Undergraduate Course Descriptions

This letter/number system is used to designate the colleges and the disciplines and subjects offered within these colleges.

Key to Course Description Information

Before registering for a course, students must satisfy prerequisites as indicated in the following course descriptions. When changes are made, students are to follow the requirements in the most recent catalog.

Course Prefix

ACCT       Accounting
ADFND      Architecture Foundations
ADIV       American Diversity
AENGR      Architectural Engineering
AHIST      History of Architecture
ANIM       Animation
ARAB       Arabic
ARCH       Architecture
ARCHDSN    Architecture Design
ARCST      Architectural Studies
AREAST     Area Studies
ARTH       Art History
ARTS       Arts & Culture
BCHEM      Biology/Chemistry
BIOL       Biology
BLAW       Business Law
BUS        Business
CAD        Computer Aided Design
CHEM       Chemistry
CHINE      Chinese
CMGT       Construction Management
           UG
COLLST     College Studies
COMM       Communications
COMX       Communication (PhilaU
           ONL)
CTC        Community & Trauma
           Counseling
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<tr>
<th>Code</th>
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Undergraduate Course Descriptions

ACCT-101 - Financial Accounting 3-0-3
Designed to introduce all business students to the field of accounting, the course covers the fundamental principles of accounting, highlighting balance sheet and income statement presentation. Primary emphasis on accounting as a source of financial information, with procedural details kept to a minimum.

ACCT-102 - Managerial Accounting 3-0-3
Objective analysis and interpretation of accounting information. Use of accounting information as a basis for planning, control and managerial decisions. Prerequisite: ACCT-1XX

ACCT-120 - Entrepreneurial Accounting & Finance 3-0-3
This course introduces students to accounting and financial skills necessary for entrepreneurial ventures. Fundamental accounting concepts include understanding financial statements and performing basic financial statement ratio analysis. Managerial accounting concepts useful in management decision-making will be introduced including the preparation of operating and capital budgets and cost-volume-profit (break-even) analysis. The course also addresses objectives of financing, internal and external sources of financing, forms of financing, short-term vs. long-term financing, role of stock exchanges, Islamic financing, defining working capital, and managing of working capital.

ACCT-198 - Transfer Accounting

ACCT-203 - Intermediate Accounting I 3-0-3
An in-depth study of basic accounting principles and theory followed by a detailed analysis of cash, receivables and investments (including the related revenue and expense transactions). Text supplemented with the current rulings of the AICPA. Prerequisite: ACCT-101;

ACCT-204 - Intermediate Accounting II 3-0-3
Continues the analysis of a company's balance sheet with a study of inventories, fixed assets and liabilities. Text supplemented by current rulings of the AICPA. Prerequisite: ACCT-203;

ACCT-303 - Accounting Theory and Practice 3-0-3
This course will enable students to study topics such as corporate entities, cash flow statements, pensions and leases; along with other material not covered in previous accounting courses. Prerequisite: ACCT-204
ACCT-309 - Federal Taxes I 3-0-3
This course examines the federal tax laws as related to individual income taxation. The textbook is supplemented by using the actual 1040 tax forms and the related supporting schedules. The course is open to all students. Prerequisite: ACCT-1XX

ACCT-316 - Cost Accounting I 3-0-3
This course includes study of job order, process and standard cost systems; cost-volume-profit analysis; absorption versus direct costing; inventory-control systems, including EOQ and JIT systems concepts; relevant costing in decision making; time value of money concepts; and capital-budgeting theory and application. Prerequisite: ACCT-203 or ACCT-203ACC

ACCT-325 - Business Taxes-State and Federal 3-0-3
An in-depth coverage of business taxes. Emphasis is placed on partnership, corporation and sub-corporations. Pennsylvania, New Jersey and Delaware tax laws will be examined. Prerequisite: ACCT-309;

ACCT-409 - Auditing 3-0-3
Principles, standards and procedures of auditing. Emphasis upon the public accounting profession, its current pronouncements, practices and problems. Prerequisite: ACCT-204

ACCT-412 - Advanced Accounting 3-0-3
This course includes study of business combinations and consolidated financial-statement preparation, foreign subsidiary operations, foreign transactions, and government and not-for-profit industry accounting. The text is supplemented with current rulings of the AICPA. Prerequisite: ACCT-303;

ADFND-101 - Design 1 0-8-4
This basic foundation course is required in the Architecture, Interior Design and Landscape Architecture curricula. It is an introduction to fundamental design principles and vocabulary, process methodologies and problem-solving strategies. Lectures and demonstrations will stress abstraction as a primary building block for future design studios.

ADFND-103 - Visualization 1: Drawing 1-5-3
Basic drawing experience to develop the understanding of form as applied to two- and three-dimensional space. The student works from nature, still life, the human figure, and the built-environment in a variety of media; exploring qualities of line, texture, light and space representation. Students begin to explore subjects and develop ideas with application to the design majors.

ADFND-108 - Vis 2: Tech & Graph Rep for Architecture -----
The designed object is tangible, but it is always first an image. The image, the product of visualization, is most fundamentally communicated through the techniques of two-dimensional modeling we call drawing. The course will include a range of drawing techniques and digital technology to devise comprehensive strategies for visualizing and communicating design ideas. By integrating techniques the student will learn the appropriate tool to employ at any given point in the design process to effectively communicate to self and to others. Prerequisite: ADFND-103 or DRAW-101

**ADFND-109 - Vis 2: Tech & Graphic Rep for Interior Representation  1-4-3**

Following one semester of drawing, this course focuses on the fundamentals of creative graphic representation. Specific topics of emphasis include the construction of orthographic and paraline projections including floor plans, elevations, sections, perspective and the integration of two-dimensional digital software. Prerequisite: ADFND-103 OR DRAW-101;

**ADFND-112 - Technics of Communication  1-4-3**

The designed object is tangible, but it is always first an image. The image, the product of visualization, is most fundamentally communicated through the techniques of twodimensional modeling we call drawing. Today's designer is privileged to own a vast range of technologies, ancient and modern, to devise comprehensive strategies for visualizing and communicating ideas. By integrating techniques the student will learn the appropriate tool to employ at any given point in the design process to effectively communicate to self and to others. Prerequisite: ADFND-101 and ADFND-103 or DRAW-101

**ADFND-120 - Design Ldrsp: Leadership as Practice  3-0-3**

Largely absent from the curriculum of architecture and design programs elsewhere, this course supports the development of students to be the next generation of design professionals by addressing the leadership and management characteristics needed to be successful in the modern complex environment of professional design. Students will learn leadership characteristics, capacities and competencies that design professionals seek in the students they propose to hire, that they seek to develop and enhance in their colleagues via internal leadership development programs, and that design leaders consider to be most important to their self-development and leadership for their profession. This course will examine leadership from multiple perspectives and will present leadership concepts that translate into real-world applications.

**ADFND-150 - History Takes Form  3-0-3**

This elective course examines the effect of environmental, societal and cultural issues on the evolution of form in architecture and design. Students will be engaged in an active, exploratory process, using research and site visits as a means to inform contemporary design decisions. Specific historical periods will be studied on site and the corresponding design movements prior to and following these periods will be compared and contrasted.

**ADIV-1XX - American Diversity Placeholder  -----**

**ADIV-200 - American Social Justice  3-0-3**
This course examines pervasive issues of difference and inequality in the U.S. through the lens of social service and nonprofit organizations. Students will learn about major American social movements, what cultural values cause and seek to remedy them (and how), and will research a social justice cause of their choosing. Students will apply course concepts by volunteering at a social justice nonprofit; students should expect to contribute out-of-class time to developing a relationship with this organization. Transportation is not necessary. Prerequisites: DBTU-114, WRIT-101/101G Prerequisite:WRIT-101 and DBTU-114

ADIV-201 - Defining American Voices
How do individual American voices influence and interact with American culture? Students in this course explore the development of key issues in American identity and culture through individual expressions such as memoir, song, fiction, film, photography, and poetry. By examining ideas and products of influential and diverse American thinkers from a variety of disciplines, this course approaches American culture from a multivocal, multimodal perspective. Prerequisite:WRIT-1XX and DBTU-114

ADIV-202 - Immigrant America 3-0-3
This course examines cultural and social issues surrounding immigration in the U.S., in the past and present. Students will analyze historical, literary, and cultural texts of immigrants and immigration and navigate multiple perspectives on related issues like assimilation and acculturation, race and xenophobia, language and culture, and ethnic experience. Students will develop their Confidence competency by using reasoning and evidence to challenge arguments and reach conclusions about immigration and American diversity. Prerequisite:WRIT-1XX and DBTU-114

ADIV-204 - Red and Blue America 3-0-3
Red and Blue America: Political Subcultures in the U.S. surveys the diversity of current political identities in the United States and traces their origins. Beginning with an examination of the dividing lines between liberal and conservative viewpoints, students consider the historical and political forces that created this central division and how it shapes today's political landscape. The course then reviews the various political subcultures to both the left and the right of the mainstream parties to assess their role in American culture and politics. Prerequisites: DBTU-114, WRIT-101/101G Prerequisite:WRIT-1XX and DBTU-114

ADIV-206 - Gender & Diversity in the US 3-0-3
This course focuses on recent developments in gender scholarship in a U.S. context. It examines how gender has been conceptualized and analyzed, historically and in the present day. Topics considered may include the formation of masculinities and femininities, the intersections between gender, sexual orientation, class, race, age and place, and the significance of gender in personal and professional contexts. Readings are drawn from a variety of disciplines depending on the instructor. Prerequisites: DBTU-114, WRIT-101/101G Prerequisite:WRIT-1XX and DBTU-114

ADIV-210 - The African Amer. Experience
This course explores African Americans' struggle for freedom and equality in American society. It examines the social, economic, political and cultural realms of African American life with some exploration of cultural origins in West Africa. Students read in primary sources and use literary evidence in an interdisciplinary effort to understand the past and explore contemporary issues in American society. Prerequisite:WRIT 1XX and DBTU 114
AENGR-200 - Architectural Engineering Design 0-8-4
This foundation course is required for Architectural Engineering. It is an introduction to design
principles, vocabulary, and process methodologies leading to the understanding of architectural
and research process. Use of prevalent and emerging visualization tools for building information
modeling (BIM) including REVIT will be covered. Prerequisite: WRTG-101 ENGR-101 ENGR-102

AENGR-301 - Structural Analysis I 3-0-3
Structural Analysis I provides the basis and serves as a foundation for subsequent advanced
Structural Analysis courses. Assumptions, principles of equilibrium in determining structures
Reactions, bending moments and shear diagrams will be discussed. Additionally, analysis of
plane and space trusses. Influence lines. Computer analysis of determinate trusses. Optimization
in structural systems. Approximate methods of analysis for indeterminate structures.
Determination of displacements by virtual work. Castiglione's theorem and moment area
theorems. Prerequisite:ENGR-215

AENGR-303 - Struct. Design Compres Element 3-0-3
The main objective of this course is to provide students with a rational basis of the design of
reinforced concrete members and structures through advanced understanding of material and
structural behavior. The subject will be approached by looking into the behavior of reinforced
concrete at different levels; material level, element level, and structural and systems level.
Prerequisite:take AENGR-301

AENGR-305 - Struct Design Tensile Elements 3-0-3
The main objective of this course is to provide students with a rational basis of the design of
tensile members, elements and structures through advanced understanding of material and
structural behavior. The subject will be approached by looking into the behavior of steel, timber
and fabrics at different levels; material level, element level, and structural and systems level.
Prerequisite: take aengr-301;

AENGR-307 - Soil Mechanics 3-0-3
AENGR 307 SOIL MECHANICS This course presents technical aspects of soil properties,
identification and classification of earth materials, stress'strain behavior of soils, and movement of
water through soils. The student will also be introduced to geotechnical design. 3-0-3
Prerequisite:take ENGR-301;

AENGR-400 - Mech & Engr Sys for Buildings 3-0-3
AENGR 400 Mechanical and Electrical Systems for Buildings This course will introduce basic
principles, types and applications of mechanical and electrical systems for buildings. Topics
include air conditioning, heating, fire protection, electrical power, and electrical lighting. Students
will learn various design methods that impact building environment and indoor air quality.
Prerequisite:take ENGR-322

AHIST-205 - Built Environment: Ancient to Medieval And Interiors I 3-0-3
By tracing significant historical themes, this course spotlights canonic examples of Western and non-Western architecture, interiors, and landscape design from Ancient times to the Medieval period. Major monuments of Europe, Asia, Africa, and the Americas are examined as solutions to technical problems, utilizing available materials, and as spatial and structural embodiments of cultural belief systems. Students acquire a working vocabulary for both analyzing and evaluating the built environment and material culture. Prerequisite: WRITING 1xx

AHIST-206 - Renaissance/Baroque Arch & Interiors II 3-0-3
Focusing upon global changes relative to patterns of patronage, and the intersection of church and state, this course highlights significant examples of Western and non-Western architecture and interiors produced from the 14th through the mid-18th centuries. Each case study is situated within a broad historical context and understood as paradigmatic of a period's values and aspirations that are given concrete form through available materials, construction methods, and technologies. Students acquire a working vocabulary for both analyzing and evaluating architecture, interiors, and material culture. Prerequisite: AHIST-205

AHIST-305 - Early Modern Arch & Interiors III 3-0-3
History III: Early Modern Architecture and Interiors (1750-1930) This course chronicles the impact of Enlightenment thinking and of the shifting definitions of modernity upon architecture and interior design by tracing the transition from Historicism to the International Style. New notions of progress and evolution; industrialization and urbanization; and debates concerning the role of the machine and the meaning of ornament are set against major technological advances. Students examine key theoretical texts and accomplish archival research on an historic structure in the Philadelphia area. [Writing Intensive] Prerequisite: AHIST-206

AHIST-306 - Modern/Contemp. Arch & Interio 3-0-3
History IV: Modern/Contemporary Architecture and Interiors (1930-Present) This course analyzes major movements and theoretical constructs that have dominated architecture and interior design from the post-World War II period until the present. Discussion focuses upon societal and environmental aspects ‘ politics, economics, science and technology, psychology, etc. ‘ that shape the greater context for architecture, interiors and the allied arts. Students examine key theoretical texts to evaluate current thinking relative to issues such as sustainability, critical regionalism, phenomenology and the role of the digital in contemporary practice. [Writing Intensive] Prerequisite: AHIST-305

ANIM-201 - Introduction to Animation 2-2-3
This course will introduce students to the practice of animation and the various techniques employed in its production. Short exercises involving hand-drawn, stop-motion and other non-digital means will serve to expose students to the fundamental concepts involved. Students will then apply these concepts to their digital toolkit in order to create a longer final project.

