHYS 212 in Prescribed Courses for the Major
- Changed Additional Courses for the Major from 16 credits to 13 credits
- Removed AGBM 101, ECON 102, ECON 104 from Additional Courses for the Major

Biology, B.S. (Science, Abington, Altoona, Berks, Capital, University College) (BIOL_BS, BIOAB_BS, BIOAL_BS, BIOBK_BS, BIOCA_BS, BIOUC_BS)

Effective Fall 2024:

- Changed Electives from 0 credits to 0-5 credits
- Changed Requirements for the Major from 94 credits to 89-99 credits
- Changed Common Requirements for the Major from 43-48 credits to 39-44 credits
- Changed Prescribed Courses for the Major from 32 credits to 1 credit
- Added C or better requirement to CHEM 111 in Prescribed Courses for the Major

- Removed CHEM 113, MATH 141, BIOL 110, BIOL 220W, BIOL 230W, BIOL 240W, CHEM 110, CHEM 112, MATH 140 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 11-16 credits to 38-43 credits
- Added CHEM 112, CHEM 112H, CHEM 113, CHEM 113B, BIOL 220W, BIOL 220M, BIOL 230W, BIOL 230M, BIOL 240W, BIOL 240M, CHEM 110, CHEM 110H, BIOL 110, BIOL 110H, BIOL 110S, MATH 140, MATH 140B, MATH 140H to Additional Courses for the Major
- Changed Ecology Option from 46-51 credits to 50-55 credits
- Added CHEM 213W, CHEM 213M to Additional Courses for the Ecology Option
- Added BIOL 418, BIOL 445, BIOL 448, BIOL 483, BIOL 484, BIOL 489 to Ecology Group in Additional Courses for the Ecology Option
- Removed BIOL 438 from Ecology Group in Additional Courses for the Ecology Option
- Added BIOL 430, BIOL 440, BIOL 442, BIOL 460H, BIOL 484, ENT 402W to Evolution Group in Additional Courses for the Ecology Option
- Removed BIOL 411, BIOL 438, BIOL 463, BIOL 474 from Evolution Group in Additional Courses for the Ecology Option
- Added BIOL 403, BIOL 459, BIOL 465, BIOL 476, BIOL 477, BIOL 483, BIOL 484, BIOL 489, BMB 442, PPEM 427, SC 220, SC 475N to Practicum Group in Additional Courses for the Ecology Option
- Removed BIOL 461, BIOL 475N, BIOL 482, BIOTC 459 from Practicum Group in Additional Courses for the Ecology Option
- Changed Supporting Courses and Related Areas for the Ecology Option from 17-24 credits to 21-28 credits
- Added CHEM 213W, CHEM 213M to Additional Courses for the General Biology Option
- Added BIOL 484, HORT 407, HORT 445, PPEM 416 to Plant and Fungi Group in Additional Courses for the General Biology Option
- Added BIOL 418, BIOL 440, BIOL 442, BIOL 460H, BIOL 484, ENT 402W to Evolution Group in Additional Courses for the General Biology Option
- Removed BIOL 411, BIOL 412 from Genetics and Developmental Biology Group in Additional Courses for the General Biology Option
- Added BIOL 445, BIOL 455, BIOL 460H, BMB 450, BMB 464, BMB 484, HORT 407 to Evolution Group in Additional Courses for the General Biology Option
- Removed BIOL 438 from Evolution Group in Additional Courses for the General Biology Option
- Added BIOL 418, BIOL 445, BIOL 448, BIOL 483, BIOL 484, BIOL 489, ENT 402W, to Ecology Group in Additional Courses for the General Biology Option
- Removed BIOL 438, BIOL 463, BIOL 474 from Ecology Group in Additional Courses for the General Biology Option
- Added BIOL 409, BIOL 430, BIOL 460H, BIOL 465, BIOL 475 to Physiology Group in Additional Courses for the General Biology Option
- Removed BIOL 482 from Physiology Group in Additional Courses for the General Biology Option
- Added BIOL 403, BIOL 440, BIOL 459/BIOTC 459, BIOL 465, BIOL 476, BIOL 477, BIOL 483, BIOL 484, BIOL 489, BMB 442, PPEM 427, SC 220, SC 475N to Practicum Group in Additional Courses for the General Biology Option
- Removed BIOL 475N, BIOL 482, BIOL 494, BIOTC 459 from Practicum Group in Additional Courses for the General Biology Option
- Changed Supporting Courses and Related Areas for the General Biology Option from 20-27 credits to 24-31 credits
- Changed Genetics and Developmental Biology Option from 46-51 credits to 50-55 credits
- Changed Prescribed Courses for the Genetics and Developmental Biology Option from 20 credits to 12 credits
- Removed BMB 401, BMB 402, CHEM 213 from Prescribed Courses for the Genetics and Developmental Biology Option
- Changed Additional Courses for the Genetics and Developmental Biology Option from 14-17 credits to 22-25 credits
- Added BMB 401, BMB 401H, BMB 402, BMB 402H, CHEM 213, CHEM 213M, CHEM 213W, MATH 240 to Additional Courses for the Genetics and Developmental Biology Option
- Added BIOL 409, BIOL 455, BIOL 460H, BIOL 484, ENT 402W to Genetics and Developmental Biology Group in Additional Courses for the Genetics and Developmental Biology Option
- Added BIOL 418, BIOL 430, BIOL 440, BIOL 442, BIOL 463 to Evolution Group in Additional Courses for the Genetics and Developmental Biology Option
- Removed BIOL 411, BIOL 438, BIOL 463 from Evolution Group in Additional Courses for the Genetics and Developmental Biology Option
- Added BIOL 403, BIOL 459/BIOTC 459, BIOL 476, BIOL 477, BIOL 483, BIOL 484, BIOL 489, BMB 442, PPEM 427, SC 220, SC 475N to Practicum Group in Additional Courses for the Genetics and Developmental Biology Option
- Removed BIOL 439, BIOL 475N, BIOL 482 from Practicum Group in Additional Courses for the Genetics and Developmental Biology Option
- Changed Supporting Courses and Related Areas for the Genetics and Developmental Biology Option from 9-17 credits to 13-21 credits
- Changed Neuroscience Option from 46-51 credits to 50-55 credits
- Changed Prescribed Courses for the Neuroscience Option from 17 credits to 15 credits
- Removed CHEM 213 from Prescribed Courses for the Neuroscience Option
- Changed Additional Courses for the Neuroscience Option from 15 credits to 17 credits
- Added CHEM 213, CHEM 213M, CHEM 213W to Additional Courses for the Neuroscience Option
- Removed HDFS 468 from Neuroscience Group in Additional Courses for the Neuroscience Option
- Added BIOL 418, BIOL 430, BIOL 440, BIOL 442, BIOL 460H, BIOL 484, ENT 402W to Evolution Group in Additional Courses for the Neuroscience Option
- Removed BIOL 411, BIOL 438, BIOL 463 from Evolution Group in Additional Courses for the Neuroscience Option
- Added BIOL 403, BIOL 459/BIOTC 459, BIOL 465, BIOL 476, BIOL 477, BIOL 483, BIOL 484, BIOL 489, BMB 442, PPEM 427, SC 220, SC 475N to Practicum Group in Additional Courses for the Neuroscience Option
- Removed BIOL 437, BIOL 473, BIOL 475N, BIOL 482, BIOL 499A, BIOTC 459 from Practicum Group in Additional Courses for the Neuroscience Option
- Changed Supporting Courses and Related Areas for the Neuroscience Option from 14-19 credits to 18-23 credits
- Changed Plant Biology Option from 46-51 credits to 50-55 credits

