USING THIS BULLETIN

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

- ACCTG 201: Introduction to Financial Accounting
- ACCTG 202: Introduction to Managerial Accounting
- CED 102Q: Wicked Problems Like Inequality, Sustainability & Climate Change: What's the Right Thing to Do?
- CHEM 491: Instructional Practice
- CI 397: Special Topics
- CMLIT 147N: Displacement and Migration
- EBF 404W: The Great Energy Transition: Law, Economics, and New Frontiers
- EMSC 125: Plastics in the Environment
- FOR 442: Forest Conservation: Principles and Practices
- GEOSC 401: Geosciences Entrepreneurship: Embrace Change
- HHUM 495: Internship
- IE 475: Modeling and Optimization of Stochastic Service Systems
- MATSE 449: Fundamentals of Composite Materials Science and Engineering
- MGMT 345: Cultural Intelligence in Leadership and Management
- MUSIC 188: Chamber Music for Mixed Ensemble
- PUBPL 471: Economic Inequality and Public Policy
- PT 290W: Professional Issues in Clinical Practice
- TURF 495A: Internship
- VBSC 415: Research Practice in Veterinary and Biomedical Sciences

Courses Added: Effective Fall 2024

Courses Dropped: Effective Summer 2024

Courses Dropped: Effective Fall 2024

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

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.

Changes Effective Summer 2024:

- Change Description
- Add 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 cells 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.

Changes Effective Summer 2024:

- Add Prerequisites

ANTH 445W: Ethnographic Film (3) (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-relations 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:

- Add Prerequisites

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. Cross-listed Courses: ERM 309

Changes Effective Summer 2024:

- Change Number
- Change Title
- Change Description
- Add Prerequisites
- Add Concurrent

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:

- Change Number
- Add Concurrent

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.

Changes Effective Summer 2024:

- Change Number
- Change Description
- Add Concurrent

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.

Changes Effective Summer 2024:

- Change Number
- Change Description
- Add Prerequisites

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.

Changes Effective Summer 2024:

- Change Number
- Add Concurrent

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.

Changes Effective Summer 2024:

- Change Number
- Change Description
- Add Prerequisites

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.

Changes Effective Summer 2024:

- Change Number
- Add Prerequisites

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.

Changes effective Summer 2024:

- Change Number
- Change Title
- Change Abbreviated Title
- Change Description
- Add Prerequisites

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, biocomposities, 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.

Changes Effective Summer 2024:

- Change Number
- Change Title
- Change Abbreviated Title
- Change Description
- Add Concurrent

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 Organization for Standardization (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.

Changes Effective Summer 2024:

- Change Number
- Add Prerequisites

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. Cross-listed Courses: BE 391

Changes Effective Summer 2024:

- Change Number
- Change Title
- Change Description
- Add Prerequisites

BRS 392: Leadership Skills for BE and BRS Students (2 Credits) (GWS)
Old Listing Effective through Spring 2024:

B E/BRS 392 is one part of a two-semester experience indiscipline-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. Cross-listed Courses: BE 392

Changes Effective Summer 2024:

- Change Number
- Change Title
- Change Abbreviated Title
- Change Description
- Add Prerequisites

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:

- Change Number

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. Cross-listed Courses: ERM 402

Changes Effective Summer 2024:

- Change Number
- Change Description
- Add Prerequisites

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.

Changes Effective Summer 2024:

- Change Number
- Add 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.

Changes effective Summer 2024:

- Change Number
- Add 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.

Changes Effective Summer 2024:

- Change Number
- Change Title
- Change Abbreviated Title
- Change Description
- Add Prerequisites

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.

Changes Effective Summer 2024:

- Change Number
- Add Prerequisites
- Add Concurrent

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.

Changes Effective Summer 2024:

- Change Number
- Add Prerequisites

BRS 428: Electric Power and Instrumentation (3 Credits)

Old Listing Effective through Spring 2024:

Principles and application of electric circuits for power distrubtion, 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.

Changes Effective Summer 2024:

- Change Number
- Change Description
- Add Prerequisites

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.

Changes Effective Summer 2024:

- Change Number
- Change Title
- Change Abbreviated Title
- Change Description
- Add Prerequisites

BRS 430W: Biorenewable Systems Capstone 1 (1 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 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.

Changes Effective Summer 2024:

- Change Number
- Change Title
- Change Abbreviated Title
- Change Description
- Add Prerequisites
- Add Concurrent

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.

Changes Effective Summer 2024:

- Change Number
- Change Title
- Change Abbreviated Title
- Change Description
- Add Prerequisites

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.