ANIM-202 - Storytelling/Storyboarding 2-2-3
This course will seek to give students a strong foundation in storytelling. Emphasis will be placed on visual storytelling, as the storyboard is the script for animation. In addition to story structure, students will explore screen composition and editing as means of relating narrative content. The class will consist of several storyboard exercises, culminating in the production of an animatic, a filmed version of the storyboard with a soundtrack.
**ANIM-204 - Design Essentials Digital Media**  
0-8-4  
This course is an introduction to the necessary graphic design methods, materials and vocabulary used in the animation and digital media professions. This studio emphasizes concepts in design including color theory, typography, visual abstraction & visual metaphor. Students also get a foundation understanding of Adobe Illustrator, InDesign and Photoshop. Prerequisite: DSGNFND-203 VSDES-101 ADFND-102 or INDD-102; Minimum grade C; Prerequisite: take DSGNFND-203 VSDES-101 ADFND-102 or INDD-102; Minimum Grade C.

**ANIM-206 - Typography & Iconography for Digital Media**  
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This course emphasizes visual design, typography, iconography and technologies for on-screen design. Students in this course have a primary focus on type and icons and how shape, size, and style convey deep meaning in a digital user experience. Additionally, students explore in-depth issues with screen sizes, resolution, color variance, and use of typography and iconography in motion. Students will demonstrate an understanding of properly licensing and creating fonts & icons using modern technology platforms for integration into digital products.

**ANIM-301N - Motion Graphics I**  
1-5-4  
This major studio course explores time and motion in the creation of primarily graphic narratives. The techniques of abstraction, motion typography and musical synchronization are studied in the context of increasingly complex projects. A major aspect of the course will be the screening of both abstract films and reels from contemporary motion graphics films.

**ANIM-301Z - Motion Graphics I**  
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This major studio course explores time and motion in the creation of primarily graphic narratives. The techniques of abstraction, motion typography and musical synchronization are studied in the context of increasingly complex projects. A major aspect of the course will be the screening of both abstract films and reels from contemporary motion graphics films.

**ANIM-303 - History of Animated Cinema**  
3-0-3  
WRITING INTENSIVE: This class will expose students to the range of animated cinema, from the early days of film to contemporary computer-generated work. Class will consist of screening and discussing a range of short and feature-length films. During the semester, students will be expected to write responses to the films as well as conduct further research into the medium and its history. [Writing Intensive]

**ANIM-305 - Comics & Graphic Narrative**  
3-0-3  
An introduction to the creation and marketing of comic strips, comic books and graphic novels, this course will emphasize graphic narrative theory and structure, the creation of characters and stories suited for the medium, strategies for monetizing the work in the real world and the development of each student's individual style.

**ANIM-307 - 3D Modeling**  
2-2-3  
This course will give students a foundation in the concepts and techniques of 3D modeling and rendering. Specific attention will be paid to modeling environments, objects and characters. Students will explore polygonal, NURBS and subdivision-surface modeling and their respective workflows.
ANIM-308N - 3D Animation 1-5-4
This course builds upon the concepts learned in 3D modeling to include animation and character setup. Special attention will be given to applying the techniques of traditional character animation to this contemporary medium. Projects will range from short animation exercises to a longer, character-driven piece. In addition, the class will view and discuss current and classic animated film. Prerequisite: ANIM-307: Minimum Grade C

ANIM-308Z - 3D Animation
This course builds upon the concepts learned in 3D modeling to include animation and character setup. Special attention will be given to applying the techniques of traditional character animation to this contemporary medium. Projects will range from short animation exercises to a longer, character-driven piece. In addition, the class will view and discuss current and classic animated film. Prerequisite: ANIM-307, Minimum Grade C

ANIM-310 - Digital Audio Production 1-3-3
This course introduces students to intermediate digital audio concepts and skills for use in a broad array of multimedia including instructional applications. Students will generate a variety of professional grade digital audio artifacts using industry-standard software and processes; instruction will focus on common elements of digital audio production to allow transfer of knowledge to various tools and platforms rather than focusing solely on the mastery of a single tool. Prerequisite: DIGD-318 Media Production

ANIM-312 - Motion Graphics II 2-2-3
This class explores the concepts covered in Motion Graphics I but with the introduction of 3D graphics and video as elements of motion graphics. In addition, the mediums of dance, photography, architecture and painting will be discussed as possible inspirations. Prerequisite: ANIM-301N & ANIM-307: Minimum grade C

ANIM-318 - 3D Animation II
This course is a continuation on the concepts, techniques, and theories learned in 3D Animation I. Students will advance their 3D animation skills by designing, modeling, texturing, and rigging a hard-surface character. Each student's character will serve as the centerpiece of an animated short with a focus on visual narrative and cinematic presentation. Emphasis will be placed on understanding and adhering to a sensible and efficient production pipeline. In this course, students will hone their expertise in 3D animation through experience and will lay the foundation for concepts explored in Advanced Topics in 3D Animation and Animation Capstone I & II. Prerequisite: ANIM-308 OR ANIM-308N

ANIM-398 - Animation Designated Elective
This is a transfer equivalency for an designated elective in the Animation program

ANIM-3XX - Animation Designated Elective
This is a placeholder for an designated elective in the Animation program
ANIM-407N - Advanced Topics in 3D Animation 1-5-4
This class will allow students to delve deeper into areas covered in prior 3D classes. Topics include advanced modeling techniques, character setup, special effects, dynamics, lighting and rendering. The creation of a character interacting with its environment will drive the projects in this class. Prerequisite: ANIM-308N: Minimum Grade B-

ANIM-407Z - Advanced Topics in 3D Animation 1-5-4
This class will allow students to delve deeper into areas covered in prior 3D classes. Topics include advanced modeling techniques, character setup, special effects, dynamics, lighting and rendering. The creation of a character interacting with its environment will drive the projects in this class. Prerequisite: ANIM-308Z: Minimum Grade B-

ANIM-497N - Animation Capstone I 1-7-6
WRITING INTENSIVE: This course focuses on preparing the student to create a short film in the Spring. The pre-production phase includes conceptualizing the story, writing the script and creating storyboards. In the process of preparing, students will also learn to schedule, budget and distribute their film. Before the end of the semester, students will have all necessary materials to begin production on their short film. Prerequisite: ANIM-312 ANIM-308N;

ANIM-497Z - Animation Capstone I 1-7-6
WRITING INTENSIVE: This course focuses on preparing the student to create a short film in the Spring. The pre-production phase includes conceptualizing the story, writing the script and creating storyboards. In the process of preparing, students will also learn to schedule, budget and distribute their film. Before the end of the semester, students will have all necessary materials to begin production on their short film. Prerequisite: ANIM-312 ANIM-308Z;

ANIM-499N - Animation Capstone II 1-7-6
This course represents the culminating experience for Animation students. Students are required to produce and deliver a short film, realizing the concepts they developed in the previous semester and synthesizing the knowledge and skills from the preceding courses. In addition, students will be required to produce a finished portfolio appropriate to the industry in which they will be pursuing further work. Prerequisite: ANIM-497N: Minimum Grade B-

ANIM-499Z - Animation Capstone II 1-7-6
This course represents the culminating experience for Animation students. Students are required to produce and deliver a short film, realizing the concepts they developed in the previous semester and synthesizing the knowledge and skills from the preceding courses. In addition, students will be required to produce a finished portfolio appropriate to the industry in which they will be pursuing further work. Prerequisite: ANIM-497Z: Minimum Grade B-

ARAB-101 - Arabic I 3-0-3
A beginner's course designed for students with very little or no knowledge of the language. The focus is on basic oral expression, listening comprehension and acquiring simple reading and writing skills, so that students can gain confidence in the language and to begin to have conversations. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.
ARAB-201 - Arabic II 3-0-3
A beginner's course designed for students who have completed one semester of college-level language or the equivalent. The focus is on oral expression, listening, comprehension and the acquisition of simple reading and writing skills, so that students can gain confidence in the language and conduct conversations and other social interactions in the language with some level of ease. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

ARCH-102 - Design 2: Arch Foundatn Stud 0-8-4
This basic foundation course is required in the Architecture and Architectural Studies curricula. It is a synthesis of fundamental design principles and an introduction to research as a tool for understanding programming and design. Lectures and demonstrations will utilize the case-study methodology to investigate various design strategies and to chart the historical course of modernism. Prerequisite: ADFND-101 with a minimum grade of C

ARCH-204 - Great Build: Strc Style & Cntx 3-0-3
This course surveys selected, key monuments of architectural history from ancient through modern times that are paradigmatic of building art and science during a particular period. The buildings spotlighted represent dominant types from pyramids to skyscrapers that are not only laboratories for innovative design and cutting-edge technologies, but also are expressive of the values and aspirations of the society at large. Developments in the areas of materiality and structural systems will be integrated with changing social, economic, political, stylistic, and environmental demands that are normative of a particular time and place. Students majoring in Architecture, Architectural Studies, Landscape Architecture, or Interior Design are not permitted to take this course. Prerequisite: WRITING 1XX

ARCH-212 - Tech 2 Passive Sys/Bldg Env 2-2-3
This lecture/lab course examines technological issues relevant to passive environmental systems and sustainable technologies. Central to the course is a students understanding of the temporal nature of program and site and their impact upon the design of natural lighting, passive heating and cooling systems, and issues of enclosure, materiality, and skin, as well as their relation to our natural and built environments. Prerequisite: ARCHDSN-210

ARCH-213 - Design 3: Architecture Foundations Stud 0-8-4
This foundation studio concentrates on general issues concerning 'dwelling' and specific issues addressing housing and residential design are explored. Emphasis is placed on designing in the urban context. This course uses research, writing and analysis of human patterns of occupancy and settlement as a means of exploration. Techniques of representation are developed and refined. Prerequisite: C or better in ARCH-102;

ARCH-214 - Design 4: Architecture Foundation Stdies 0-8-4
This foundation course focuses on building the landscape using the elements, principles and theories of architectural and landscape design. Concurrently, specific theoretical issues related to design, organization and the interrelationship of interior and exterior space are explored. A particular emphasis is placed on an experiential and intuitive design process. The importance of the building ‘parti’ as a response to naturally occurring context is stressed. Techniques of representation are developed and refined. Prerequisite:C or better in ARCH-213

ARCH-303 - Structures 1 2-2-3
This course merges structural design (form) and analysis as a simultaneous act and introduces the role of structural engineering in the architectural process. Students develop familiarity with the fundamentals of statics, gain a sense of how structures resist forces, and learn to visualize the load path and the direction of forces. Material is learned while designing actual structures and details. Structural design and analysis is taught using both numerical and graphical analyses for the the preliminary shapes of cable structures, arches, and trusses. Prerequisite:MATH-103 or MATH-111;PHYS-101

ARCH-304 - Structures 2 2-2-3
Reinforcing concepts learned in Structures 1, this course presents the effect of cross-sectional properties on stresses in beams as well as the concept of bending as it is applied to beams, columns, slabs and walls in wood, steel and reinforced concrete. Also covered are the resistance of buildings and their components to lateral loads (wind and earthquake) and the introduction to structural grids and patterns for structural systems in wood, steel and concrete as they relate to gravity and lateral loads. Prerequisite:ARCH-303