- Changed Prescribed Courses for the Plant Biology Option from 20 credits to 18 credits
- Removed CHEM 213 from Prescribed Courses for the Plant Biology Option
- Changed Additional Courses for the Plant Biology Option from 12 credits to 14 credits
- Added CHEM 213, CHEM 213M, CHEM 213W to Additional Courses for the Plant Biology Option
- Added BIOL 459, BIOL 484, HORT 407, HORT 445, PPEM 416, PPEM 427 to Plant and Fungi Group in Additional Courses for the Plant Biology Option
- Added BIOL 418, BIOL 430, BIOL 440, BIOL 442, BIOL 460H, BIOL 484, ENT 402W to Evolution Group in Additional Courses for the Plant Biology Option
- Removed BIOL 411, BIOL 438, BIOL 463 from Evolution Group in Additional Courses for the Plant Biology Option
- Added BIOL 403, BIOL 444, BIOL 465, BIOL 476, BIOL 477, BIOL 483, BIOL 484, BIOL 489, BMB 442, PPEM 427, SC 220, SC 475N to Practicum Group in Additional Courses for the Plant Biology Option
- Removed BIOL 425/PPEM 425, BIOL 475N, BIOL 478, BIOL 482, BIOTC 459 from Practicum Group in Additional Courses for the Plant Biology Option
- Changed Supporting Courses and Related Areas for the Plant Biology Option from 14-19 credits to 18-23 credits
- Changed Vertebrate Physiology Option from 46-51 credits to 50-55 credits
- Changed Prescribed Courses for the Vertebrate Physiology Option from 19 credits to 11 credits
- Removed BMB 401, BMB 402, CHEM 213 from Prescribed Courses for the Vertebrate Physiology Option
- Changed Additional Courses for the Vertebrate Physiology Option from 12 credits to 20 credits
- Added BIOL 418, BIOL 460H, BIOL 465, BIOL 467 to Physiology Group in Additional Courses for the Vertebrate Physiology Option
- Removed BIOL 412, BIOL 482 from Physiology Group in Additional Courses for the Vertebrate Physiology Option
- Added BIOL 418, BIOL 430, BIOL 440, BIOL 442, BIOL 460H, BIOL 484, ENT 402W to Evolution Group in Additional Courses for the Vertebrate Physiology Option
- Removed BIOL 411, BIOL 438, BIOL 463 from Evolution Group in Additional Courses for the Vertebrate Physiology Option
- Added BIOL 403, BIOL 465, BIOL 477, BIOL 483, BIOL 484, BIOL 489, BMB 442, PPEM 427, SC 220, SC 475N to Practicum Group in Additional Courses for the Vertebrate Physiology Option
- Removed BIOL 422, BIOL 439, BIOL 475N, BIOL 482, BIOL 499A, BIOTC 459 from Practicum Group in Additional Courses for the Vertebrate Physiology Option
- Changed Supporting Courses and Related Areas for the Vertebrate Physiology Option from 15-20 credits to 19-24 credits

Biology, B.S. (University College) (BIOUC_BS)

Effective Fall 2024:

- Program added to Lehigh Valley campus

BioRenewable Systems, B.S. (BRS_BS)

Effective Summer 2024:

- Changed name to Agricultural and Biorenewable Systems Management
- Revised Program Description
- Changed Requirements for the Major from 106-109 credits to 106-108 credits
- Changed Prescribed Courses for the Major from 43 credits to 46 credits
- Added ABSM 300 to Prescribed Courses for the Major
- Added Supporting Courses and Related Areas for the Major
- Removed Agricultural Systems Management Option
- Removed Bioproducts Option

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

Effective Summer 2024:

- Revised Entrance to Major Requirements
- Changed Electives from 10 credits to 5-8 credits
- Changed Requirements for the Major from 80 credits to 82-85 credits
- Changed Common Requirements for the Major from 62 credits to 64-67 credits
- Changed Prescribed Courses for the Major from 41 credits to 37 credits
- Added MIS 301 to Prescribed Courses for the Major
- Removed ACCTG 211, MIS 204 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 18-21 credits to 24-30 credits
- Added ACCTG 211, ACCTG 201, ACCTG 202, MIS 204, MIS 250, MATH 21, MATH 22, MATH 26, MATH 40, MATH 41 to Additional Courses for the Major
- Removed C or better requirement for BA 495A, BA 495B in Additional Courses for the Major
- Changed Prescribed Courses for the Business Analytics Option from 9 credits to 6 credits
- Removed MIS 301 from Prescribed Courses for the Business Analytics Option
- Changed Additional Courses for the Business Analytics Option from 9 credits to 12 credits
- Added ECON 442, FIN 302, SCM 421, SCM 445, SCM 455, SCM 460, SODA 308, STAT 300, STAT 400, STAT 460, STAT 462 to Additional Courses for the Business Analytics Option

Civil Engineering, B.S. (Engineering, Capital) (CE_BS, CECA_BS)

Effective Fall 2024:

- Changed Prescribed Courses for the Major from 71 credits to 64 credits
- Removed STAT 401, MATH 251 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 26 credits to 24 credits
- Added STAT 401, IE 424, MATH 251, MATH 250, MATH 252 to Additional Courses for the Major
- Removed CHE 220, ME 201, CE 341, CE 342, CE 371, CE 441, CE 447, CE 461, CE 462, CE 475, CE 476, CE 479 from Additional Courses for the Major

- Changed Supporting Courses and Related Areas for the Major from 12 credits to 21 credits
- Added 9 credits of technical electives to Supporting Courses and Related Areas for the Major

Cybersecurity Analytics and Operations, B.S. (CAOUC_BS) **Effective Summer 2024:**

- Program phased out at Shenango campus

Diversity and Inclusion in Health and Human Development, Minor (DIHHD_UMNR) **Effective Fall 2024:**

- Added HDFS 417, HPA 401, KINES 426, NUTR 421 to the Global Health Diversity and Inclusion cluster in Supporting Courses and Related Areas
- Added CSD 300, CSD 462, HDFS 245N, HDFS 287Y, HPA 311, KINES 425W, KINES 441 to the Health and Identity cluster in Supporting Courses and Related Areas
- Added HDFS 287Y, HDFS 345, HM 210N, HM 366, HPA 435, HPA 438, KINES 441, NUTR 175N to the Work, Recreation, Family and Community cluster in Supporting Courses and Related Areas
- Removed NUTR 456 from the Work, Recreation, Family and Community cluster in Supporting Courses and Related Areas

Diversity Studies, Certificate (Liberal Arts) (DIVSTD_UCT) **Effective Fall 2024:**

- Added PSYCH 231, WMNST 200 to Additional Courses for the Certificate

Electrical Engineering, B.S. (Behrend) (EEBC_BS) **Effective Fall 2024:**

- Added CMPSC 121, CMPEN 270, EE 388, EE 453, EE 481, STAT 318 to Prescribed Courses for the Major
- Removed CHEM 111, CMPSC 201, EMCH 211, CMPEN 271, CMPEN 275, EE 380, EE 383, STAT 301 from Prescribed Courses for the Major
- Added CMPSC 132 to Additional Courses for the Major
- Removed ME 201, ME 300 from Additional Courses for the Major

Electro-Mechanical Engineering Technology, B.S. (Engineering, Altoona, Berks) (EMET_BS, EMTAL_BS, EMTBK_BS) **Effective Summer 2024:**

- Revised Program Description
- Changed Requirements for the Major from 110-116 credits to 109-116 credits
- Changed Prescribed Courses for the Major from 73 credits to 69 credits
- Added STS 233/PHIL 233 to Prescribed Courses for the Major
- Removed EMET 440 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 28-33 credits to 31-37 credits
- Added EMET 350, EMET 351, EMET 403, EMET 440, EMET 441, EMET 442 to Additional Courses for the Major
- Removed ENGR 320Y, STS 200, STS 233Z/PHIL 233Z, STS 245Z from Additional Courses for the Major

Elementary Education, B.El.Ed. (ELEM_BELED) **Effective Summer 2024:**

- Changed total requirements for degree completion of the PK-4 Early Childhood Option from 139 credits to 123 credits
- Changed total requirements for degree completion of the Grade 4-8 English/Language Arts and Reading Option from 137 credits to 121 credits
- Changed total requirements for degree completion of the Grade 4-8 Mathematics Option from 139 credits to 120 credits
- Changed total requirements for degree completion of the Grade 4-8 Social Studies Option from 137 credits to 121 credits
- Changed Electives from 0-6 credits to 0 credits
- Changed Requirements for the Major from 131-141 credits to 120-123 credits
- Changed Common Requirements for the Major from 104-112 credits to 91 credits
- Added CAS 100A, EDTHP 115S to Prescribed Courses for the Major
- Removed CAS 100, EDTHP 115 from Prescribed Courses for the Major
- Removed Supporting Courses and Related Areas for the Major
- Changed PK-4 Early Childhood Education Option from 29 credits to 32 credits
- Changed Additional Courses for the PK-4 Early Childhood Education Option from 9 credits to 12 credits
- Added EDMTH 302, SPLED 409C to Additional Courses for the PK-4 Early Childhood Education Option
- Removed AA 193N, AFAM 139, AFAM 141N/ENGL 141N/INART 141N, AMST 150N, APLNG 220N, ARTH 224N/ENGL 224N, CMLIT 1, CMLIT 2, CMLIT 3, CMLIT 4/ASIA 4, CMLIT 5, CMLIT 6/PHIL 6, CMLIT 10, CMLIT 11, CMLIT 100, CMLIT 101, CMLIT 105, CMLIT 106, CMLIT 107, CMLIT 108, CMLIT 109, CMLIT 110/JUST 131, CMLIT 111, CMLIT 130, CMLIT 140, CMLIT 141, CMLIT 153, CMLIT 183Q/SC 183Q, ENGL 101, ENGL 103, ENGL 104/JST 104, ENGL 112, ENGL 129, ENGL 133, ENGL 134, ENGL 135/AMST 135, ENGL 140, ENGL 142N/SC 142N, ENGL 161N/HIST 162N, ENGL 165N, ENGL 180, ENGL 182A, ENGL 182C, ENGL 183N/PLSC 183N, ENGL 184, ENGL 185, ENGL 189, ENGL 191, ENGL 194/WMNST 194, ENGL 223N, ENGL 228, ENGL 233N/CHEM 233N, ENGL 236N, ENGL 237N, ENGL 262, ENGL 263, ENGL 265, ENGL 268, HDFS 254N, LLED 215N from Additional Courses for the PK-4 Early Childhood Education Option
- Changed English/Language Arts and Reading (4-8) Option from 27 credits to 30 credits
- Changed Prescribed Courses for the English/Language Arts and Reading (4-8) Option from 15 credits to 12 credits
- Added ENGL 470 to Prescribed Courses for the English/Language Arts and Reading (4-8) Option
- Removed EDUC 320, EDUC 470W from Prescribed Courses for the English/Language Arts and Reading (4-8) Option
- Changed Additional Courses for the English/Language Arts and Reading (4-8) Option from 12 credits to 18 credits
- Added EDMTH 301, SPLED 409C to Additional Courses for the English/Language Arts and Reading (4-8) Option
- Removed ENGL 221, ENGL 222, ENGL 440, ENGL 441, ENGL 442, ENGL 443, ENGL 444, ENGL 445, ENGL 446, ENGL 447, ENGL 448, ENGL 450, ENGL 451, ENGL 452, ENGL 453, ENGL 454, ENGL 455, ENGL 456, ENGL 457, ENGL 458, ENGL 231, ENGL 232, ENGL 432, ENGL 433, ENGL 434, ENGL 435, ENGL 436, ENGL 437, ENGL 438,