Changes Effective Summer 2024:

- Change Number
- Change Title
- Change Abbreviated Title
- Change Description
- Add Prerequisites

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

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

Changes Effective Summer 2024:

- Change Number

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.

Changes Effective Summer 2024:

- Change Number
- Add Prerequisites

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

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

Changes Effective Summer 2024:

- Change Number

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:

- Change Number

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:

- Change Number

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:

- Change Number

ENGL 428: Asian American Literatures (3:6) (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:

- Change 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.

Changes Effective Summer 2024:

- Add Prerequisites
- Add Concurrent

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.

Changes Effective Summer 2024:

- Change Abbreviated Title
- Change Description
- Add Recommended Prep

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) 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.

Changes Effective Summer 2024:

- Add Concurrent

FORT 175: Forest Products Industry Tour (1 Credit)
Old Listing Effective through Spring 2024:

Field tour of local and regional forest products industries. FORT 175 Forest Products Industry Tour (1) FORT 175 is a 1-credit, field-based

course in the Forest Technology curriculum. The course is offered in the 4-week summer intersession following completion of the second semester. It provides students with the opportunity to visit and tour forest products industries. Tours of sawmills, pulp and paper facilities, plywood factories, and other manufacturing industries are incorporated into a 3-to 4- day field trip in the Mid-Atlantic region. This course provides a basic understanding of forest products industries for FORT 250 (Forest Management Practices).The course objectives are for students to develop an understanding of general industrial and manufacturing sectors of forestry and to learn and apply basic concepts of business, economics, and management in relation to forest products. Course grades will be determined by the level of participation at each forest products industry visited and by the quality of trip reports.

Changes Effective Summer 2024:

- Change Title
- Change Abbreviated Title
- Change Description
- Add Concurrent

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.

Changes Effective Summer 2024:

- Add 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.

Changes Effective Summer 2024:

- Change Description

LHR 472: Work-Life Practices and Policies (3 Credits) (BA)

Old Listing Effective through Spring 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. Cross-listed Courses: SOC 472 WMNST 472

Changes Effective Summer 2024:

- Change Description

LING 404: Phonology I (3) (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:

- Add Prerequisites

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:

- Add Prerequisites

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:

- Add Prerequisites
- Add Concurrent
- Add Recommended Prep

PLSC 114Z: Winning Political Support Through Persuasion (3 Credits: Maximum of 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:

- Change Number
- Change Title
- Change Abbreviated Title
- Change Description
- Remove General Education Linked Attribute

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:

- Change Title
- Change Abbreviated Title
- Change 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 inter-

cultural 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:

- Change 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:

- Change 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.

Changes Effective Summer 2024:

- Change Description

SUR 222: Photogrammetry (3 Credits)
Old Listing Effective through Spring 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.

Changes Effective Summer 2024:

- Change Description
- Add Prerequisites

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 X2, 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.

Changes Effective Summer 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites
- Add Concurrent

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.

Changes Effective Summer 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites
- Add Concurrent

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.

Changes Effective Summer 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites
- Add Concurrent

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.

Changes Effective Summer 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites
- Add Concurrent

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.

Changes Effective Summer 2024:

- Change Abbreviated Title
- Change Description

SUR 441: Data Analysis and Project Design (3 Credits)
Old Listing Effective through Spring 2024:

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

Changes Effective Summer 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites

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.

Changes Effective Summer 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites

SUR 471: Professional Aspects of Land Surveying (3 Credits)
Old Listing Effective through Spring 2024:

Ethical issues and legal limits of practice; surveyor as an expert witness; surveyor-client relationship; responsibilities to the profession.

Changes Effective Summer 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites

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.

Changes Effective Summer 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites
- Add Concurrent

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) 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.

Changes Effective Summer 2024:

- Add Prerequisites
- Add Recommended Prep

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.

Changes Effective Summer 2024:

- Add Recommended Prep

Course Changes: Effective Fall 2024

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.

Changes Effective Fall 2024:

- Change Description
- Change Prerequisites

ANSC 300: Integrated Animal Biology (3 Credits)
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.

Changes Effective Fall 2024:

- Change Title
- Change Abbreviated Title
- Change Description

ART 144Z: Climate Change: Arts, Agency and Activism (3 Credits)
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:

- Change Course Number
- Change Description
- Remove 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. BB H 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.

Changes Effective Fall 2024:

- Change Description
- Add Prerequisites

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. C E 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.

Changes Effective Fall 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites
- Add Concurrent

CE 448W: Structural Design Capstone (3 Credits)
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.