ARCH-306A - Stdy Abd: S. Africa Preparatn 2-0-2
This study abroad short course preparatory course seeks to provide students with the following opportunities: . Appreciate the interdependence of the global environment . Demonstrate knowledge of international economic and/or cultural developments in the field of architecture . Value intercultural experience . Develop an ethical & professional awareness of their discipline within the global community . Gain insight into the historical, cultural, social, political and geographic contexts of the site of study . Apply their resourcefulness, flexibility and interdependence and the ability to collaborate and work in a group . Seek another opportunity to travel abroad in the future

ARCH-306B - Stdy Abd: South Africa 1-0-1
This study abroad short course seeks to provide students with the following opportunities: . Appreciate the interdependence of the global environment . Demonstrate knowledge of international economic and/or cultural developments in the field of architecture . Value intercultural experience . Develop an ethical & professional awareness of their discipline within the global community . Gain insight into the historical, cultural, social, political and geographic contexts of the site of study . Apply their resourcefulness, flexibility and interdependence and the ability to collaborate and work in a group . Seek another opportunity to travel abroad in the future Prerequisite: take ARCH-306A

ARCH-308 - Visual 4: Advanced Modeling 1-4-3
This advanced, computer-aided design, course focuses on complex three-dimensional modeling, photorealistic rendering and virtual reality; with an emphasis on using 3-D Studio Advanced modeling and rendering software. Interactive media and digital imaging are introduced in order to increase the effectiveness of student presentations. Students complete a series of specifically designed exercises of increasing difficulty leading to a final project of the student's choosing from a concurrent or earlier design studio. Prerequisite: ARCHDSN-208 or ARCHDSN-209;

ARCH-311 - Design 5 for Architecture 0-12-6
This topical studio explores the integration between individual buildings and urban design. The course focuses on creating community within the city. Students investigate socio-cultural and environmental aspects of the city as they relate to architecture. The studio includes discussion of architectural history, theory and principles as the basis for the making of architecture and urban form. Prerequisite: ARCH-212; ARCH-202; Minimum grade C;

ARCH-312 - Design 6 for Architecture 0-12-6
This tectonics studio focuses on the theories surrounding the materials and processes of making architecture. Students investigate the inherent properties of building materials to understand their roles in informing and directing the design process. They explore methods of structure, enclosure, and assembly to analyze their effect on built form. Prerequisite: ARCH-202 Minimum grade C or ARCH-214;

This lecture/lab course presents basic theory and application parameters associated with the dynamic building systems within the architectural environment. These include HVAC, power and data, lighting, acoustics, security, plumbing, vertical transportation, and life and fire safety. Emphasis is placed on the relationships of these systems within the building structure and envelope, as well as the integration of design processes, the implementation of sustainable design principles, and the health, safety, and welfare of users. Prerequisite: ARCH-212;

This lecture/lab is the capstone course to the Structures and Technology course sequences. This course presents advanced theory, design and application parameters associated with structures, environmental systems and enclosure within the architectural environment. These parameters are examined through the context of building form typology. Emphasis is placed on the relationships of structures, environmental systems and building enclosure within each building type, and the use of these design elements in the conceptualization and realization of architecture. Prerequisite: ARCH-313;

ARCH-320 - Ecology & Making 3-0-3
The objective of this seminar is to broaden the base of understanding relative to the current discussion of sustainability and reveal some of the greater complexities of the topic. The course will include relevant design work, work outside of the realm of convention, and non-designers that have contributed greatly to the field. The semester's readings will explore the topic through different filters: technological, historical, philosophical, aesthetic, scientific, social, economic, political, and cultural. Prerequisite: AHIST-306 LARCH-411 or INDD-304;

ARCH-324 - Visualization: Experimental Modeling 1-4-3
This advanced digital elective course focuses on the direct correlation between digital techniques and the design process. Complex three-dimensional modeling, rendering, animation, design visualization and presentation are emphasized in the course methodology. Using a variety of softwares, students complete a series of exercises of increasing difficulty leading to a final project that demonstrates the culmination of the skills developed throughout the semester. Prerequisite: ARCHDSN-208

**ARCH-326 - Visualization 2: Advanced Modeling** 1-4-3

This advanced, computer-aided design, course focuses on complex three-dimensional modeling, photorealistic rendering and virtual reality; with an emphasis on using 3-D Studio Advanced modeling and rendering software. Interactive media and digital imaging are introduced in order to increase the effectiveness of student presentations. Students complete a series of specifically designed exercises of increasing difficulty leading to a final project of the student's choosing from a concurrent or earlier design studio. Prerequisite: ARCHDSN-208

**ARCH-372 - The Architectural Publication** 2-2-3

Architectural publications from Vitruvius' De architectura libri decem to Bjarke Ingel's Yes is More has been and continues to be integral to architectural discourse. This seminar introduces students to the book as a representational tool for considering architecture, landscape architecture, and interior design as a critical artifact for the dissemination of environmental design theory and praxis. This course also introduces students to the history and conceptual underpinnings of the architectural publication as well as typography, layout and architectural writing. Concurrent with the analysis of architectural publications through case studies, students will utilize their design and editorial skills to produce the annual CABE publication of student work. Prerequisite: AHIST-306 or LARCH-411

**ARCH-398 - Architecture Elective**

This course is a transfer equivalency for an architecture elective course

**ARCH-401 - Design 7 for Architecture** 0-12-6

This studio permits students to customize their professional education by offering a series of options, including study abroad architectural studio, design-build studio, interdisciplinary studio, design studio within another discipline or another option approved by the program director. Prerequisite: ARCH-311 and ARCH-312 with minimum grade C

**ARCH-412 - Design 8 for Architecture** 0-12-6

This comprehensive course demands that students work in teams integrating constructional structural and enviromental systems in the design and documentation of a large and complex building. Students research building type and systems precedents and their resulting impact on built form, analyze material properties, specify component building systems and apply codes and standards to fulfill technical, programmatic and aesthetic needs. Prerequisite: ARCH-314 ARCH 311 & 312 with minimum grade C Corequisite ARCH-416 Corequisite: ARCH-416

**ARCH-413 - Experimental Structures** 2-2-3
This elective lab/seminar course is an exploration into the architectural potential of form-active structures (including thin-shell, tensile-membrane and fabric structures), and new and alternative materials and methods of construction. Unlike conventional structures that rely on their internal rigidity, form-active structures rely purely on their geometric shape to carry loads, thus providing a base for experimenting with form to create innovative solutions for structural-design problems. Prerequisite: ARCH-304 or AENGR-305;

ARCH-414 - Experimental Materials  
2-2-3

This elective lab/seminar course is a hands-on exploration into the mechanical properties and aesthetic potential of materials in the built environment. The course encourages experimentation with both new materials and non-traditional use of existing materials toward the full-scale production of architectural objects and building components. Implications of craft and technology underscore research and production. Students complete several smaller individual projects and a larger group project of longer duration. Prerequisite: ARCH-303 or AENGR-301;

ARCH-415 - Visualization: Multimedia  
1-4-3

This interdisciplinary course focuses on Interactive CDROM design, Web page design and digital-video production. Students begin by reviewing basic two-dimensional, design communication concepts as a prelude to more complex projects involving various digital media. The course is primarily taught on the Macintosh platform and features software such as Adobe Premier, Macromedia Flash and Macromedia Director. Students create their own individualized final project as approved by the instructor. Prerequisite: ARCH-315 or ARCH-326; Corequisite: ARCH-414

ARCH-416 - Tech 5: Documentatn & Detailn  
1-4-3

This course focuses on the important role of structural, environmental, and constructional systems in the design process through the creation of technically precise computer generated drawings and models. Students systematically analyze precedence through case studies and develop their own design into a set of technical documents and details that enhance the project concept. The utilize CAD and BIM computer software to convey their technical design intentions. Prerequisite: ARCH-314 ARCH-326; Corequisite: ARCH-412

ARCH-417 - Urban Strategies  
2-2-3

This lecture/seminar course introduces the history and theory that informs contemporary issues in urban design. It examines the evolving structure of the modern city and the ways in which theoretical ideas and design strategies impact the urban landscape. The importance of environmental and social responsibility and the role of the architect in the urban design process are stressed, while at the same time considering form and spatial qualities of buildings in the urban environment. Prerequisite: AHIST-306 ARCH-311 ARCH-312;

ARCH-418 - Housing and Construction Technology  
3-0-3

This elective seminar course explores interrelated issues of house, land and construction. Discussions and research center around how historical and cultural concepts of the homeand land-use have brought housing to its present condition, and how current concerns about land use and construction technologies might effect a change. Prerequisite: ARCH-212 or LARCH-207

ARCH-419 - High Performance Bldg Envelop  
3-0-3
This course explores future possibilities for advanced building envelopes as well as the properties of interior and exterior building materials and their relation to construction methods and detailing. The building envelope will be considered using the following criteria: architectural expression, sustainability, spatial order, performance, and user experience. The goal of these investigations is to develop new building envelope systems that integrate the construction process with structure, materials, climate, energy use, transparency, surface qualities, and aesthetics. Students will participate in an integrated design process leading towards the technical and architectural design of a high performance-building envelope. Prerequisite: ARCH-304 ARCH-313;

ARCH-423 - Architecture Fellowship 0-8-3
This course is designed to allow students to take the first step towards learning to be a teacher. During the semester students will be linked one-to-one with a section of a foundation design studio. Participation in desk critiques and the review process, as Studio Assistants rather than as the student, allows upper level students the opportunity to share their knowledge with foundation students. In return by revisiting the fundamentals as a Studio assistant, students will be able to reevaluate the work they are doing in their own coursework and to develop further their critical, analytical, speaking and communication skills. Prerequisite: ARCH 214 or INTD 202 or LARCH 202 and completion of the second year of studio courses and instructor consent and minimum GPA of 3.00.

ARCH-426 - Design/Build 1-4-3
Through a combination of lecture and lab, students apply knowledge of building technologies and structural systems to the design and construction of a project at appropriate scale. Working under the supervision of faculty, students research, plan, and build their solution to a problem of topical interest. Prerequisite: ARCH-212 or LARCH-207

ARCH-430 - Architecture in Education 1-4-3
Each student is teamed with a practicing architect and a classroom teacher to develop and carry out an eight-week program for a class of school children (elementary through high school). The emphasis is on hands-on activities and direct experiences (neighborhood walks, etc.) that introduce the children to the basic principles of architecture and the built environment. The program is in collaboration with the Foundation for Architecture, the Philadelphia Public School District and local architecture firms. Prerequisite:ARCH-202 or LARCH-202WRTG-215 or WRIT-201 or WRIT-202

ARCH-4X1 - Design Theory Seminar Placeholder Design Theory: 6 credits Special Topics
This is a placeholder for a Design Theory Elective (6 cr)

ARCH-4X2 - Nexus Design Experience Placeholder Design Theory: 3 credits Special Topics
This is a placeholder for a N3xus Design Experience course (3 cr)

ARCH-503 - Professional Management 3-0-3
This course focuses on the nature of the architect's practice and on office proprietorship typologies, through detailed studies of legal, financial, marketing and management issues. Using individual projects, it examines the project process - from development through construction, including administrative procedures, economic systems, codes, standards and regulations - as well as various professional disciplines' responsibilities and requirements for professional registration. Contractual and ethical obligations of the architect, particularly in response to client needs and safety, as well as codes, standards and regulations are covered. (first offered Fall 2013) Prerequisite: ARCH-311 or LARCH-301, ARCH-312 or LARCH-302, Minimum grade C

ARCH-507 - Design 9 for Architecture 0-12-6
This studio combines seminar and workshop elements in a non-linear manner to allow students to develop the architectural agenda explored in their position papers done for the required theory seminar. Students engage in a rigorous process uniting research, analysis, and design. Each studio section is topical according to the curricular streams identified in the students' work.
Prerequisite: ARCH-412; Minimum grade C; ARCH-320 ARCST-221 ARCST-341 ARCST-410 ARCST-422 ARCST-471 ARCH-413 ARCH-324 LARCH-411 ARCST-409 or PHOTO-307;

ARCHDSN-208 - Visual 3: Digital Modeling for Arch 1-4-3
The primary intent of this course is to establish the computer as an effective tool in the design and presentation process. The course will focus on two primary areas in this regard: visualizing design concepts in three dimensions and communicating those concepts in a manner consistent with studio level work. Methods include digital model construction, creating and applying surface materials, lighting, rendering, and post-processing. Prerequisite: ARCH-102 or INTD-102; Minimum grade C;

ARCHDSN-209 - Visualization 3: Digital Modeling 1-4-3
The primary intent of this course is to establish the computer as an effective tool in the design and presentation process. The course will focus on two primary areas in this regard: visualizing design concepts in three dimensions and communicating those concepts in a manner consistent with interior design studio level work. Methods include digital model construction, creating and applying surface materials, lighting, rendering, and post-processing. Prerequisite: ARCH-102 or INTD-102; Minimum grade C;

ARCHDSN-210 - Technology 1: Materials and Methods 2-2-3
This course focuses on the presentation of the technical factors of construction that affect a building's structure. Students are introduced to and compare the nature and structural characteristics of the major construction systems of wood, masonry, steel and concrete. Structural principles, as well as building and zoning codes, are introduced and their influence on form and choice of materials is emphasized. Prerequisite: ARCH-102 AENGR-200 or INTD-102; Minimum grade C;

ARCHDSN-212 - Color: Theory and Practice 1-4-3
This elective studio explores the phenomena and meaning of color, based on appropriate theories light and space. Exercises examine what color is, why it is and how we see it. Additional foci include control of color interactions and distinguishing color differences. This course will provide the basis for color choices in a logical and sequential manner and will bridge the gap between theory and use. Prerequisite: DSGNFND-203; or ADFND-102 or INTD-102
ARCHDSN-381 - Ind Study in Arch, Intd & Land 0-0-3
For further details, see general description of Independent Study in "University Academic Policies and Procedures: Common Academic Policies for All Students" section. Permission required. See appropriate form online at the University Registrar's webpage www.philau.edu/registrar/ for more information.