ENGL 439 from Additional Courses for the English/Language Arts and Reading (4-8) Option

- Added EDMTH 301, SPLED 409C to Additional Courses for the Mathematics (4-8) Option
- Removed AFAM 139, CMLIT 1, CMLIT 2, CMLIT 3, CMLIT/ASIA 4, CMLIT 5, CMLIT 6/PHIL 6, CMLIT 10, CMLIT 11, CMLIT 100, CMLIT 101, CMLIT 105, CMLIT 106, CMLIT 107, CMLIT 108, CMLIT 110/JST 131, CMLIT 111, CMLIT 141, CMLIT 184/ENGL 184, CMLIT 185/ENGL 185, CMLIT 189/ENGL 189, ENGL 2, ENGL 104/JST 104, ENGL 129, ENGL 129H, ENGL 133, ENGL 134, ENGL/AMST 135, ENGL 140, ENGL 180, ENGL 182A, ENGL 182C, ENGL 191, ENGL 194/WMNST 194, ENGL 194H, ENGL 262, ENGL 263, ENGL 265, ENGL 268
- Changed Social Studies (4-8) Option from 27 credits to 30 credits
- Changed Additional Courses for the Social Studies (4-8) Option from 6 credits to 9 credits
- Added EDMTH 301, SPLED 409C to Additional Courses for the Social Studies (4-8) Option
- Removed AA 193N, AFAM 139, AFAM 141N/ENGL 141N/INART 141N, AMST 150N, APLNG 220N, ARTH 224N/ENGL 224N, CMLIT 1, CMLIT 2, CMLIT 3, CMLIT 4/ASIA 4, CMLIT 5, CMLIT 6/PHIL 6, CMLIT 10, CMLIT 11, CMLIT 100, CMLIT 101, CMLIT 105, CMLIT 106, CMLIT 107, CMLIT 108, CMLIT 110/JUST 131, CMLIT 111, CMLIT 130, CMLIT 140, CMLIT 141, CMLIT 153, CMLIT 183Q/SC 183Q, CMLIT 184/ENGL 184, CMLIT 185/ENGL 185, CMLIT 189/ENGL 189, ENGL 101, ENGL 112, ENGL 129, ENGL 129H, ENGL 133, ENGL 134, ENGL 135, ENGL 142N/SC 142N, ENGL 161N/HIST 162N, ENGL 165N, ENGL 180, ENGL 182A, ENGL 182C, ENGL 183N/PLSC 183N, ENGL 191, ENGL 194/WMNST 194, ENGL 194H, ENGL 223N, ENGL 236N, ENGL 237N, ENGL 262, ENGL 263, ENGL 265, ENGL 268, HDFS 254N, LLED 215N from Additional Courses for the Social Studies (4-8) Option

Energy Business and Finance, B.S. (EBF_BS)

Effective Summer 2024:

- Revised Program Description
- Changed General Education credits included in Requirements for the Major from 25-27 credits to 21-28 credits
- Changed Electives from 0-12 credits to 11-19 credits
- Changed Requirements for the Major from 90-102 credits to 84-85 credits
- Changed Prescribed Courses for the Major from 45 credits to 48 credits
- Added EBF 483, EBF 484, EMSC 100S to Prescribed Courses for the Major
- Removed IB 303, EBF 304W from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 21 credits to 27 credits
- Added EGEE 120, IB 303, EGEE 401, EME 444, METEO 469, EBF 304W, EBF 404W, EME 210, ESL 15, ENGL 137H to Additional Courses for the Major
- Removed CAS 100, EMSC 100S, CMPSC 202, EBF 472, STAT 301, EBF 483, EBF 484 from Additional Courses for the Major
- Added Supporting Courses and Related Areas for the Major
- Removed Energy Land Management Option
- Removed General Option

Energy Engineering, B.S. (ENENG_BS)

Effective Summer 2024:

- Revised Entrance to Major Requirements
- Added ESL 15, ENGL 137H to Additional Courses for the Major

English, B.A. (Abington) (ENGAB_BA)

Effective Summer 2024:

- Traditions of Innovation Option phased out at Penn State Abington, the Abington College

Entrepreneurship and Innovation, Minor (ENTI_UMNR)

Effective Fall 2024:

- Removed Arts Cluster
- Added AEE 360, ANSC 346, FORT 250, AEE 460, FDSC 450 to the Food and Bio-Innovation Cluster
- Removed AEE 311 from the Food and Bio-Innovation Cluster
- Made HM 484 a Required Course in the Hospitality Management Cluster
- Added HM 382, HM 407, HM 435, HM 485, HM 488 to the Hospitality Management Cluster
- Removed HM 413, HM 432, HM 483, HM 496 from the Hospitality Management Cluster
- Added COMM 384, COMM 462, COMM 483 to the New Media Cluster
- Removed COMM 461, COMM 484A from the New Media Cluster
- Renamed Technology Based Entrepreneurship Cluster to Product Innovation Cluster
- Added EDSGN 367, EDSGN 467, ENGR 408 to the Product Innovation Cluster

Finance, B.S. (Capital, Abington) (FINCE_BS, FNCE_BS)

Effective Fall 2024:

- Changed Prescribed Courses for the Major from 49 credits to 46 credits
- Removed MIS 204 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 21 credits to 24 credits
- Added MIS 204, MIS 250 to Additional Courses for the Major

Forensic Science, B.S. (FRNSC_BS)

Effective Summer 2024:

- Revised Entrance to Major Requirements

Gerontology, Minor (GERON_UMNR)

Effective Summer 2024:

- Changed name to Longevity, Aging and Generational Studies
- Changed Program Description
- Changed Prescribed Courses from 3 credits to 6 credits
- Added HDFS 445 to Prescribed Courses
- Removed Additional Courses
- Changed Supporting Courses and Related Areas from 9 credits to 12 credits
- Added BBH 368, BBH 416, BBH 417, BBH 420, BBH 468, BBH 469, BIOL 409, CAS 162N, CAS 253, CAS 453, ENGR 310, FIN 330, FIN 450, HDFS 210Z, HDFS 434, HDFS 448, HHD 100H, HHD 245N, HM 413, HM 483, HM 484, HPA 301, HPA 443, HPA 444, KINES 350, KINES 360,

KINES 384, MGMT 215, PSYCH 244, PSYCH 260, RM 302, RM 320W, SOC 162N to Supporting Courses and Related Areas

- Removed HPA 101 from Supporting Courses and Related Areas

Health Care Administration, Certificate (HCADMN_UCT)

Effective Summer 2024:

- New certificate added

Health Policy, Certificate (HLPLCY_UCT)

Effective Summer 2024:

- New certificate added

Health Policy and Administration, B.S. (HPA_BS, HPACA_BS, HPAUC_BS) (Health and Human Development, Capital, University College)

Effective Fall 2024:

- Changed Electives from 4-6 credits to 1-3 credits
- Changed Requirements for the Major from 81-83 credits to 84-86 credits
- Changed Prescribed Courses for the Major from 36 credits to 39 credits
- Added HPA 200 to Prescribed Courses for the Major

Human Capital Management, B.S. (HCPMG_BS)

Effective Fall 2024:

- Revised Entrance to Major Requirements
- Changed Prescribed Courses for the Major from 55 credits to 52 credits
- Added HRM 495 to Prescribed Courses for the Major
- Removed CAS 100, MGMT 495 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 21 credits to 23-24 credits
- Added CAS 100A, CAS 100B, CAS 100C, CAS 100S, ENGL 15S, DA 101 to Additional Courses for the Major
- Changed Supporting Courses and Related Areas for the Major from 17 credits to 17-18 credits

Human Development and Family Studies, B.S. (Health and Human Development, Altoona, Capital, University College) (HDFS_BS, HFSAL_BS, HFSCA_BS, HFSUC_BS)