Changes Effective Fall 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites
- Add Concurrent

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.

Changes Effective Fall 2024:

- Change Description
- Add Prerequisites

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 chance; 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.

Changes Effective Fall 2024:

- Change Description

EDUC 313: Field Observation (2 Credits)
Old Listing Effective through Summer 2024:

Observation techniques; classroom observation and participation.

Changes Effective Fall 2024:

- Change Title
- Change Abbreviated Title
- Change Description

EDUC 314: Learning Theory and Instructional Procedures (3 Credits)
Old Listing Effective through Summer 2024:

Theories of learning in relation to instructional practices. Analysis of motivation, transfer of learning, and retention. Field practicum.

Changes Effective Fall 2024:

- Change Description

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

Changes Effective Fall 2024:

- Add 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

Changes Effective Fall 2024:

- Change Prerequisites
- Change Concurrent

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. Cross-listed Courses: WFS 450

Changes Effective Fall 2024:

- Change Title
- Change Abbreviated Title
- Change Description
- Add Prerequisites

FORT 175: Forest Products Industry Tour (1 Credit)

Old Listing Effective through Summer 2024:

Field tour of local and regional forest products industries. FORT 175 Forest Products Industry Tour (1) FORT 175 is a 1-credit, field-based course in the Forest Technology curriculum. The course is offered in the 4-week summer intersession following completion of the second semester. It provides students with the opportunity to visit and tour forest products industries. Tours of sawmills, pulp and paper facilities, plywood factories, and other manufacturing industries are incorporated into a 3-to 4- day field trip in the Mid-Atlantic region. This course provides a basic understanding of forest products industries for FORT 250 (Forest Management Practices).The course objectives are for students to develop an understanding of general industrial and manufacturing sectors of forestry and to learn and apply basic concepts of business, economics, and management in relation to forest products. Course grades will be determined by the level of participation at each forest products industry visited and by the quality of trip reports.

Changes Effective Fall 2024:

- Change Description
- Add Concurrent

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.

Changes Effective Fall 2024:

- Change Title
- Change Description
- Add Prerequisites

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.

Changes Effective Fall 2024:

- Add Prerequisites

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:

- Change Title
- Change Abbreviated Title
- Change Description

MUSIC 458: Electronic Music Composition I (3) (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.

Changes Effective Fall 2024:

- Add Prerequisites

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.-styled 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.

Changes Effective Fall 2024:

- Add Prerequisites

LHR 475H: Labor in the Global Economy (3 Credits: Maximum of 3 Credits)

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.

Changes Effective Fall 2024:

- Change 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.

Changes Effective Fall 2024:

- Change Description
- Add 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.

Changes Effective Fall 2024:

- Change Number
- Change Description

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:

- Change Description

SOC 13: Juvenile Delinquency (3 Credits)
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:

- Change Description

SOILS 102: Introductory Soil Science Laboratory (1 Credit)
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.

Changes Effective Fall 2024:

- Change Description
- Add Concurrent

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.

Changes Effective Fall 2024:

- Change Title
- Change Description
- Add Prerequisites
- Add Concurrent

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.

Changes Effective Fall 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites

SUR 471: Professional Aspects of Land Surveying (3 Credits)
Old Listing Effective through Summer 2024:

Ethical issues and legal limits of practice; surveyor as an expert witness; surveyor-client relationship; responsibilities to the profession.

Changes Effective Fall 2024:

- Change Abbreviated Title
- Change Description
- Add Prerequisites

Program Changes

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

Archaeological Science, B.S. (ARSCI_BS)
Effective Summer 2024:

- Program phased out

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 th Major

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

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

- Program phased out at Shenango campus

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 or the Major
- Removed ENGR 320Y, STS 200, STS 233Z/PHIL 233Z, STS 245Z from Additional Courses or 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

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

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, HFDS 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

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

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

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 Common Requirements for the Major from 56 credits to 53-59 credits
- Changed Electives from 0-1 credits to 0-4 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

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

- Revised Program Description
- Changed total requirements for degree completion from 125 credits to 121 credits
- Changed Requirements for the Major from 95 credits to 94-98 credits
- Changed General Education credits included in Requirements for the Major from 15 credits to 15-18 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.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 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

Occupational Science, B.S. (OCCSC_BS)
Effective Fall 2024:

- New program added

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. (Capital) (PSYC_BS)
Effective Summer 2024:

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

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

- New minor added

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

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

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 Requirements for the Major from 110-111 credits to 108-110 credits
- Changed Electives from 3-4 credits to 0-1 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