ARCST-221 - Contemp Preservation & Adaptive Reuse 3-0-3
This course introduces the multi-faceted field of contemporary preservation, examining fundamental principles and practices used today by historians, architectural conservators, designers, archaeologists, non-profit museum directors, and professional advocates, with attention given to issues of sustainability and adaptive reuse. Students learn through guest lectures, case studies, class discussion, field trips and "hands-on" projects.

ARCST-266 - Building Conservation 2-2-3
Through site visits, demonstrations, laboratory exercises, guided research, and discussions, this course provides a comprehensive overview of historic building materials and the ongoing processes of material deterioration, contemporary approaches to treatment, and sustainability concepts of embodied energy and life cycle analysis as these pertain to building conservation. Topics include: investigative techniques for historic structures; diagnosing existing conditions, including non-destructive and laboratory testing methods; and designing appropriate interventions to remedy observed problems. Students will collect, present, critically review findings and formulate recommendations for conservation. Prerequisite: ARCH-102 or INTD-102 or CMGT-102

ARCST-300 - Exhibition Desg & Planning 2-2-3
The renaissance of museums, product display, and exhibitions has made the making of exhibitions a significant, recognizable, and highly valued skill as well as profession. This course covers the fundamentals of exhibition design, as well as its history, theory and practice. Through the use of lecture based case studies, field trips to exhibitions, and studio work, students will not only learn to develop, design, build, and document exhibitions, but to prepare written design proposals, didactic exhibition material, and exhibition critiques. Emphasis will be on the narrative used to create exhibitions, employing scale, color, materials, lighting, sound, and graphics. Prerequisite:take ADFND-102 INTD-102 LARCH-102 INDD-102 or DSGNFND-203;

ARCST-302 - Uncovering the Past: Tools, Methods & St 3-0-3
Buildings are silent witnesses to the past. Rediscovering the "stories" of a building's many lives relies upon piecing together archival, physical, and ethnographic evidence. This course affords in-depth study of the techniques, strategies, and resources employed to track down data, using written, graphic, and oral sources. Field trips to key archival repositories provide students with first-hand experience in collecting and interpreting documentary evidence to develop historical narratives. Prerequisite: AHIST-206

ARCST-324 - Architectural Forensics and Documentati 2-2-3
In this course students decode a building's past by deciphering and recording the physical evidence of its evolution. Students learn the fundamentals of professional field techniques used to document and interpret historic structures and places, utilizing sketching and technical drawing via hand drafting and computer modeling. Through field work and labs, students survey, sketch, draft, and annotate comprehensive, technically proficient drawings that represent the salient aspects of historic structures and sites. Procedures and techniques for analyzing historic buildings to determine original appearance and the nature, extent, and chronology of physical change which has occurred over their history are introduced. Prerequisite: archdsn-208

ARCST-341 - American Architecture 3-0-3
What makes the built environment in America unique? How has American design changed over the generations? What were architects, clients, and critics thinking? Where will American architecture go in the future? Using history, sociology, and the humanities, we will address these types of questions as we examine American architecture according to themes such as the iconic American home, public buildings, buildings for work and play, and American architectural practice. Prerequisite: take ahist-206 or larch-206

ARCST-409 - The Great American City 3-0-3
The American city is examined from multiple viewpoints historical, theoretical and critical and with respect to specific communities, as well as to general issues. Themes include the initial founding of settlements and their growth, the architectural character of the communities and how character relates to the socioeconomic and physical environments, and the contribution of all these factors toward the specific image or reputation associated with Americas best known or most typical cities and towns. Field trips vary by semester and are required. Prerequisite: AHIST-206 or LARCH-411;

ARCST-410 - Vernacular Architecture 3-0-3
This elective course provides the groundwork for the study of architecture built without architects or in some other way, unlike the buildings that comprise the standard architectural canon. Scholars estimate that 95 percent of buildings fall into this category. Depending on faculty expertise, focus will be on national and regional traditions, non-Western traditions or a combination of the two. Examples of vernacular architecture will be examined in the context of their materials, building technology, climate and culture. Prerequisite: AHIST-206 or LARCH-206

ARCST-412 - Adaptive Reuse and Sustainability 0-6-4
"The greenest building is the one already built!" Working with a site and community-based client in the Philadelphia area, students engage in the process of adaptive reuse of historic buildings and the philosophical motives behind reuse, including the tenets of sustainable design and urban regeneration. Through the interplay of history, historical significance, and the constraints of a program for reuse, students develop solutions for buildings to serve a new purpose while still relaying their unique character. Students research a structure, provide a written statement of the philosophical approach to reuse, develop a concept for adaptive reuse and create a final spatial solution. Prerequisite: ARCST-221 or ARCH-214 or INTD-202

ARCST-422 - Issues in Contemporary Architecture 3-0-3
Through discussion and field trips, this seminar investigates selected topics that have dominated architectural thinking during the 20th and 21st centuries. The course focuses upon major issues that continue to influence both the meaning and practice of contemporary architecture, such as: the relationship of architecture to the region and culture-at-large; the impact of technology and the digital realms; patterns of settlement and the city; the spatial and sensory experience of a building; sustainable design; and the role of adaptive reuse and historic preservation, to name a few. Students will critique contemporary theory and practice to develop their own architecture and design theory. Prerequisite: AHIST-305

ARCST-425 - Meaning in Architectural Ornamentation 3-0-3
This elective course raises some theoretical questions that are relevant to contemporary practice. What is ornament? How and why have attitudes toward architectural ornamentation changed through history? Is ornament essential to architecture? Lectures will be presented following a reconstructed chronology of theoretical topics; from the things (res materialis) of which architecture consists; to the 'rules' and 'abuses' of classical ornament; to the role of imitation; to the effects of the Industrial and Post-industrial Revolutions on theories of ornament. The relationship between the forms and the materials of ornament will be examined in lecture and group discussions. Prerequisite: AHIST-206 or LARCH-411;

ARCST-428 - Restoration/Rehabilitation Interiors 2-2-3
This is an elective lecture/lab course in which students work with period and historic spaces. The course introduces students to theories and techniques of adaptation and preservation of period spaces, preserving their historical integrity. The course will deal with applicable building codes, National Park Service standards of rehabilitation, designing within ADA guidelines and use of appropriate materials and lighting. Prerequisite: AHIST-305 or LARCH-307;

ARCST-434 - Water and Architecture 3-0-3
The rich architecture of public water in urban and rural contexts is a key to the cultural landscape. From the gravity systems of a Roman city, through the rich world of medieval water, and concluding with water powered by outside energy, we will study Western, Arab and Asian water systems. Through architecture, the course will link the technology of water cycles, purity, collection and storage with the aesthetics and rituals of culture. Prerequisite: SOC-2XX

ARCST-471 - Design Theory: Special Topics 3-0-3
This upper-level course is organized to take advantage of faculty members’ expertise and the interests of the student body. All topics chosen require that students have completed basic courses in architectural history and theory, so that this course can focus on (1) an advanced analysis of theoretical texts in architecture, literary texts and buildings; and (2) an examination of architecture as a cultural discipline that seeks to accommodate contemporary human needs and natural situations. Prerequisite: AHIST-306 or LARCH-411

AREAST-201 - Contemporary Europe 3-0-3
A multidisciplinary study of European society, history and culture with emphasis on the 20th century. Through a variety of materials and approaches including fiction, visual sources, political commentary and cultural artifacts, this course will examine the rise of the European Community and the continuing conflict between ethnic, cultural and political forces in the region. Prerequisite: WRTG-101 HIST-1XX
AREAST-201S - Contemporary Europe (study Abroad)  3-0-3
A multidisciplinary study of European society, history and culture with emphasis on the 20th century. Through a variety of materials and approaches including fiction, visual sources, political commentary and cultural artifacts, this course will examine the rise of the European community and the continuing conflict between ethnic, cultural and political forces in the region. This study abroad course is taught in Europe. Prerequisite:WRTG-101HIST-1XX

AREAST-202 - Latin America  3-0-3
A multidisciplinary introduction to Latin American history, society and culture through a variety of materials including literature, film, music, journalistic accounts and history with emphasis upon the 20th century. The course will emphasize the complex interplay between indigenous, Iberian and African influences in the forging of the continent's past, present and future. Students will examine the roots of everyday and state violence, as well as the current controversies over "liberalization" and "market" economies. Prerequisite:WRTG-101HIST-1XX

AREAST-205 - East Asia  3-0-3
A multidisciplinary course examining the shifting relationship between 'tradition' and 'modernity' in East Asia. The course will explore such topics as kinship, gender relations and stratification systems in the Asian past and present. Students will investigate some of the different paths of development that Asian societies have followed in the last two centuries including communism and state-directed capitalism. The course will close with Asia's increasing significance in the globalization of capitalism. Prerequisite:WRTG-101HIST-1XX

AREAST-208 - Africa  3-0-3
A multidisciplinary introduction to African civilization through a variety of sources including oral epics, film, music, literature, ethnographies, historical studies and visual materials with emphasis upon the 20th century. The course will investigate such topics as the cultural roots of African leadership, the enduring importance of family and community, the impact of the trans-Atlantic trade in human beings on African societies, the struggle to achieve a just, multi-ethnic society in Southern Africa, and the present continent-wide democratization process. Prerequisite:WRTG-101HIST-1XX

AREAST-210 - Middle East  3-0-3
The contemporary Middle East will be examined from an interdisciplinary perspective, including the region's history, geography, politics, economy, religions and cultures with emphasis upon the 20th century. The course aims to promote an understanding of the social dynamics of this region, as well as to provide the basic tools for a better understanding of world events in general. Prerequisite:WRTG-101HIST-1XX

AREAST-220 - Great Britain  3-0-3
An interdisciplinary study of Great Britain (England, Scotland, Wales and Northern Ireland) including social, political, economic and cultural issues with particular emphasis on the post-1945 period. Students will also learn how to understand cultural difference and to cope with culture shock. This course prepares students for study abroad programs in Great Britain. Open to all students. Prerequisite:WRTG-101HIST-1XX

AREAST-226 - Italy: Study Abroad Preparation  3-0-3
A multidisciplinary study of Italy including social, political, economic and cultural issues with particular emphasis upon the post-1945 period; attention is given also to Italy's role in Europe. The course also introduces students to how to learn a language and basic communication skills in Italian needed to cope with daily living in the society, with a special emphasis on issues relating to 'culture shock' when living, working and studying in Italy. Prerequisite: WRTG-101HIST-1XX

AREAST-227 - India and South Asia 3-0-3
South Asia A multidisciplinary introduction to the Asian Subcontinent, including the countries of India, Pakistan, Bangladesh and Sri Lanka. The region's modern history, geography, politics, economies, religions, cultures and social issues are each discussed in an integrative manner. Regional popular culture, including modern music, literature and cinema, are also analyzed in order to help students understand the rapidly changing nature of this region today. Prerequisite: WRTG-101HIST-1XX

AREAST-383 - Independent Study in Area Studies 0-0-3
See the statement on Independent Study in the 'Academic Policies' section.

ARTH-101 - History of Western Art I 3-0-3
The evolution of Western painting, sculpture and architecture from pre-history to the 16th century is covered. A thorough foundation in art and ideas with special emphasis on styles is presented as inspiration for designers.

ARTH-102 - History of Western Art II 3-0-3
The evolution of Western painting, sculpture and architecture from the 16th century to the present is covered with the same emphasis on styles.