Effective Fall 2024:

- Revised Program Description
- Changed Electives from 3-5 credits to 12-18 credits
- Changed Common Requirements for the Major from 30-31 credits to 42-43 credits
- Changed Prescribed Courses for the Major from 18 credits to 12 credits
- Added HDFS 216 to Prescribed Courses for the Major
- Removed HDFS 129, HDFS 315, HDFS 418 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 12-13 credits to 30-31 credits
- Added HDFS 101N, HDFS 315Y, SOC 30, HDFS 200 to Additional Courses for the Major
- Added 15-credit Career Development and Experiential Learning Capstone requirement to Additional Courses for the Major

- Removed 3 credits of United States Cultures requirement from Additional Courses for the Major
- Renamed Life Span Human Services Option to Human Development and Family Science Option
- Changed Human Development and Family Science Option from 43-45 credits to 18 credits
- Removed Prescribed Courses for the Human Development and Family Science Option
- Changed Additional Courses for the Human Development and Family Science Option from 22-24 credits to 12 credits
- Added HDFS 405, HDFS 413, HDFS 432, HDFS 434, HDFS 447, HDFS 412, HDFS 415, HDFS 416/SOC 411, HDFS 417, HDFS 418, HDFS 424, HDFS 431, HDFS 469U, HDFS 477, SOC 430, HDFS 410, HDFS 430, HDFS 440, HDFS 465/CMAS 465 to Additional Courses for the Human Development and Family Science Option
- Removed HDFS 490, HDFS 495A, HDFS 495B, HDFS 401, HDFS 402, HDFS 495C from Additional Courses for the Human Development and Family Science Option
- Changed Supporting Courses and Related Areas for the Human Development and Family Science Option from 12 credits to 6 credits
- Renamed Life Span Developmental Science Option to Developmental Science for Health Professions Option
- Changed Developmental Science for Health Professions Option from 45 credits to 24 credits
- Removed Prescribed Courses for the Developmental Science for Health Professions Option
- Changed Additional Courses for the Developmental Science for Health Professions Option from 21 credits to 9 credits
- Added BBH 407, SOC 451, HDFS 405, HDFS 413, HDFS 432, HDFS 434, HDFS 447 to Additional Courses for the Developmental Science for Health Professions Option
- Changed Supporting Courses and Related Areas for the Developmental Science for Health Professions Option from 18 credits to 15 credits

Human Resource Management, Minor (HRMGT_UMNR)

Effective Fall 2024:

- Revised Program Description
- Changed Prescribed Courses from 9 credits to 6 credits
- Removed MGMT 440 from Prescribed Courses
- Changed Additional Courses from 2-4 credits to 3-12 credits
- Added MGMT 440, MGMT 441, MGMT 443, MGMT 445 to Additional Courses
- Removed BA 241, BA 243, BLAW 243, BLAW 341, LER 201 from Additional Courses
- Changed Supporting Courses and Related Areas from 9 credits to 0-9 credits
- Added ECON 315, ECON 410, HRM 495, PSYCH 484, MGMT 326, MGMT 331, MGMT 400, CAS 404, MGMT 433, MGMT 461 to Supporting Courses and Related Areas
- Removed LER 424, LER 425, MGMT 400, MGMT 441, MGMT 443, MGMT 445 from Supporting Courses and Related Areas

Keystone Certificate for Integrative Humanities, Certificate (KCIHNM_UCT)

Effective Fall 2024:

- Added AFAM 102, AFAM 105N, AFAM 116, RLST 147, AFAM 152/HIST 152, AFAM 211/HIST 211, AFAM 213Y, HIST 213Y, WMNST 213Y, AFAM 250/HIST 250, AFR 150, AFR 202N/WMNST 202N, ANTH 129N/HIST 129N/PLANT 129N, APLNG 210, AFR 230N, ARTH 101N, ARTH 202N, ARTH 224N, ARTH 225N, ARTH 292N, ARTH 325, ASIA 101N, ASIA 102, ASIA 122/JAPNS 122, CAMS 12N, JST 12N, RLST 12N, CAMS 44, RLST 44, CAMS 100/HIST 100, CAMS 101, CAMS 105, CAMS 109Y, CAMS 111/JST 111/RLST 111, CAMS 120/JST 120/RLST 120, CAMS 123/JST 123/RLST 123, CAMS 124/JST 124/RLST 124, CAMS 130, CAMS 153/JST 153/RLST 153, CAMS 180/HIST 180, CMLIT 5, CMLIT 7, CMLIT 13, CMLIT 19N/ASTRO 19N, CMLIT 100, CMLIT 101, CMLIT 106, CMLIT 107, CMLIT 108, CMLIT 109, CMLIT 110, CMLIT 111, CMLIT 112N, CMLIT 122, CMLIT 130, CMLIT 133N, CMLIT 142, CMLIT 143, CMLIT 191N/GAME 160N, COMM 150N, DART 102N, EMSC 240N, ENGL 114, ENGL 125, ENGL 206, ENGR 115N/GER 115N, ENT 216N, FDSC 134/PHIL 134, FR 138N, GEOSC 212N/HIST 212N, GER 100, GER 123/HIST 195/JST 195, GER 143, GER 189N, GER 200N, HIST 105, HIST 106, HIST 107, HIST 108, HIST 113, HIST 122, HIST 123, HIST 130, HIST 131N, HIST 142N, HIST 155, HIST 165/ARAB 165/RLST 165, HIST 172/ASIA 172/JAPNS 172, HIST 178, HIST 184, HIST 186/ASIA 186/JST 186, HIST 190, HIST 238N, HIST 252, IT 131, IT 225N, JAPNS 120, JAPNS 121N, KOR 120, KOR 121, JST 4/RLST 4/CAMS 4, JST 60N, JST 90/CAMS 90/RLST 90, JST 114/RLST 114, JST 140/HIST 140, JST 190, JST 260/HIST 260, LTNST 139/PHIL 139, PHIL 2, PHIL 5, PHIL 8/WMNST 8, PHIL 11, PHIL 60N, PHIL 106, PHIL 107, PHIL 108, PHIL 110, PHIL 114, PHIL 118, PHIL 131N, PHIL 136N, PHIL 137N, PLSC 17N, PLSC 120N/PUBPL 120N/SOC 180N, PLSC 200N, PLSC 210N, PLSC 223N, RLST 116, RLST 145, RUS 100, RUS 101N, RUS 110, RUS 143/GER 143, RUS 144, RUS 145, HIST 125N, SPAN 132/AFAM 132/AFR 132, WMNST 102, WMNST 105N, WMNST 106N, WMNST 137, WMNST 166, WMNST 230N, WMNST 266Y/HIST 266Y to Additional Courses for the Certificate

Kinesiology, Minor (KINES_UMNR)

Effective Summer 2024:

- Changed Requirements for the Minor from 18-19 credits to 18 credits
- Changed Additional Courses from 6-7 credits to 6 credits
- Added KINES 160N, KINES 303 to Supporting Courses and Related Areas
- Removed KINES 405N, KINES 410, KINES 411, KINES 419, KINES 420, KINES 421, KINES 422, KINES 423, KINES 424, KINES 425W, KINES 426, KINES 427, KINES 428, KINES 429, KINES 430W, KINES 431, KINES 439W, KINES 440, KINES 441/AMST 441, KINES 442/CAMS 442, KINES 445, KINES 446, KINES 447W, KINES 449, KINES 452, KINES 453, KINES 454, KINES 455, KINES 456, KINES 457, KINES 458, KINES 459, KINES 460, KINES 463, KINES 465, KINES 467, KINES 470, KINES 471, KINES 481W, KINES 483, KINES 484, KINES 485, KINES 488, KINES 492W, KINES 493, KINES 493W, KINES 495E, KINES 499 from Supporting Courses and Related Areas

Landscape Contracting, B.S. (LSCPE_BS)

Effective Fall 2024:

- Changed Electives from 2-16 credits to 3-16 credits
- Changed Requirements for the Major from 80-97 credits to 80-96 credits
- Changed Common Requirements for the Major from 66-71 credits to 66-70 credits
- Changed Prescribed Courses for the Major from 41-42 credits to 39 credits

- Removed CHEM 101 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 25-29 credits to 27-31 credits
- Added CHEM 101, CHEM 130 to Additional Courses for the Major
- Removed MATH 40 from Additional Courses for the Major
- Added HORT 270 to Prescribed Courses for the Design/Build Option
- Removed EDSGN 10 from Prescribed Courses for the Design/Build Option

Law and Society, B.A. (LAWSC_BA)

Effective Summer 2024:

- Revised Program Description
- Changed total requirements for degree completion from 123 credits to 120 credits
- Changed General Education credits included in Requirements for the Major from 12-15 credits to 9-15 credits
- Changed Electives from 30-36 credits to 24-30 credits
- Changed Prescribed Courses for the Major from 18 credits to 15 credits
- Added LA 201W to Prescribed Courses for the Major
- Removed LA 100, PLSC 110 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 3-6 credits to 6 credits
- Added CAS 215, CAS 390, PLSC 10, PLSC 309, SOC 207, Courses from department list to Additional Courses for the Major
- Changed Supporting Courses and Related Areas for the Major from 12-15 credits to 15 credits
- Added CAS 252, CAS 426W, CAS 475, CRIM 12/CRIMJ 12, CRIMJ 100, CRIMJ 200, CRIMJ 420, LA 402, LA 404, LHR 458Y, PHIL 102, PHIL 119, PLSC 210N, PLSC 473, Courses from department list to Supporting Courses and Related Areas for the Major

Management, B.S. (Capital) (MNGMT_BS)

Effective Summer 2024:

- Revised Program Description
- Revised Entrance to Major Requirements
- Changed General Education credits included in Requirements for the Major from 12 credits to 18 credits
- Changed Electives from 8 credits to 5 credits
- Changed Requirements for the Major from 79 credits to 85 credits
- Changed Prescribed Courses for the Major from 46 credits to 43 credits
- Added MGMT 400 to Prescribed Courses for the Major
- Removed MIS 204, MGMT 341 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 21 credits to 30 credits
- Added MIS 204, MIS 250 CAS 100A, CAS 100B, CAS 100C, CAS 100S, ENGL 15, ENGL 30T, ENGL 30H, ESL 15, MGMT 326, MGMT 341, MGMT 355, MGMT 365, MGMT 431, MGMT 445, MGMT 453, MGMT 461, MGMT 466 to Additional Courses for the Major
- Removed all concentrations from Additional Courses for the Major

Management, Minor (MGMT_UMNR)

Effective Summer 2024:

- New minor added

Mathematical Sciences, B.S. (MASC_BS)**Effective Summer 2024:**

- Revised Program Description
- Changed Requirements for the Major from 84-99 credits to 84-97 credits
- Added EDUC 385 to Prescribed Courses for the Secondary Education in Mathematical Sciences Option
- Changed required credits of EDUC 490 from 12 credits to 9 credits in Prescribed Courses for the Secondary Education in Mathematical Sciences Option

Mathematics, B.A. (MTHBA_BA)**Effective Summer 2024:**

- Changed Electives from 0-1 credits to 0-4 credits
- Changed Common Requirements for the Major from 56 credits to 53-59 credits
- Added C or better requirement to STAT 200 in Prescribed Courses for the Major
- Added CMPSC 131 to Additional Courses
- Added C or better requirement to CMPSC 101, CMPSC 121, CMPSC 201 in Additional Courses for the Major

Mathematics, B.S. (Science) (MTHBS_BS)**Effective Summer 2024:**

- Changed Requirements for the Major from 80-83 credits to 80-84 credits
- Changed Common Requirements for the Major from 30-32 credits to 30-33 credits
- Changed Prescribed Courses for the Major from 24-25 credits to 24-26 credits
- Changed MATH 220 from 2 credits to 2-3 credits in Prescribed Courses for the Major
- Added CMPSC 131, CMPSC 200 to Additional Courses for the Major
- Added RM 421 to Prescribed Courses for the Actuarial Mathematics Option
- Added RM 422, STAT 380 to Additional Courses for the Actuarial Mathematics Option
- Removed MATH 461 from Additional Courses for the Applied and Industrial Mathematics Option
- Added C or better requirement to CMPSC 465 in Prescribed Courses for the Computational Mathematics Option
- Removed CMPSC 122, MATH 467, MATH 484 from Prescribed Courses for the Computational Mathematics Option
- Added CMPSC 132, MATH 467, MATH 465, CMPSC 442, MATH 452, MATH 457, MATH 484 to Additional Courses for the Computational Mathematics Option
- Added MATH 412, MATH 448 to Additional Courses for the Systems Analysis Option

Medical Laboratory Technology, A.S. (2MLT_AS)**Effective Summer 2024:**

- Changed Prescribed Courses for the Major from 49 credits to 52 credits
- Added KINES 203 to Prescribed Courses for the Major
- Changed Additional Courses for the Major from 14-16 credits to 11-13 credits

- Removed CMPSC 100 and MIS 103 from Additional Courses for the Major

Materials Science and Engineering, B.S. (MATSE_BS)**Effective Summer 2024:**

- Revised Entrance to Major Requirements
- Changed Prescribed Courses for the Major from 79 credits to 76 credits
- Changed Additional Courses for the Major from 19 credits to 22 credits
- Added MATSE 471, MATSE 474, MATSE 112, CHEM 112 to Additional Courses for the Major
- Removed MATSE 444, MATSE 448, MATSE 472, MATSE 474 from Additional Courses for the Major

Mechanical Engineering, B.S. (Behrend, Berks, Capital) (MEBC_BS, MEBK_BS, MECA_BS)**Effective Fall 2024:**

- Added new Integrated B.S. in Mechanical Engineering and M.S. in Mechanical Engineering at Harrisburg campus

Microbiology, B.S. (MICRB_BS)**Effective Summer 2024:**

- Revised Program Description
- Changed total requirements for degree completion from 125 credits to 121 credits
- Changed General Education credits included in Requirements for the Major from 15 credits to 15-18 credits
- Changed Requirements for the Major from 95 credits to 94-98 credits
- Changed Common Requirements for the Major from 95 credits to 76-77 credits
- Changed Prescribed Courses for the Major from 64 credits to 46 credits
- Added MICRB 401, MICRB 450, PPEM 456 to Prescribed Courses for the Major
- Removed BIOL 322, BMB 428, MATH 141, MICRB 202, MICRB 251, MICRB 252, PHYS 250, PHYS 251 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 21-23 credits to 13-14 credits
- Added MICRB 203, PHYS 250, PHYS 211, PHYS 251, PHYS 212, MATH 141, STAT 200, STAT 240, STAT 250 to Additional Courses for the Major
- Removed MICRB 401, MICRB 410, MICRB 412, MICRB 415, MICRB 450, BMB 445W, BMB 448, MICRB 422, MICRB 447, BMB 408, BMB 488, BMB 496, FDSC 408, Any other MICRB 400-level course from Additional Courses for the Major
- Changed Supporting Courses and Related Areas for the Major from 8-10 credits to 17 credits
- Added General Microbiology Option
- Added Medical Microbiology Option

Music, B.A. (MUSBA_BA)**Effective Fall 2024:**

- Revised Program Description
- Changed General Education credits included in Requirements for the Major from 1-12 credits to 0-15 credits
- Changed Electives from 0-3 credits to 0-1 credits
- Changed Requirements for the Major from 49-76 credits to 50-79 credits
- Changed Common Requirements for the Major from 34 credits to 38 credits
- Changed Prescribed Courses for the Major from 24 credits to 26 credits
- Added MUSIC 40, MUSIC 270 to Prescribed Courses for the Major
- Changed Supporting Courses and Related Areas for the Major from 10 credits to 12 credits
- Changed applied music through Level IV of Primary requirement in Supporting Courses and Related Areas for the Major from 6 credits to 8 credits
- Changed General Music Studies Option from 15-17 credits to 12 credits
- Removed Prescribed Courses for the General Music Studies Option
- Removed Additional Courses for the General Music Studies Option
- Changed Music Technology Option from 39-42 credits to 41 credits
- Changed required credits of MATH 41 from 3-4 credits to 4 credits in Prescribed Courses for the Music Technology Option
- Changed required credits of MUSIC 177 from 1-3 credits to 8 credits in Prescribed Courses for the Music Technology Option
- Removed COMM 100N/AMST 106N, HIST 128N from Prescribed Courses for the Music Technology Option

Music, B.M. (MUSBM_BM)

Effective Summer 2024:

- Changed total requirements for degree completion of the Composition Option from 134 credits to 133 credits
- Removed General Education credits included in Requirements for the Major
- Changed Requirements for the Major from 81-91 credits to 80-90 credits
- Added MUSIC 40, MUSIC 270 to Prescribed Courses for the Major
- Removed MUSIC 331 from Prescribed Courses for the Major
- Changed Composition Option from 55-57 credits to 54-56 credits
- Changed Prescribed Courses for the Composition Option from 42-44 credits to 41-43 credits
- Removed MUSIC 120 from Prescribed Courses for the Composition Option
- Changed Keyboard Instruments Option from 48-53 credits to 47-50 credits
- Changed Prescribed Courses for the Keyboard Instruments Option from 6 credits to 3 credits
- Removed MUSIC 129S from Prescribed Courses for the Keyboard Instruments Option
- Changed Additional Courses for the Keyboard Instruments Option from 3-6 credits to 2-3 credits
- Removed INART 258A, INART 258B from Additional Courses for the Keyboard Instruments Option
- Changed Supporting Courses and Related Areas for the Keyboard Instruments Option from 39-43 credits to 42-46 credits

- Changed Strings, Winds, Brass and Percussion Instruments Option from 47-52 credits to 46-49 credits
- Removed Prescribed Courses from the Strings, Winds, Brass and Percussion Instruments Option
- Changed Additional Courses for the Strings, Winds, Brass and Percussion Instruments Option from 9-12 credits to 8-9 credits
- Removed INART 258A, INART 258B from Additional Courses for the Strings, Winds, Brass and Percussion Instruments Option
- Changed Supporting Courses and Related Areas for the Strings, Winds, Brass and Percussion Instruments Option from 35-37 credits to 38-40 credits
- Changed Voice Option from 53-56 credits to 52-53 credits
- Changed Prescribed Courses for the Voice Option from 8 credits to 5 credits
- Removed MUSIC 129S from Prescribed Courses for the Voice Option
- Changed Additional Courses for the Voice Option from 3-6 credits to 2-3 credits
- Removed INART 258A, INART 258B from Additional Courses for the Voice Option
- Changed Supporting Courses and Related Areas for the Voice Option from 42 credits to 45 credits

Music Education, B.M.E. (MUED_BME)

Effective Fall 2024:

- Revised Program Description
- Revised Entrance to Major Requirements
- Changed total requirements for degree completion from 139 credits to 136.5 credits
- Changed General Education credits included in Requirements for the Major from 10-12 credits to 9 credits
- Changed Requirements for the Major from 104-106 credits to 100.5-101.5 credits
- Changed Prescribed Courses for the Major from 49 credits to 43.5 credits
- Added MUSIC 240 to Prescribed Courses for the Major
- Removed MUSIC 216, MUSIC 331, MUSIC 340, EDPSY 10 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 45-47 credits to 47-48 credits
- Added EDPSY 10, EDPSY 11, EDPSY 14, MUSIC 420, MUSIC 100, MUSIC 189, MUSIC 442W, MUSIC 443W to Additional Courses for the Major
- Removed INART 258A, INART 258B from Additional Courses for the Major

Music Studies, Minor (MUSST_UMNR)

Effective Summer 2024:

- Revised Program Description
- Added MUSIC 332, MUSIC 4 to Additional Courses
- Removed MUSIC 332 from Additional Courses

Musical Arts, B.M.A. (MUBMA_BMA)

Effective Summer 2024:

- Revised Entrance to Major Requirements
- Changed General Education credits included in Requirements for the Major from 1-15 credits to 0-12 credits

- Changed Requirements for the Major from 88-90 credits to 87 credits
- Changed Prescribed Courses for the Major from 27 credits to 24 credits
- Added MUSIC 40, MUSIC 270 to Prescribed Courses for the Major
- Removed MUSIC 129S, MUSIC 331 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 4-6 credits to 3 credits
- Removed INART 258A, INART 258B from Additional Courses for the Major
- Changed Supporting Courses and Related Courses for the Major from 57 credits to 60 credits
- Changed Applied Music Requirement in Supporting Courses and Related Courses for the Major from 21 credits to 24 credits

Music Technology, Minor (MUTEC_UMNR)

Effective Summer 2024:

- Revised Program Description
- Revised Entrance to Minor Requirements
- Changed total requirements for minor completion from 21 credits to 18 credits
- Changed Prescribed Courses from 15 credits to 12 credits
- Removed MUSIC 8 from Prescribed Courses

Nuclear Engineering, B.S. (NUCE_BS)

Effective Fall 2024:

- Added NUCE 321, NUCE 322, NUCE 420 to Prescribed Courses for the Major
- Removed ME 300, ME 320, ME 410 from Prescribed Courses for the Major
- Removed NUCE 420 from Additional Courses for the Major

Nursing, B.S.N. (NURS_BSN)

Effective Fall 2024:

- RN to BSN Option phased out at Schuylkill campus

Nutritional Sciences, B.S. (NUTR_BS)

Effective Summer 2024:

- Revised Program Description
- Revised Retention Requirements
- Changed General Education credits included in Requirements for the Major from 17-18 credits to 18 credits
- Changed Electives from 2-5 credits to 1-13 credits
- Changed Requirements for the Major from 88-91 credits to 80-9 credits
- Changed Common Requirements for the Major from 24 credits to 23 credits
- Changed Prescribed Courses for the Major from 21 credits to 20 credits
- Added BIOL 162, BIOL 164, NUTR 452, NUTR 490W to Prescribed Courses for the Major
- Removed NUTR 445, NUTR 446, BMB 211 from Prescribed Courses for the Major
- Changed Behavioral Nutrition and Public Health Option from 64 credits to 57 credits

- Changed Prescribed Courses for the Behavioral Nutrition and Public Health Option from 28 credits to 24 credits
- Added NUTR 175N, NUTR 372, NUTR 409 to Prescribed Courses for the Behavioral Nutrition and Public Health Option
- Removed BIOL 162, BIOL 164, NUTR 211R, NUTR 452, NUTR 490W from Prescribed Courses for the Behavioral Nutrition and Public Health Option
- Changed Additional Courses for the Behavioral Nutrition and Public Health Option from 30 credits to 24 credits
- Added AGBM 170N, NUTR 320, NUTR 410, NUTR 445, NUTR 446 to Additional Courses for the Behavioral Nutrition and Public Health Option
- Removed CHEM 202, CHEM 210, NUTR 175, NUTR 175Z, AEE 450, AGBM 170, AGBM 170Z, HDFS 210Z from Additional Courses for the Behavioral Nutrition and Public Health Option
- Changed Supporting Courses and Related Areas for the Behavioral Nutrition and Public Health Option from 6 credits to 9 credits
- Changed Nutrition and Dietetics Option from 64 credits to 69 credits
- Changed Prescribed Courses for the Nutrition and Dietetics Option from 46 credits to 45 credits
- Added BMB 211, NUTR 445, NUTR 446 to Prescribed Courses for the Nutrition and Dietetics Option
- Removed BIOL 162, BIOL 164, MICRB 107, NUTR 211R, NUTR 452, NUTR 490W from Prescribed Courses for the Nutrition and Dietetics Option
- Changed Supporting Courses and Related Areas for the Nutrition and Dietetics Option from 9 credits to 15 credits
- Changed Nutritional Physiology and Biochemistry Option from 66-67 credits to 66-66 credits
- Changed Prescribed Courses for the Nutritional Physiology and Biochemistry Option from 44 credits to 40 credits
- Added BMB 211, NUTR 175N, NUTR 445, NUTR 446
- Removed BIOL 110, BIOL 162, BIOL 164, NUTR 452, NUTR 490W, NUTR 175Z, NUTR 211R
- Changed Supporting Courses and Related Areas for the Nutritional Physiology and Biochemistry Option from 9 credits to 12 credits

Occupational Science, B.S. (OCCSC_BS)

Effective Fall 2024:

- New program added

Organizational Leadership, B.A. (OLBA_BA)

Effective Summer 2024:

- Added program to University Park campus
- Changed total requirements for degree completion from 123 credits to 120 credits
- Changed Electives from 23-30 credits to 24-30 credits
- Changed Requirements for the Major from 36-37 credits to 33 credits
- Removed Supporting Courses and Related Areas section

Organizational Leadership, B.S. (OLBS_BS)

Effective Summer 2024:

- Added program to University Park campus
- Changed total requirements for degree completion from 123 credits to 120 credits

- Changed Requirements for the Major from 61-62 credits to 58-59 credits
- Changed Supporting Courses and Related Areas from 18-19 credits to 15-16 credits

Petroleum and Natural Gas Engineering, B.S. (PNGE_BS)

Effective Summer 2024:

- Revised Entrance to Major Requirements
- Changed Prescribed Courses for the Major from 99 credits to 102 credits
- Added CMPSC 201 to Prescribed Courses for the Major
- Changed required credits of PNG 490 from 1 credit to 3 credits in Prescribed Courses for the Major
- Added C or better requirement to EMSC 100S in Prescribed Courses for the Major
- Removed PNG 491, PNG 492 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 9 credits to 6 credits
- Added ESL 15 to Additional Courses for the Major
- Removed CMPSC 201, CMPSC 202 from Additional Courses for the Major

Physical Therapist Assistant, A.S. (2PTA_AS)

Effective Summer 2024:

- Revised Retention Requirements
- Changed General Education credits included in Requirements for the Major from 9-12 credits to 12 credits
- Changed Requirements for the Major from 61 credits to 61-62 credits
- Changed Prescribed Courses for the Major from 41 credits to 39 credits
- Added C or better requirement to PSYCH 100 in Prescribed Courses for the Major
- Removed PT 290 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 20 credits to 19-20 credits
- Added PT 290, PT 290W to Additional Courses for the Major
- Removed CAS 203, ENGL 202C, HDFS 129, HDFS 229, PSYCH 212, PSYCH 270 from Additional Courses for the Major
- Added Supporting Courses and Related Areas for the Major section

Physics, B.S. (Science) (PHYS_BS)

Effective Summer 2024:

- Changed General Education credits included in Requirements for the Major from 18-19 credits to 16-18 credits
- Changed Electives from 0 credits to 0-3 credits
- Changed Requirements for the Major from 93-96 credits to 90-97 credits
- Changed Common Requirements for the Major from 69 credits to 66-70 credits
- Changed Prescribed Courses for the Major from 59 credits to 52-56 credits
- Removed CHEM 113, MATH 251 from Prescribed Courses for the Major
- Changed MATH 220 from 2 credits to 2-3 credits in Prescribed Courses for the Major
- Changed PHYS 237 from 3 credits to 3-4 credits in Prescribed Courses for the Major