ARTH-314 - History of Textiles and Costumes 3-0-3
A multi-faceted survey of textiles and costumes from ancient cultures to the present, technical-and visual-design aspects of the textile arts, the influence of trade on design trends, styles in period costume and the sociological implications of dress are all incorporated. [Writing Intensive] Prerequisite: DSGNFND-203 or DSGNFND-423 or VSDES-101

ARTS-101 - Integrative Design Process 1-5-3
Design thinking is a shared process and key component of innovation for all fields within the College of Design, Engineering and Commerce. In this course, students will develop and refine abilities to construct, analyze and use the process of designing within an interdisciplinary, team based environment. Integrative Design Process is a part of the DEC core and is a mandatory course for all students in the College of Design, Engineering and Commerce. This course also fulfills the Arts and Cultures requirement of the College Studies Program for students enrolled in the majors in the School of Business Administration and for students enrolled in majors in the College of Science, Health, and the Liberal Arts.

BCHEM-312 - Biochemistry I: Proteins 3-0-3
Proteins reviews fundamental protein synthesis, structure/function relationship, consequences of mutations, equilibrium binding, use of antibodies as investigative tools, catalytic mechanisms, kinetics, and regulation of enzymes. Direct application of course content to health and biotechnology are emphasized. Corequisite: BCHEM 312 Prerequisite: grade of "C-" or better in BIOL 104 and BIOL 104L and grade of "C" or better in CHEM-202 and CHEM 202L Prerequisite: CHEM-202 CHEM-202L (minimum grade of C) BIOL-104 BIOL-104L (minimum grade of C-) Corequisite: BCHEM-312L

**BCHEM-312L - Biochemistry I: Proteins Lab** 0-4-1

This lab introduces some common, basic techniques used routinely the study of proteins. The techniques learned include spectrophotometric, chromatographic, electrophoretic, and enzymatic analysis. Students prepare lab reports and seminar presentations typical of real-world dissemination methods. Corequisite: BCHEM 312 Prerequisite: grade of "C-" or better in BIOL 104 and BIOL 104L and grade of "C" or better in CHEM-202 and CHEM 202L Prerequisite: CHEM-202 CHEM-202L; (minimum grade C) BIOL-104 BIOL-104L; (minimum grade C-) Corequisite: BCHEM-312L

**BCHEM-313 - Biochemistry II: Metabolism** 3-0-3

Biochemistry II: Metabolism reviews the structures and metabolic transformations of carbohydrates, lipids, amino acids, and nucleotides. The regulation of metabolism by principles of protein function reviewed in BCHEM 312 is thematic throughout the course. Direct application of course content to health and biotechnology are emphasized. Corequisite: BCHEM 313L Prerequisite: grade of "C" or better in BCHEM-312 and BCHEM 312L Prerequisite: BCHEM-312 BCHEM-312L Minimum grade C in both.

**BCHEM-313L - Biochem II: Metabolism Lab** 0-4-1

This lab includes analysis of metabolites and the regulation of metabolism by proteins. The techniques learned include spectrophotometric, chromatographic, electrophoretic, and enzymatic analysis. Students prepare lab reports and seminar presentations typical of real-world dissemination methods. Corequisite: BCHEM 313 Prerequisite: grade of "C" or better in BCHEM-312 and BCHEM 312L Prerequisite: take BCHEM-312 BCHEM-312L or BIOL-312; Minimum grade of C in both. Corequisite: BCHEM-313L

**BIOL-101 - Current Topics in Biology** 3-2-3

(for non-science majors) Explore contemporary biological topics that you hear and read about or that are part of your daily life and learn the fundamental scientific concepts that underlie them. Topics will cover molecules to cells and organisms to populations as well as inheritance, development, infectious disease and what constitutes well-supported science. The course utilizes projects, hands-on activities, online discussions and group work to illustrate concepts.

**BIOL-102 - Introduction to Botany** 2-1-3

This course will review botanical topics including ecology and diversity, form, growth and reproduction, selective breeding and genetic modification and other newsworthy botanical topics that arise during the semester. These topics provide a foundation for those interested in agriculture and horticulture, plants in nutrition and pharmaceuticals, and alternative energy production. Class time will be a combination of lectures, discussions, hands-on activities, laboratory exercises, and field work. Pre-requisites: none Co-requisites: none
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 BIOL-103 - Biology I
(required for Science majors) The objective of this course is to gain an understanding of the cellular, molecular and genetic basis of life. Students will be introduced to the physical and chemical principles involved in biological processes, the microscopic world of the cell, regulation of gene expression and the laws that govern inheritance. This course and BIOL-104 and BIOL-104L Biology II are the introductory courses for science majors. Prerequisite: BIOL-103L Corequisite: BIOL-103L

 BIOL-103L - Biology I Lab
This laboratory course reinforces the understanding of cellular, molecular and genetic processes learned in Biology I lecture. Exercises include microscopic examination of cells and tissues, biochemical analysis of enzyme activity, osmosis, cellular respiration and genetic investigation, including electrophoretic analysis of mutation. Prerequisite: BIOL-103 Corequisite: BIOL-103

 BIOL-104 - Biology II
(for science majors) In this course students will apply the principles learned in Biology I to the structure and function of organisms. Physiological processes that will be examined include nutrition, gas exchange, transport and regulation of body fluids, chemical and nervous control, and reproduction. Prerequisite: BIOL-103, BIOL-103L Minimum Grade C- Corequisite: BIOL-104L

 BIOL-104L - Biology II Lab
(for science majors) In this course students will apply the principles learned in Biology I to the structure and function of organisms. Physiological processes that will be examined include nutrition, gas exchange, transport and regulation of body fluids, chemical and nervous control, and reproduction. Prerequisite: BIOL-103 BIOL 103L Minimum grade of C- Corequisite: BIOL-104

 BIOL-105 - Environmental Issues
In this course, students will explore the ecological, chemical, social, economic and political implications of critical global environmental issues including water pollution, pesticides, energy, acid rain, global warming, waste management, biodiversity loss and population growth. Alternative solutions proposed to address these experimental issues will be explored from multiple perspectives. Prerequisite: SCI-101 BIOL-101 BIOL-103 CHEM-101 or PHYS-101; SCI-201

 BIOL-201 - Human Anatomy and Physiology I
This course is the first of a two-semester sequence. This course will examine anatomical and physiological aspects of the following systems of humans: tissues, integumentary, musculoskeletal and neurologic. A close correlation between lecture and laboratory topics will be maintained. During lecture, both anatomy and physiology will be discussed however greater emphasis will be placed on the physiology of each system while during the laboratory session, greater emphasis will be placed on anatomy. Prerequisite: BIOL-104 BIOL-104L Minimum grade C- Corequisite: BIOL-201L

 BIOL-201L - Human Anatomy and Physiology I Lab
0-2-1
The A&P laboratory sessions will provide students with hands-on learning opportunities to help conceptualize content discussed in lecture. During lab, students will work on problem sets, examine and dissect organs and/or anatomical models, use microscopes, perform basic physiological experiments and examine cadaver specimens. During laboratory sessions of the first half of this two-semester course, emphasis will be placed on the anatomy of the relevant system. Prerequisite: BIOL-104 & 104L minimum grade of c- Corequisite: BIOL-201

BIOL-202 - Human Anatomy and Physiology II 3-0-3
This course is the second of a two semester sequence. This course will examine anatomical and physiological aspects of the following systems of humans: sensory, endocrine, circulation, respiration, nutrition-digestion, excretion and reproductive. During lecture, both anatomy and physiology will be discussed. While some lab sessions will focus mainly on the anatomy of the current system, most laboratory sessions will involve physiological experiments to provide students with greater insight into the physiology of the current system. A close correlation between lecture and laboratory topics will be maintained. Prerequisite: BIOL-201 BIOL-201L Corequisite: BIOL-202

BIOL-202L - Human Anatomy and Physiology II Lab 0-2-1
The A&P laboratory sessions will provide students with hands-on learning opportunities to help conceptualize content discussed in lecture. During lab, students will work on problem sets, examine and dissect organs and/or anatomical models, use microscopes, perform basic physiological experiments and examine cadaver specimens. While some lab sessions will focus mainly on the anatomy of the current system, most laboratory sessions will involve physiological experiments to provide students with greater insight into the physiology of the current system. Prerequisite: BIOL-201 BIOL-201L Corequisite: BIOL-202

BIOL-204 - Cell Biology 3-0-3
This course focuses on both structure and function of cellular components. Cellular structure is investigated from the molecular level to macromolecular assemblies and organelles with the major emphasis on how these structures function to form a dynamic cell interacting with its environment. Cell growth, reproduction and communication are discussed. Cells studies include single cells to those organized into tissues in multicellular organisms. Prerequisite: CHEM-201 CHEM-201L BIOL-104 BIOL-104L Corequisite: BIOL-204L

BIOL-204L - Cell Biology Lab 0-3-1
The purpose of this laboratory is to introduce the student to some of the procedures and techniques used to investigate cell structure and function, including use of the microscope, differential cell fractionation and biochemical exercises. Prerequisite: CHEM-201 CHEM-201L BIOL-104 BIOL-104L Corequisite: BIOL-204

BIOL-205 - Plant Biology 3-0-3
WRITING INTENSIVE: Plant Biology (writing intensive) Students will study the diversity and evolution of plants, their structure, selected physiological processes, and current topics in plant biology. Prerequisite: BIOL-104 BIOL-104L Corequisite: BIOL-205L

BIOL-205L - Plant Biology Lab 0-3-1
WRITING INTENSIVE: This laboratory course includes the examination of algae to flowering plants, and cells, tissues and organs to whole plants. Plant species will be propagated by cloning and spore culture. Prerequisite: BIOL-104L Corequisite: BIOL-205

BIOL-207 - Principles of Genetics 3-0-3
This course will consider Mendelian genetics and the contributions of other early research on our present knowledge. Included will be crossover consequences, gene mapping, sex linkage, statistical genetics, mutation, chromosome abnormalities and human genetics. Prerequisite: BIOL-104L Corequisite: BIOL-207L

BIOL-207L - Principles of Genetics Lab 0-3-1
This is the laboratory course which must be taken to complete the genetics requirement. The laboratory exercises use current techniques of DNA technology as applied to disease diagnosis, forensic determinations and the isolation and structural examination of the DNA molecule. Prerequisite: BIOL-104L Corequisite: BIOL-207

BIOL-208 - Biodiversity ----- 
The purpose of this course is to explore what is known about the abundance and distribution of all species on earth, what threatens and supports these species and what efforts humans have taken both in the United States and globally to destroy and conserve biodiversity. Genetic variability, demographic and population dynamics, environmental variation, economic value and legal status will be compared for the design of captive breeding programs, protected areas management and sustainable use alternatives. Prerequisite: 2 of the following courses SCI-101 SCI-102 BIOL-101 BIOL-103 CHEM-101 CHEM-103 PHYS-101 PHYS-201(2879);

BIOL-209 - Medicinal Plants 3-2-4
This writing-intensive course focuses on the use of plants and plant products in human health. Topics include a survey of plants and plant families with medicinal properties, their cultivation and conservation, physiological effects of plant extracts, plantderived drugs, historical and cultural aspects of medicinal plant use. Prerequisite: Writing II and BIOL 104 & 104L (min Grade C-)

BIOL-221 - Microbiology 3-0-3
This course provides an introduction to environmental, industrial, food and medical microbiology. An understanding of the methods by which microbes produce disease as well as interact with body surfaces to maintain human health is also discussed. [Writing Intensive] Prerequisite: BIOL-104 Minimum grade C-; BIOL-104L Minimum grade C-; Corequisite: BIOL-221L

BIOL-221L - Microbiology Lab 0-3-1
Laboratories are designed to complement and expand information from lectures. Students will gain experience in classical techniques used by environmental and clinical microbiologists for determining unknown bacteria and molds. Practical studies will also compare historical and current methods for physical and chemical removal of microbes. Prerequisite: BIOL-104L Corequisite: BIOL-221

BIOL-2XX - Biology Designated Elective ----- 
This is a transfer equivalency for a Biology Designated Elective
**BIOL-301 - Ecology**

This course quantitatively measures the relationship between organisms and their environment at the population, community, landscape and global level. Critical ecological controversies will be explored. Field data for both flora and fauna will be collected, analyzed and presented following guidelines from professional scientific journals. Prerequisite: BIOL-104 BIOL-104L; Minimum grade C-;

**BIOL-302 - Medical Genetics**

The course in medical genetics deals with the definition of the role of genetic variation and mutation in predisposing to disease, modifying the course of disease, or causing the disease itself. It will cover single gene defects caused by a critical error in the information carried by a single gene, diseases due to an excess or deficiency of the genes contained in whole chromosomes or segments of chromosomes, and multifactorial inheritance diseases which result of more than one genes which can act together to produce or predispose to a serious defect. The course will also introduce the method collection and interpretation of a family history as an integral tool in medical genetics, and integrate this in all aspects of the presentation. Prerequisite: take biol-207 biol-207L;

**BIOL-303 - Histology**

Histology provides students with an integrated perspective of how adaptations in physiology, biochemistry and morphology allow cellular organization into human organs and support systems. Laboratory studies will introduce students to abnormal embryology, which is the core of many aspects of disease, especially those affecting children. As well as analysis of prepared slides, students will learn to interpret and present abnormal histology/embryology in the form of ‘case histories. Prerequisite:BIOL-104BIOL-104L.