- Changed PHYS 400 from 4 credits to 3-4 credits in Prescribed Courses for the Major
- Changed PHYS 410 from 4 credits to 3-4 credits in Prescribed Courses for the Major
- Changed Additional Courses for the Major from 7 credits to 11 credits
- Added CMPSC 204, MATH 251, MATH 250, MATH 252 to Additional Courses for the Major
- Changed Supporting Courses and Related Areas for the Computation Option
- Changed Supporting Courses and Related Areas for the Electronics Option
- Added PHYS 337, PHYS 437, PHYS 465 to Additional Courses for the General Physics Option
- Removed PHYS 413, PHYS 461 from Additional Courses for the General Physics Option
- Changed Supporting Courses and Related Areas for the General Physics Option
- Changed Medical Physics Option from 24-25 credits to 24-26 credits
- Changed Additional Courses for the Medical Physics Option from 15-16 credits to 15-17 credits
- Added CHEM 113 to Additional Courses for the Medical Physics Option
- Changed Supporting Courses and Related Areas for the Nanotechnology/Material Science Option

Premedical-Medical, B.S. (PMM_BS)

Effective Summer 2024:

- Added Retention Requirements
- Changed Electives from 0-1 credits to 0 credits
- Changed Requirements for the Major from 64-66 credits to 66 credits
- Added C or better requirement to CHEM 210, CHEM 212, CHEM 213, PHYS 211, PHYS 212, PHYS 213, PHYS 214 in Prescribed Courses for the Major
- Added Additional Courses for the Major section
- Changed Supporting Courses and Related Areas for the Major from 18-20 credits to 7-9 credits
- Changed program list requirement from 3-11 credits to 3-6 credits in Supporting Courses and Related Areas for the Major
- Removed life science with lab requirement and foreign language requirement from Supporting Courses and Related Areas for the Major

Premedicine, B.S. (PM_BS)

Effective Summer 2024:

- Changed total requirements for degree completion from 126 credits to 120 credits
- Revised Entrance to Major Requirements
- Changed Requirements for the Major from 105 credits to 99 credits
- Changed Prescribed Courses for the Major from 59 credits to 44 credits
- Removed PHIL 432, PHYS 211, PHYS 212, PHYS 213, PHYS 214 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 16-20 credits to 28-36 credits

- Added SC 294, SC 494, CAS 453, NURS 464, PHYS 211, PHYS 212, PHYS 213, PHYS 214, PHYS 250, PHYS 251 to Additional Courses for the Major
- Changed Supporting Courses and Related Areas for the Major from 26-30 credits to 19-27 credits
- Added Area of Concentration requirement to Supporting Courses and Related Areas for the Major
- Removed foreign language requirement from Supporting Courses and Related Areas for the Major

Project and Supply Chain Management, B.S. (University College) (PSMUC_BS)

Effective Summer 2024:

- Program phased out at Schuylkill, Shenango, and Wilkes-Barre campuses

Psychology, B.A. (Behrend) (PSHBA_BA)

Effective Summer 2024:

- Revised Program Description
- Changed General Education credits included in Requirements for the Major from 0-4 credits to 13 credits
- Changed Requirements for the Major from 43 credits to 52 credits
- Changed Additional Courses for the Major from 19 credits to 25 credits
- Added ENGL 15, ENGL 30H, CAS 100A, CAS 100B, CAS 100C, ENGL 202A, ENGL 202B, ENGL 202C, ENGL 202D to Additional Courses for the Major
- Removed PSYCH 261, PSYCH 425, PSYCH 439, PSYCH 441, PSYCH 460, PSYCH 461, PSYCH 462, PSYCH 464, PSYCH 475, PSYCH 478 from Biological Bases of Behavior category in Additional Courses for the Major
- Added HDFS 129, HDFS 229 to Social/Developmental category in Additional Courses for the Major
- Removed PSYCH 412, PSYCH 413, PSYCH 414, PSYCH 415, PSYCH 416, PSYCH 420, PSYCH 421, PSYCH 423, PSYCH 424 from Social/Developmental category in Additional Courses for the Major
- Added PSYCH 263N to Cognitive/Learning category in Additional Courses for the Major
- Removed PSYCH 253, PSYCH 413, PSYCH 426, PSYCH 427, PSYCH 439, PSYCH 452, PSYCH 456, PSYCH 461 from Cognitive/Learning category in Additional Courses for the Major
- Added PSYCH 217N to Clinical/Applied category in Additional Courses for the Major
- Removed HDFS 311, HDFS 315, PSYCH 370, PSYCH 404, PSYCH 408, PSYCH 414, PSYCH 419, PSYCH 438, PSYCH 444, PSYCH 445, PSYCH 452, PSYCH 456, PSYCH 470, PSYCH 471, PSYCH 473, PSYCH 474, PSYCH 476, PSYCH 477, PSYCH 481, PSYCH 482, PSYCH 484, PSYCH 485 from Clinical/Applied category in Additional Courses for the Major
- Removed PSYCH 422, PSYCH 432, PSYCH 479/WMNST 471 from Diversity category in Additional Courses for the Major
- Changed Supporting Courses and Related Areas for the Major from 12 credits to 15 credits
- Added requirement for 3 additional PSYCH credits at the 200- 300- or 400-level to Supporting Courses and Related Areas for the Major

Psychology, B.S. (Behrend) (PSHBS_BS)

Effective Summer 2024:

- Revised Program Description
- Changed General Education credits included in Requirements for the Major from 4 credits to 13 credits
- Changed Requirements for the Major from 64 credits to 73 credits
- Changed Common Requirements for the Major from 46 credits to 55 credits
- Changed Additional Courses for the Major from 19 credits to 25 credits
- Added ENGL 15, ENGL 30H, CAS 100A, CAS 100B, CAS 100C, ENGL 202A, ENGL 202B, ENGL 202C, ENGL 202D to Additional Courses for the Major
- Removed PSYCH 425, PSYCH 439, PSYCH 441, PSYCH 460, PSYCH 461, PSYCH 462, PSYCH 464, PSYCH 475, PSYCH 478 from Biological Bases of Behavior category in Additional Courses for the Major
- Added HDFS 129, HDFS 229 to Social/Developmental category in Additional Courses for the Major
- Removed PSYCH 412, PSYCH 413, PSYCH 414, PSYCH 415, PSYCH 416, PSYCH 420, PSYCH 421, PSYCH 423, PSYCH 424 from Social/Developmental category in Additional Courses for the Major
- Removed PSYCH 253, PSYCH 413, PSYCH 426, PSYCH 427, PSYCH 439, PSYCH 452, PSYCH 456, PSYCH 461 from Cognitive/Learning category in Additional Courses for the Major
- Added PSYCH 217N to Clinical/Applied category in Additional Courses for the Major
- Removed HDFS 311, HDFS 315, PSYCH 370, PSYCH 404, PSYCH 408, PSYCH 414, PSYCH 419, PSYCH 438, PSYCH 443, PSYCH 444, PSYCH 445, PSYCH 452, PSYCH 456, PSYCH 470, PSYCH 471, PSYCH 473, PSYCH 474, PSYCH 476, PSYCH 477, PSYCH 481, PSYCH 482, PSYCH 484, PSYCH 485 from Clinical/Applied category in Additional Courses for the Major
- Removed PSYCH 422, PSYCH 432, PSYCH 479/WMNST 471 from Diversity category in Additional Courses for the Major
- Changed Supporting Courses and Related Areas for the Major from 15 credits to 18 credits
- Added requirement for 3 additional PSYCH credits at the 200- 300- or 400-level to Supporting Courses and Related Areas for the Major
- Added new Data Analytics Option
- Added PSYCH 260A to Additional Courses for the Human Factors and Design Option
- Added Additional Courses section to Psychology in the Workplace Option
- Changed Supporting Courses and Related Areas for the Psychology in the Workplace Option from 15 credits to 12 credits
- Added PSYCH 256 to Additional Courses for the Science Option

Psychology, B.S. (Capital) (PSYC_BS)

Effective Summer 2024:

- Changed Supporting Courses and Related Areas to one 18-credit requirement from department approved list

Public Policy, B.S. (PUBPL_BS)

Effective Fall 2024:

- Changed Electives from 16 credits to 15 credits
- Changed Requirements for the Major from 65 credits to 66 credits

- Removed PUBPL 241/CRIMJ 241, PUBPL 305 from Additional Courses for the Major
- Added PUBPL 200-499 to Additional Courses for the Major
- Changed Supporting Courses and Related Areas for the Major from 32 credits to 33 credits
- Added CMPSC 300-499, ENGL 300-499, HDFS 300-499, HLS 400-499, HPA 300-499, IST 300-499, MIS 300-499, PADM 500-899, PSYCH 300-499, SRA 300-499 to Supporting Courses and Related Areas for the Major
- Removed ENVE 460, SRA 211 from Supporting Courses and Related Areas for the Major