**BIOL-307 - Developmental Genetics**

This course is an elective for students who have completed BIOL 104/104L and required for those in the genetics minor. It will consider animal embryology from gametogenesis (of sperm and egg) to organogenesis (development of organs) and specification with emphasis placed the genes controlling these processes. The course includes cytogenesis (development of cells) and morphogenesis (genes which control change in body form) of the developing embryo. Prerequisite:BIOL-104 and BIOL 104L Grade of C- or better

**BIOL-308 - Tropic Field Studies Costa Ri**

**BIOL-315 - Immunology**

(writing intensive) The objective of this course is to introduce students to the innate mechanisms by which the human body prevents infection, as well as those involved in specifically acquired immunity. Topics include the structural, functional and genetic aspects of a fully competent immune system that can successfully prevent attack by millions of microorganisms each day. Exploration of the many medical conditions which result from hyperactive- or impaired-immune responses including allergy, autoimmunity, cancer and AIDS are studied. Prerequisite:BIOL-221/221L (Min grade C-) and WRIT 2XX
BIOL-316 - Wildlife Ecology and Conservation

This course is an international overview of current strategies used for wildlife conservation of mammals, birds, fish and other vertebrate species. Population ecology, habitat, disease, foraging and behavior will be covered in depth. Students will research the historical, legal and economic foundation for current best-management practices. Through intensive field studies, students will compare and contrast scientific-field techniques used in wildlife management.
Prerequisite: ECBIO-301

BIOL-317 - Experimental Field Ecology

This course focuses on the historical, legal, ethical, economic and scientific foundation of the emerging field of conservation biology. Genetic, ecological and population analytical methods will be applied to case studies of conservation programs from around the world with an emphasis on research design critiques. Experimental design and statistics for field problems will be covered in depth. Students will design, implement, analyze and present their findings from an ecological field experiment. Prerequisite: ECBIO-301

BIOL-318 - Urban Ecology, Restoration and Planning

Natural lands and natural systems occur in densely populated areas and because of the human impacts present vast challenges to the landscape architects and environmental planners who are entrusted with their protection and enhancement. This course studies in detail urban ecological systems, and the human impacts that shape them. The student will also be exposed to current restoration techniques, which are being utilized in the urban setting to restore natural ecological functioning to the city. Prerequisite: SCI-101 or BIOL-104 and BIOL-104L with minimum grade C-

BIOL-319 - Oceanography

An introduction to the biological, chemical, geological and physical aspects of the ocean environment with particular emphasis on the importance of the oceans to human beings and the impact we have on them. Students may participate in an optional field trip highlighting estuarine/coastal biodiversity, aquacultural techniques and oceanographic sampling techniques. Prerequisite: 2 from the following: SCI-101, SCI-102, BIOL-101, BIOL-103, CHEM-101, CHEM-103, PHYS-101, PHYS-201

BIOL-320 - Intro to Biotechnology

This course is an introduction to the field of biotechnology, one of the major technologies of the twenty-first century. Its wide-ranging, multi-disciplinary activities include recombinant DNA techniques, cloning, and the application of microbiology to the production of goods from bread to antibiotics. This course introduces both the principles and applications of Recombinant DNA technology to animals, plants and microbial organisms. Basic biotechnology, biology and bioprocessing topics will be combined to provide a complete overview of biotechnology. Students engage in ethical debate surrounding biotechnology. Students review employment and careers in the biotechnology and biopharmaceutical industries. Prerequisite: Prerequisites required: CHEM-104/L and a C- or better in BIOL-104/L

BIOL-371 - Selected Topics in Biology 3-0-3

This course provides an opportunity to explore topics in biology not developed in other courses. Examples include specialized areas of organismal biology, conservation biology, developmental and molecular biology. Students may take this course more than once as the topics differ each time it is offered. Prerequisite: BIOL-104 & 104L Minimum grade C
BIOL-391 - Research in Biology I 0-9-3
Independent research is taken under the guidance of a faculty member. The research will include a written proposal prior to initiation of the project, a literature search, experimental work, a written abstract and report upon completion of the semester and an oral presentation of the work. Guidelines for approval and for final evaluation are available in the College of Science, Health and the Liberal Arts office.

BIOL-392 - Research in Biology II 0-9-3
Continuation of BIOL-391. Prerequisite: BIOL-391

BIOL-398 - Biology Designated Elective ----- 
This is a transfer equivalency for a Biology Designated Elective

BIOL-3X1 - Writing Intensive Elective ----- 
This is a placeholder. Choose 1 writing elective from BIOL-209, 221 or 315

BIOL-3XX - Designated Elective ----- 
This is a placeholder. Choose 1 designated elective in consultation with advisor

BIOL-401 - Molecular Genetics 3-3-4
This lecture/lab course reviews the structure and function of the macromolecules that manifest genetic information. Topics include DNA and chromatin structure, replication, recombination, repair, RNA structure transcription, regulation of transcription and downstream processes and current investigative technologies. The lab enables students to have hands-on experience with handling and analysis of macromolecules. Students prepare lab reports and seminar presentations typical of real-world dissemination methods. Prerequisite: grade of "C-" or better in BIOL 104 and BIOL 104L Prerequisite: BIOL-104 BIOL-104L

BIOL-402 - Genetics Seminar 3-0-3
This writing intensive course will expose the student to the fields of population genetics and several emerging and important subdisciplines (behavioral, conservation, and evolutionary genetics). Human health will be a recurring theme. The seminar format will encourage an independent learning experience. Papers and presentations will build research, communication, and critical thinking skills. [Writing Intensive] Prerequisite: take biol-207 biol-207L and writing 2xx

BIOL-407 - Comparative Vertebrate Anatomy 3-3-4
A comparative study of the structure, function and evolutionary relationships of the major vertebrate groups. Prerequisite: BIOL-104 BIOL-104L

BIOL-409 - Cellular Analysis 3-3-4
This course will teach fundamental methods of contemporary cellular and biotechnology. Laboratory exercises focus on microscopic, biochemical and molecular analysis of cells and cell structures. Prerequisite: BIOL-204 BIOL-204L

**BIOL-411 - Life Science Seminar 3-0-3**

The course covers recent advances in the biological and medical sciences by way of formal presentations and discussions involving both students and invited faculty. In addition, students will learn techniques for the preparation of a research project involving a literature search. Students will be required to carry out a research project and present a formal seminar on this work to their peers. Prerequisite: BIOL-104 BIOL-104L

**BIOL-413 - Pathology 3-3-4**

Pathology represents an integrated perspective of how disease results from a series of common, underlying changes resulting from initial and continued cell stresses. Students will relate disease processes to the symptoms and signs reported by patients and interpreted by physicians through the use of case history presentation and will acquire a variety of light microscopy techniques routinely used in hospitals for the diagnosis and monitoring of abnormal pathology. Prerequisite: BIOL-202 or BIOL-303

**BIOL-415 - Natural Resource Management 3-0-3**

(writing intensive) This course explores the existing state of the world's natural resources including forests, fisheries, rangeland, soil, water, wildlife, air and energy. Management options for each resource will be explored in depth. Field trips will compare cost, impact and implementation of different approaches used by environmental agencies. Students will write and present a resource-management plan for a key issue. Prerequisite: ECBIO-301

**BIOL-493 - Preceptorship I 0-0-3**

The preceptorship experience is designed to enhance the student's knowledge, technical skills and problem-solving abilities within the biomedical science realm. These studies will be performed off campus under the supervision of biomedical professionals and other practitioners in the medical sciences, previously approved by the program director. Designed to be taken as summer classes between the sophomore and junior years. A minimum of 54-hours required, preferably as six, one-week periods of nine hours per week.

**BIOL-494 - Preceptorship II 0-0-3**

The preceptorship experience is designed to enhance the student's knowledge, technical skills and problem-solving abilities within the biomedical science realm. These studies will be performed off campus under the supervision of biomedical professionals and other practitioners in the medical sciences, previously approved by the program director. Designed to be taken as summer classes between the sophomore and junior years. A minimum of 54-hours required, preferably as six, one-week periods of nine hours per week.

**BLAW-301 - Business Law 3-0-3**
Lecture, class discussion and case problems emphasizing legal principles on the following topics: the legal environment, government regulation of business, contracts, personal property, environmental liability as it relates to business transactions, bankruptcy, employment and human resources, and current legal issues. The legal environment as it impacts business decision making is addressed. [Writing Intensive] Prerequisite: WRTG-101 WRTG-101G WRIT-101 or WRIT-101G;

BUS-317 - Opportunity Findn Emergn Mkts 3-0-3
Students learn how to describe, visualize, develop and assess a business model by utilizing design thinking and qualitative research methods within a cultural immersion context and through a combination of classroom seminars and experiential instructions. Central to this learning process is identifying value propositions for a range of fields in the private sector and non-profit sectors. While abroad, students will have daily seminars from area experts and site visits to organizations representing diverse industry sectors.

CAD-201 - Intro to Digital Imaging 2-2-3
This course focuses on increasing the student's individual level of computer literacy through the exploration of the basic structure of the operating system, general internet skills and the fundamentals of both raster and vector based software. Course projects provide hands-on experience with Adobe Photoshop and Adobe Illustrator software.

CAD-204 - CAD for Fashion Design 2-2-3
Computer-aided design is utilized in every segment of the fashion industry from concept development, fabric design and illustration to line development, technical drawing, and presentations. Students learn CAD software and gain skills utilized in a variety of industry-related projects. Prerequisite: FASHDES-252 and FASHDRW-207

CAD-206 - CAD I for Industrial Design 1-4-3
The course introduces students to computer-aided design with a focus on the industrial design processes. In an intuitive fashion, students create and refine designs using a solids-modeling software package. In order to recognize the critical role CAD plays in the development of designs, students will use designs created in design studio courses as the subject matter of the CAD activities. Design-control drawings, three-dimensional rendered drawings and perspective drawings will be the course's output.

CAD-206N - CAD I for Industrial Design ----- 
The course introduces students to computer-aided design with a focus on the industrial design processes. In an intuitive fashion, students create and refine designs using a solids-modeling software package. In order to recognize the critical role CAD plays in the development of designs, students will use designs created in design studio courses as the subject matter of the CAD activities. Design-control drawings, three-dimensional rendered drawings and perspective drawings will be the course's output.

CAD-301 - Advanced Computer-Aided Textile Design 1-5-3
This course focuses on both the conceptual and technical aspects of digital portfolio presentation for the textile designer. Course projects provide an in-depth exploration of Adobe Photoshop, Adobe Illustrator, InDesign and Dreamweaver software. Prerequisite:CAD-201
CAD-306 - CAD II Digital Design Techniques 1-4-3
This course will build upon principles introduced in introductory CAD courses. It is primarily a laboratory course in which students will learn to take their early design concepts through to the final presentation using advanced digital design techniques. Students will use multiple digital design software packages across computer platforms with an emphasis on CAID packages such as NURBS modelers and animation software, as well as vector-based, desktop-publishing programs and bitmap-based programs. Prerequisite: CAD-206

CAD-401 - Apparel CAD/CAM 2-2-3
A comprehensive course that incorporates software widely used in the apparel industry where patterns are created then graded and made into markers. Industry standards and specifications are followed for each area. Students use software to solve problems and increase productivity. Prerequisite: FASHDES-213

CHEM-101 - General Chemistry 3-2-3
(for non-science majors) This course allows students to pursue further study of chemical issues as they relate to the consumer and to health. Students will become familiar with issues surrounding the use of everyday products such as laundry products, personal-care products, plastics, fibers and food additives. Also included are an introduction to organic chemistry, biochemistry and the chemistry of some health-related issues. Students should complete this course with an awareness of the complexities of the chemical structures in their daily lives and the issues involving their use and abuse, so that they may make more informed decisions.

CHEM-103 - Chemistry I 4-0-3
(required for Science and Engineering majors) An introduction to the fundamental laws and theories of chemistry, including the properties of matter, chemical reactions and stoichiometry, energy and thermochemistry, atomic structure, and the periodic table. Basic knowledge of algebra, geometry and trigonometry is presumed. Students enrolled in MATH-099 may not take this course. This course is not recommended for students enrolled in WRTG-099 or READ-099 fundamentals courses. Prerequisite: CHEM-103L Corequisite: CHEM-103L

CHEM-103L - Chemistry I Lab 0-3-1
(required for Science and Engineering majors) This hands-on laboratory-based course highlights concepts covered in Chemistry I Lecture. Emphasis is placed on developing good laboratory and data analysis skills. Experiments include acid/base titrations, heat determination using calorimeters and oxidation/reduction reactions. Prerequisite: CHEM-103 Corequisite: CHEM-103

CHEM-104 - Chemistry II 4-0-3
(required for science majors) Continuation of CHEM 103 Chemistry I. that provides an introduction to chemical bonding and molecular geometry, property of gases, intermolecular attractions, solutions, kinetics, chemical equilibrium, acids, bases and thermodynamics. Prerequisite: CHEM-103 (minimum grade C-), CHEM-103L Corequisite: CHEM-104L

CHEM-104L - Chemistry II Lab 0-3-1
This hands-on laboratory-based course highlights concepts covered in Chemistry II Lecture. Analytical and data interpretation/presentation skills are honed through a series of experiments including aspirin synthesis and determination of vitamin C content.

Prerequisite: CHEM-103
Corequisite: CHEM-104

**CHEM-201 - Organic Chemistry I**

3-0-3

First semester in a 2-semester lecture series on Organic Chemistry. Topics include origin and history of organic chemistry; chemical bonding, structure and properties of organic compounds; structure, properties and nomenclature of the alkanes; stereochemistry, and a comprehensive discussion of the substitution and elimination reactions of alkyl halides. Prerequisite: CHEM-104 (minimum grade C-), CHEM-104L
Corequisite: CHEM-201L

**CHEM-201L - Organic Chemistry I Lab**

0-4-1

First semester in a 2-semester companion course to Organic Chemistry Lecture. Topics include practical instruction in basic organic chemistry laboratory techniques such as recrystallization, distillation, extraction, reflux, thin-layer chromatography, gas chromatography, and IR spectroscopy. Utilizing these techniques, the synthesis and characteristic reactions of alkyl halides are explored. Prerequisite: CHEM-104
Corequisite: CHEM-201

**CHEM-202 - Organic Chemistry II**

3-0-3

Second semester in a 2-semester lecture series on Organic Chemistry. Topics include the structure, nomenclature, synthesis and characteristic reactions of alkenes, alkynes, alcohols, aldehydes, ketones & aromatic compounds. Prerequisite: CHEM-201 (minimum grade C-), CHEM-201L
Corequisite: CHEM-202L

**CHEM-202L - Organic Chemistry II Lab**

0-4-1

Second semester in a 2-semester companion course to Organic Chemistry Lecture. Utilizing techniques learned in first semester, the synthesis and characteristic reactions of alkenes, alcohols, aromatics and aldehydes/ketones are studied. Prerequisite: CHEM-104 CHEM-104L; Corequisite: CHEM-202

**CHEM-206 - Forensic Chemistry**

3-3-4

Students will become acquainted with the various sub-disciplines of forensic science with emphasis on the chemical principles used to collect, process, identify, quantify and qualify crime scene/victim evidence. Through lectures and case studies, the scientific foundations for the examination of physical, chemical, and biological evidence will be explored. Laboratory sessions will provide hands on experience with modern forensic techniques used to analyze physical evidence such as blood, glass, and fibers. The course will culminate with a mock trial in which students present the results of their analytical investigations to a jury. Prerequisite: take chem-104 chem-104L biol-104 biol-104L;

**CHEM-214 - Bioorganic Chemistry**

3-0-3
This course is a one-semester overview of organic chemistry and biochemistry for PA majors and open to those who meet the prerequisites. After introduction to different functional groups, the course provides a systematic study of the biologically important compounds, including amino acids, proteins, nucleic acids, enzymes, carbohydrates and lipids. Emphasis will be placed upon the structure, properties and functions of these compounds. The course will culminate in an overarching discussion of the intricacies of metabolism of some of these biomolecules.

Prerequisite: BIOL-104 Minimum grade C
BIOL-104L Minimum grade C
CHEM-104
CHEM-104L

CHEM-2XX - Advanced Chemistry Elective

This is a placeholder. Choose 1 advanced elective in consultation with advisor.

CHEM-305 - Physical Chemistry I 3-4-4
Fundamental topics in thermodynamics are covered, emphasizing the first three laws of thermodynamics. Applications of these principles and chemical equilibrium to ideal gases, real gases, solutions and solids are discussed. Chemical kinetics is covered in detail. A brief examination of the field of chemical dynamics is included. Where appropriate, current research in these areas will be discussed. The laboratory will emphasize using chemistry techniques such as FTIR, UV-Vis, GC and computational programs to examine fundamental physical processes. Prerequisite: PHYS-203 and PHYS-203L CHEM-202 and CHEM-202L Corequisite: MATH-213

CHEM-306 - Physical Chemistry II 3-4-4
Quantum mechanics is the fundamental theory underlying the description of atoms. It details how atoms can interact on the microscopic level. Quantum mechanics will be used to understand the observed spectroscopic properties of atoms and molecules. Statistical mechanics, which connects the macroscopic world of thermodynamics and kinetics with quantum mechanics, will also be covered. The laboratory is a continuation of CHEM-305 with an emphasis on spectroscopy. Prerequisite: CHEM-305

CHEM-309 - Inorganic Chemistry 3-3-4
An advanced course in modern inorganic chemistry that covers structure and bonding, symmetry, thermodynamics and mechanisms; along with a systematic discussion of reactions and properties of representative main group and transition metal elements. This course will also illustrate some of the relationships between inorganic chemistry and other areas of chemistry, including biochemistry. The laboratory covers a variety of synthetic techniques and physical and analytical methodologies that are particularly applicable to inorganic compounds. Prerequisite: CHEM-306

CHEM-323 - Instrumental Methods of Analysis 3-3-4
WRITING INTENSIVE: This course provides an overview of the variety of analytical and instrumental methods for quantitative and qualitative chemical analysis. Topics include gravimetric and volumetric analysis; ultraviolet, infrared, and visible spectroscopy; gas and liquid chromatography; and mass spectrometry. Laboratory sessions hone students’ analytical- and critical thinking skills. Students are required to work on a group research project and present their findings at a local/regional scientific conference. [Writing Intensive] Prerequisite: CHEM-202 CHEM-202L

CHEM-371 - Selected Topics in Chemistry 3-0-3
A study of a specialized topic and/or recent developments in one of the fields of chemistry. Sample topics might include theoretical organic chemistry, spectroscopy, photochemistry, stereochemistry and computational chemistry. Prerequisite: CHEM-202CHEM-202L

CHEM-391 - Research in Chemistry I 0-9-3
Students interested in pursuing independent research in any field of chemistry or biochemistry under faculty supervision must submit a proposal to the dean of the School of Science and Health for approval at least two weeks before pre-registration. The research will include both literature search and experimental work in any current field of chemistry or biochemistry. At the end of the semester, students will be expected to do an oral presentation to the faculty during reading days and prepare a comprehensive written report as mandated by the American Chemical Society.

CHEM-392 - Research in Chemistry II 0-9-3
Continuation of CHEM-391 Prerequisite: CHEM-391

CHEM-3XX - Advanced Chemistry Elective
This is a placeholder. Choose 1 advanced elective in consultation with advisor.

CHEM-405 - Advanced Organic Chemistry 3-0-3
An in-depth study of the factors that affect organic reactions such as solvent, energy, kinetic and steric factors. These are used to examine a variety of reaction mechanisms such as nucleophilic substitution, elimination, aromatic substitution and rearrangement reactions. [Writing Intensive] Prerequisite: CHEM-202CHEM-202L

CHEM-410 - Polymer Chemistry 3-0-3
Physical and chemical study of natural and synthetic polymers based on the mechanism of polymer formation, including such topics as stereochemistry, cationic, anionic and free radical polymerization reactions and the formation of stereospecific polymers by use of heterogeneous catalysts. Prerequisite: CHEM-405

CHEM-417 - Environmental Chemistry 3-3-4
Environmental Chemistry will allow students to develop a general understanding of the role of chemistry and physiochemical concepts in the development, identification and solution of environmental problems. This course will provide the necessary background for conducting chemical analyses on water, air and soil samples. The skills learned in this course will be employed in learning more about the application of chemical principles in solving environmental problems. Prerequisite: CHEM-104CHEM-104L Corequisite: CHEM-417L

CHINE-101 - Chinese I 3-0-3
A beginner's course designed for students with very little or no knowledge of the language. The focus is on basic oral expression, listening comprehension and acquiring simple reading and writing skills, so that students can gain confidence in the language and to begin to have conversations. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.
CHINE-201 - Chinese II 3-0-3

A beginner's course designed for students who have completed one semester of college-level language or the equivalent. The focus is on oral expression, listening comprehension and the acquisition of simple reading and writing skills, so that students can gain confidence in the language and conduct conversations and other social interactions in the language with some level of ease. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions. Prerequisite: take CHINE-101;

CMGT-101 - Construction Graphics 2-2-3

CMGT 101 Construction Graphics (2-2-3) An introduction to the nature and vocabulary of graphical expression used in construction drawings, details, and sketches to include, architectural, structural, civil, mechanical, electrical, disciplines. Students develop an appreciation for the importance of effective graphical documentation and interpret drawings in terms of form, size, distance, quantity and interrelation of elements. Emphasis is placed on effective sketched, verbal, and written expression of drawing interpretations to audiences not familiar with construction drawings.

CMGT-102 - Intro the Constructn Industry 3-0-3

Through analysis of relevant case studies, this course examines construction management concepts and principles as applied to contemporary practice and investigates the intersecting roles of construction manager, architect, client, and general contractor. Topics include planning, programming and documentation from pre-construction to project close-out; legal aspects relative to environmental protection, public and worker safety, contract documents, insurance and bonds; labor relations and inspection; project control, total quality management and ethics in construction management.

CMGT-104 - Intro to Estimating and Schdl 3-0-3

Utilizing pertinent case studies, this course focuses upon the planning and scheduling stages of the building process, with particular emphasis upon reading construction documents and basic estimating principles applied to small-scale, residential and commercial projects. Construction site procedures as well as techniques for estimating unit quantities and costs of materials, labor and equipment, are introduced, and given industry application utilizing building specifications and computer software. Prerequisite: take ARCH-427 or CMGT-102

CMGT-1XX - Construction Mgmt Elective -----

Placeholder: Construction Management Elective. Take 1 Construction Management Course in consultation with checksheet

CMGT-200 - Const Proj Plann & Scheduling 2-2-3

A study and application of the tools and concepts used in planning and controlling construction projects. Students employ the Critical Path Method (CPM) of project scheduling, resource leveling, and time-cost analysis using manual and computer-based solution methods to develop and maintain working project schedule models. Prerequisite: take cmgt-101 or arch-428 or permission of prog director
CMGT-202 - Const Cost Estimn & Budgtn 2-2-3
This experiential course familiarizes students with manual and computer aided techniques of contract document quantity surveys, estimated cost calculations, and the development and maintenance of purchase and management budgets. Prerequisite: ARCH-428 or CMGT-104 & CMGT-101 or perm of Prog dir

CMGT-204 - Behavior of Materials 3-0-3
This course familiarizes students with the mechanical behavior of materials and systems in equilibrium using Newton's laws of motion. Students will examine the principles of force equilibrium, construct free-body diagrams, and model the effect on various structural shapes and materials under load. Prerequisite: MATH-103 or MATH-111 & PHYS -101

CMGT-206 - Building Systems 3-0-3
This course introduces students to the foundation, structural, envelope, Mechanical, electrical, plumbing, and automation systems and their interaction in a functioning building facility. Emphasis is placed on value achieved through constructability, performance, and sustainability characteristics. Prerequisite: CMGT-102;

CMGT-208 - Materials & Mthds of Construc 3-0-3
This course is an introduction to the materials, assemblies and methodologies of general construction organized around Construction Specifications Institute division format. Topics include site-work and excavation techniques and proceed through basic building systems in concrete, masonry, wood, plastic and steel along with interior and exterior finishes. Emphasis is placed on achieving design intent through appropriate construction techniques and sequencing. Case studies, site visits, ongoing project examples are an integral part of the course. Prerequisite:CMGT-104

CMGT-300 - Constructn Acct/Cost Control 3-0-3
This course familiarizes students with construction cost accounting systems and reporting formats. Students will examine the sources of cost data and report generation and will evaluate performance based on analysis of data for labor, material, equipment, and subcontract cost. Emphasis is placed on the formulation of management decisions and the ongoing evaluation of their effectiveness. Prerequisite: CMGT-202 ACCT-101;

CMGT-302 - Construction Contract Admin. 3-0-3
This course familiarizes students with the various forms of contract used in the construction industry and best practices for their administration and management. Through exploration of cases and current events, students will explore contract operation regarding rights, duties, responsibilities, claims management and assignment of risk. Emphasis is placed on the management of contracts as a means for the achievement of overall project success. Prerequisite: CMGT-102;

CMGT-304 - Construc Safety & Risk Magmt. 3-0-3
This course familiarizes students with best practices for risk identification, assessment, and mitigation for construction businesses and projects. Students will examine case examples of construction industry businesses and construction project site conditions, identify and assess specific risks, and formulate management plans to mitigate and manage the risks. Particular emphasis is placed on OSHA compliance and worksite safety management. Prerequisite: take CMGT-102.