Public Policy and Leadership Across Sectors, Minor (PBPLD_UMNR)
Effective Summer 2024:

- New minor added

Radiological Sciences, A.S. (2RSUC_AS)
Effective Fall 2024:

- Changed General Education credits included in Requirements for the Major from 15 credits to 12 credits
- Changed Requirements for the Major from 61 credits to 58 credits
- Changed Prescribed Courses for the Major from 53 credits to 50 credits
- Removed IST 110 from Prescribed Courses for the Major

Sales, Minor (SALES_UMNR)
Effective Fall 2024:

- Changed Prescribed Courses from 9 credits to 12 credits
- Added MKTG 476 to Prescribed Courses
- Changed Supporting Courses and Related Areas from 9 credits to 6 credits
- Removed MKTG 476 from Supporting Courses and Related Areas
- Added MKTG 422, MKTG 443 to Supporting Courses and Related Areas

Science, B.S. (Science, Abington, Berks, Capital, University College) (SCBS_BS, SCIAB_BS, SCIBK_BS, SCICA_BS, SCIUC_BS)
Effective Summer 2024:

- Changed name to Integrative Science
- Revised Program Description
- Revised Entrance to Major Requirements
- Changed total requirements for degree completion for the options in General Science; Biological Sciences and Health Professions; Legal Studies, Government Service, Public Policy; Life Science; and Mathematical Science from 124 credits to 120 credits
- Changed General Education credits included in Requirements for the Major from 15 credits to 13-30 credits
- Changed Requirements for the Major from 94 credits to 90-110 credits
- Changed Common Requirements for the Major from 20 credits to 16 credits
- Changed Prescribed Courses for the Major from 20 credits to 16 credits
- Removed MATH 141 from Prescribed Courses for the Major
- Added BIOL 161, BIOL 162 to Additional Courses for the General Science Option

- Removed BIOL 129, BIOL 141, BIOL 142, STAT 301, STAT 401 from Additional Courses for the General Science Option
- Changed Supporting Courses and Related Areas for the General Science Option
- Changed Additional Courses for the Biological Sciences and Health Professions Option from 24-31 credits to 24-32 credits
- Added BIOL 161, BIOL 162 to Additional Courses for the Biological Sciences and Health Professions Option
- Changed CHEM 213 to CHEM 213W in Additional Courses for the Biological Sciences and Health Professions Option
- Removed BIOL 129, BIOL 141, BIOL 142, STAT 250, STAT 301, STAT 401 from Additional Courses for the Biological Sciences and Health Professions Option
- Changed Supporting Courses and Related Areas for the Biological Sciences and Health Professions Option from 40-47 credits to 39-47 credits
- Changed Supporting Courses and Related Areas for the Biological Sciences and Health Professions Option
- Added BIOL 161, BIOL 162 to Additional Courses for the Legal Studies, Government Service, Public Policy Option
- Removed BIOL 129, BIOL 141, BIOL 142, STAT 250, STAT 301, STAT 401 from Additional Courses for the Legal Studies, Government Service, Public Policy Option
- Changed Supporting Courses and Related Areas for the Legal Studies, Government Service, Public Policy Option
- Changed Additional Courses for the Life Science Option from 24-30 credits to 24-32 credits
- Added BIOL 222, BIOL 322, STAT 200 to Additional Courses for the Life Science Option
- Removed CMPSC 101, MATH 250 from Additional Courses for the Life Science Option
- Changed Supporting Courses and Related Areas for the Life Science Option from 44-50 credits to 42-50 credits
- Changed Supporting Courses and Related Areas for the Life Science Option
- Changed Prescribed Courses for the Mathematical Science Option from 5-6 credits to 6-7 credits
- Added MATH 141 to Prescribed Courses for the Mathematical Science Option
- Removed CMPSC 122 from Prescribed Courses for the Mathematical Science Option
- Changed Additional Courses for the Mathematical Science Option from 24-29 credits to 27-34 credits
- Added CMPSC 122, CMPSC 132, CMPSC 131, STAT 200, STAT 250, STAT 318, BIOL 222, BIOL 230W, BIOL 322 to Additional Courses for the Mathematical Science Option
- Removed STAT 301, CMPSC 202 from Additional Courses for the Mathematical Science Option
- Changed Supporting Courses and Related Areas for the Mathematical Science Option from 39-45 credits to 34-41 credits
- Changed Supporting Courses and Related Areas for the Mathematical Science Option
- Added Secondary Education Option
- Removed Physical Science Option

Sociology, B.S. (Liberal Arts) (SOCBS_BS)
Effective Summer 2024:

- Revised Program Description
- Changed total requirements for degree completion from 123 credits to 120 credits
- Changed General Education credits included in Requirements for the Major from 6 credits to 6-9 credits
- Changed Electives from 21-23 credits to 22-25 credits
- Changed Requirements for the Major from 61-63 credits to 59 credits
- Changed Prescribed Courses for the Major from 17 credits to 22 credits
- Added SOC 470, STAT 184 to Prescribed Courses for the Major
- Removed STAT 480 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 5-7 credits to 22 credits
- Added CMPSC 101, CMPSC 121, CAMPS 131, MATH 110, MATH 140, 15 credits in sociology to Additional Courses for the Major
- Removed CAS 283, MATH 441, 2-4 credits of GQ courses excluding STAT 301 from Additional Courses for the Major
- Changed Supporting Courses and Related Areas for the Major from 39 credits to 15 credits
- Replaced 18 credits in sociology and 18 credits in social sciences with Pathways in Supporting Courses and Related Areas for the Major

Special Education, B.S. (SPLED_BS)

Effective Fall 2024:

- Revised Entrance to Major Requirements
- Changed Electives from 6 credits to 3 credits
- Changed Requirements for the Major from 89 credits to 92 credits
- Added Supporting Courses and Related Areas for the Major
- Added 3 credits in Literature to Supporting Courses and Related Areas for the Major

Sports Administration, Certificate (SPTADM_UCT)

Effective Summer 2024:

- Added MGMT 495 to requirements
- Removed Lists A, B, C from requirements
- Added tracks in Sports Business and Data Analytics, Sports Event Planning and Promotion, Sports Marketing, Sports Health and Wellness Management

Surveying Engineering, B.S. (SURE_BS)

Effective Summer 2024:

- Revised Program Description
- Changed total requirements for degree completion from 132 credits to 127-128 credits
- Changed Electives from 3-4 credits to 0-1 credits
- Changed Requirements for the Major from 110-111 credits to 108-110 credits
- Changed Prescribed Courses for the Major from 89-90 credits to 81-82 credits
- Added SUR 132, SUR 213, SUR 352, SUR 361, SUR 421, SUR 121, SUR 122, SUR 221, SUR 373W to Prescribed Courses for the Major
- Removed SUR 212, SUR 262, SUR 351, SUR 362, SUR 462, SUR 490, STAT 200, SUR 111, SUR 162, SUR 272, SUR 372W from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 15 credits to 21-22 credits

- Added CMPSC 200, STAT 401, STAT 200 to Additional Courses for the Major
- Added IE 302, SUR 362, SUR 424, SUR 432 to Supporting Courses and Related Areas for the Major
- Removed SUR 422 from Supporting Courses and Related Areas for the Major

Trauma Studies, Certificate (TRST_UCT)

Effective Fall 2024:

- Added CI 433, HDFS 108N, HDFS 258N, HDFS 448, PSYCH 150N, PSYCH 217N, PSYCH 270, RHS 433, SOC 5, SOCW 205, WMNST 266Y, ASIA 105, AFAM 100N, AFAM 152, CAS 373, CMLIT 128N, ENGL 245, GLIS 102N, HIST 140, HIST 144, HIST 177, PLSC 223N, PLSC 290N, PLSC 291,
- Removed HDFS 258, PLSC 91, PLSC 123 from Prescribed Courses for the Certificate

Veterinary and Biomedical Sciences, B.S. (VBSC_BS)

Effective Summer 2024:

- Revised Program Description
- Changed total requirements for degree completion from 124 credits to 123 credits
- Changed Electives from 7-10 credits to 6-10 credits
- Changed Requirements for the Major from 87-90 credits to 86-90 credits
- Changed Prescribed Courses for the Major from 53 credits to 32 credits
- Removed MATH 140, MATH 141, MICRB 201, BIOL 110, BIOL 222, VBSC 403 from Prescribed Courses for the Major
- Changed Additional Courses for the Major from 25-28 credits to 45-49 credits
- Added MICRB 201, MICRB 201H, BA 100, ECON 14, BIOL 110, BIOL 110H, BIOL 222, BIOL 322, MATH 140, MATH 140B, MATH 141, MATH 141B, VBSC 403, VBSC 403H to Additional Courses for the Major

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 are 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. How can I do a wild card search in the search box?
 - Use an asterisk (*) in the search box as a wild card. For example, MATH* will find everything that starts with "MATH", *MATH everything that ends with "MATH", and *MATH* everything that contains "MATH".
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.