**CMGT-306 - Construction Site Operations**  
2-2-3  
This course familiarizes students with methods, procedures, and practices required for the effective management of field operations preparing students to assess construction project sites and prepare comprehensive site management plans. The course explores aspects of site management such as layout, logistics, sustainable practices, administration, and false work in a hands-on collaborative environment. Prerequisite: CMGT-102

**CMGT-308 - Construction Safety Lab**  
0-1-1  
This one hour course deepens student awareness and understanding of jobsite safety hazards, mitigation techniques, and OSHA Regulation compliance. Particular emphasis is placed on hands-on practical application of the principles covered in CMGT 3xx, Construction Safety and Risk Management. Prerequisite: CMGT-102; Corequisite: CMGT-304

**CMGT-310 - Constructn Surveying**  
1-3-3  
This course presents the basic surveying principles and their applications in construction. Students are introduced the use of surveying equipment to achieve horizontal and vertical distance measurement, horizontal and vertical angle measurement, and computation of coordinates. The course includes additional topics like field data collection for site mapping, such as topographic surveys, boundary surveys, feature location, ground survey control, and traverse computations in addition to construction layout practices with the use of digital instruments.

**CMGT-398 - CMGT Designated Elective**  
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This is a transfer course equivalency for a designated elective in the Construction Management Program.

**CMGT-3XX - Construction Mgmt Elective**  
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This is a transfer course equivalency for a designated elective in the Construction Management Program.

**CMGT-410 - Heavy Construction Principles & Practice**  
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This course is intended to provide students with an introduction to the principles and practices employed in heavy/civil infrastructure and marine construction. The course content is presented from a practical perspective focusing on the management of heavy/civil construction projects. The course is designed for construction management majors as well as those majoring in related fields and is intended to provide a broad understanding of heavy construction techniques and contracting. Prerequisite: CMGT-200, 202 & 300

**CMGT-450 - Construction Mgmt Seminar**  
3-0-3
This seminar course is an opportunity for upper-level construction management students to explore emerging trends in the construction industry while integrating the knowledge and skills developed through their previous coursework. Seminar discussions will respond to readings, guest lecturers and project reviews presented by industry partners. The course includes individual and group research projects the results of which are also discussed during seminar meetings. Material and discussions will include topics such as professional practice, integrated project delivery, industriespecific ethical challenges, sustainable practice, and career alternatives. [Writing Intensive] Prerequisite: CMGT-302 CMGT-300;

CMGT-499 - Construction Capstone Project 1-4-3
This course develops a higher level understanding of the construction process by examining the problem solving that begins with conception and progresses through the completion, start-up and maintenance of a project. Utilizing the technical design drawings that students completed in ARCH-324 Visualization: Experimental Modeling and generated through Building Information Modeling (BIM) software, this course provides an opportunity to simulate the progressive stages of a construction project, thereby synthesizing knowledge and skills acquired in previous coursework. Prerequisite: Earned 24 credits in CMGT

COLLST-499 - Contemporary Perspectives 4-0-4
(writing intensive) The capstone seminar of the College Studies program, this writing intensive-course examines the origins and impact of current international trends with an emphasis on the period since World War II. Students also address questions of intercultural understanding at the global, regional and local level. A final research paper requires students to connect these global trends with issues in their profession. Prerequisite: one Area Studies or Foreign Language 1-HUMN-215 HUMN-223 HUMN-198 HUMN-225 OR LIT-225; one Jr. Seminar

COMM-101 - Introduction to Communication 3-0-3
This course introduces students to the history, theory, practices, institutions, and impact of modern communications media. We will examine both print and non-print media and address the media's impact on society, how audiences respond to media, how people produce and consume media, and media industries and careers. Students will apply what they learn by composing in multiple mediums and other means of communication integral to contemporary communications.

COMM-102 - Intro to Public Speaking 3-0-3
This course is designed to expand your public speaking “tool box”. By preparing and performing a range of speaking assignments, engaging in in-class activities, and reading the assigned textbook, each student should leave this course with an increased comfort in expressing ideas before various audiences. These skills will not only be useful in larger, formal public speaking settings, but also for small group and interpersonal communications, and for constructing, analyzing and criticizing claims, arguments and rhetorical techniques more generally.

COMM-105 - Design As Communication 3-0-3
Students learn to apply basic principles and elements of design as they relate to communication. Through a study of found examples of visual design and by applying design concepts to their own work, students learn to explain how hierarchy of information, sequence of delivery, and juxtaposition of type and image all build toward audience trust and understanding of the visual experience. In addition, students will explore wider implications of considering design as communication. (Not available to majors from the School of Design and Engineering or the College of Architecture and the Built Environment)
COMM-107 - Radio Production  3-0-3

This course provides a brief introduction to the principles, tools, and techniques of digital audio recording, editing and production. Through discussion, demonstrations, and hand-on experiences in the studio and the field, students will gain an understanding of the nature of sound, basic microphone usage, digital audio recording equipment and techniques, digital sound editing using Audacity software, writing, narration, and production techniques used in music, news and audio documentaries.

COMM-199 - Planning Your Prof. Narrative  1-0-1

In this course, the first of four one-credit courses conceptualized as an ongoing planning process, students learn processes of reflection, self-discovery and decision-making and then apply these skills to begin creating a strategic, professional narrative of their educational path and future plans. (1 credit)

COMM-1X1 - Comm Primary Spec Course

This is a placeholder. Choose 1 Primary Specialization course in consultation with advisor

COMM-1X2 - Comm Primary Spec Course

This is a placeholder. Choose 1 Primary Specialization course in consultation with advisor

COMM-200 - Reading the Visual  3-0-3

Students will analyze various visual genres such as comics, graphic novels, movies, advertisements, and political cartoons to learn how the visual elements of texts affect understanding. Students will examine the considerations required for communicating in visual media and will produce a multimedia project and a final researched project. [Writing Intensive] Prerequisite: WRIT-1XX and COMM-101

COMM-202 - Survey of Research Meths.  3-0-3

Students in this course analyze and design survey instruments, polls, samples, and other quantitative and qualitative research methods. Students learn about the ethics of research, especially as regards human subjects. The course includes introduction to electronic resources, print resources, archiving data, mining data, information architecture, database management, and ethnography as regards business and design. [Writing Intensive] Prerequisite: COMM-101;

COMM-204 - Technologies of Communication  3-0-3

The social media course that's an essential component of the major. Students will consider communication technologies and how and what people communicate using those technologies. We'll examine the role of communication technologies in society and culture, with an emphasis on how they function in the information age. This will include both the social and cultural influences that have shaped the development of various emerging media, information, and communication technologies. Prerequisite: COMM-101;

COMM-206 - Strategic Communication  3-0-3
The tools and tactics of strategic communication are changing dramatically as a result of the constantly transforming digital media environment. Because of this, organizations in both the for-profit and non-profit world find themselves constantly facing the challenge of determining what communication strategies and products will set them apart. This course incorporates lecture, class speakers and a significant group project for an outside organization to provide students with an overview of what's involved in the strategic communications industries, how the campaign development process works, and some of the challenges facing the field. Prerequisite: COMM-204;

**COMM-2X1 - Comm Secondary Spec Course**

This is a placeholder. Choose 1 Secondary Specialization course in consultation with advisor.

**COMM-300 - Text, Sound and Image** 3-0-3

In this hands-on course, students will explore different means of creative expression and become savvier about how audiences are affected by messages in different media. Genres addressed may include song lyrics, blogs, journalism, poetry, documentaries, policy documents, fiction, and creative nonfiction. [Writing Intensive] Prerequisite: COMM-101 WRIT-1XX;

**COMM-303 - Technical Writing** 3-0-3

(writing intensive) Students will learn to write and design documents in a variety of technical genres, including executive summaries, reports, instructions, among others, for technical and professional audiences. The course will usually take place in a discussion or workshop format and will use case studies based on real-world situations. Because technical writing in the workplace is often collaborative, students will often work in teams during class and on the final project. Prerequisite: COMM-100 or COMM-101;

**COMM-305 - Multimedia Presentations** 3-0-3

Students in this course learn to marry the basics of effective public speaking with visual technology, to allow them to make effective and professional quality presentations. Students will master these technologies and intensively practice speaking in front of an audience. In addition, students will study the standards of professional presentation that befit different audiences.

**COMM-306 - Advanced Strategic Communication**

This advanced Communication course offers students the opportunity to engage in complex strategic story telling, message targeting, social media integration, and most importantly the creation of well-designed, unified communications plans. Students will study, develop and evaluate messages that resonate with a target audience, drive effective creative expressions and incorporate a wide variety of communication tools. Each student will design and present to professionals in the field a full strategic communication plan. Prerequisite: COMM-101, COMM-206, WRIT-101 & WRIT-201

**COMM-307 - Public Relations & Media Wrtg.** 3-0-3

WRITING INTENSIVE: Students in this course learn the fundamentals of writing for multiple public audiences in multiple communication formats and genres. Areas addressed include public relations, public affairs, media relations and press releases. Students will also learn to judge the importance of information as well as set priorities and tailor writing to meet the needs of different audiences. Prerequisite: COMM-100 or COMM-101 or MKTG-310;
COMM-312 - Fashion Communication 3-0-3

Fashion is one of the fundamental ways in which humans communicate about themselves and their desired self-image. Students will examine the intersection between fashion, media, personal identity, and image management in today's society. They will learn how the fashion industry creates powerful and persuasive messages through various channels, and how those images are reinforced through media. Guest speakers, industry-based learning projects, and field trips will aid students in transforming theory into fashion communication practice.

COMM-314 - Sports Communication 3-0-3

In today's media based world there is little that divides the fields of Communication and Sports. Students will explore their intersection through examination of journalism, social media, media relations, sports information production and advertising. By critically analyzing actual media coverage of sporting events, addressing social and ethical issues involved in college and professional sports, meeting professionals in the field and developing an understanding of sports promotion and advertising processes, students gain an in-depth understanding of not only the professional issues involved in sports communication, but their larger importance in our society.

COMM-316 - Journ in the Multi-Media World 3-0-3

The field of journalism has faced tremendous transformation over the last two decades. Whether it is the on-line presence of newspapers with videos, the ubiquitous nature of blogs or the development of niche targeting apps, those who are the producers and influencers of news must understand how transformations in technology are changing the overall information environment. Topics covered in the class include the new media profession, Web credibility, cyber laws, blogging and podcasting and basic multimedia design. Students will learn the basics of creating online story packages: planning, pitching, reporting, editing-determining the best use of multimedia and visual presentation. Course prefix and level: COMM-3XX (3-0-3) List prerequisite: COMM 101, WRIT 201/2 Prerequisite: take COMM-101; WRIT-201 WRIT-202 WRTG-211 WRTG-217 or WRTG-215;

COMM-318 - Crisis Communication 3-0-3

Crises are a fact of life in organizations, whether it is in business, fashion, politics, sports or others, and being able to navigate through them is a crucial skill for all communication professionals. Building on much of what students have learned in their previous communication classes, this course will be an introduction to crisis communication theory and application. The class time and readings will cover crisis management approaches, classic cases and the influence of culture on crisis communication. Additionally, throughout the semester students will engage in group simulations, field trips and individual projects to master the tools of the trade. pre-requisite: COMM 101, COMM 206 Prerequisite: COMM-101;

COMM-322 - Writing for Non-Profit 3-0-3

While academic writing courses are designed to prepare you for the writing required as a university student, this course prepares students for writing and communication in a professional setting. In particular, this course focuses on the specific demands of communicating and writing for non-profit organizations. We study the audiences you may encounter in the field and the diverse writing tasks that you may be asked to complete. The numerous writing workshops and peer group tasks make this a very collaborative course and will prepare students for a career at a non-profit organization. Therefore, the course will run, as much as is possible, as a non-profit writing consultancy. Prerequisite:WRIT-101 WRIT-201 OR WRIT-202;
COMM-3X1 - Comm History/Theory Elective
This is a placeholder. Choose 1 History/Theory elective in consultation with advisor

COMM-3X2 - Comm Idea Invention Elec
This is a placeholder. Choose 1 Idea Invention elective in consultation with advisor

COMM-3X3 - Comm Writing/Rhetoric Elec
This is a placeholder. Choose 1 Writing/Rhetoric elective in consultation with advisor

COMM-3X4 - Comm Vis/Verbal Narrative Elec
This is a placeholder. Choose 1 Visual/Verbal Narrative elective in consultation with advisor

COMM-400 - Usability Testing 3-0-3
WRITING INTENSIVE: Usability testing is a technique used to measure a document or website's capacity to meet its intended purpose. The process of usability testing gives direct input on how the anticipated audience will use the product and is critical to product development. This course provides an overview of usability tools and techniques, and then focuses on usability testing. Through discussion, reading, and practice, students learn the concepts and techniques needed to conduct a usability test. Prerequisite: COMM-202 COMM-303;

COMM-402 - Professional Ethics in Comm 3-0-3
This course, designed for the senior in Professional Communication, will focus on important ethical issues facing the profession and its practitioners. The course will not advocate for particular ethical standards, but it will strive to motivate students to critically and analytically think about standards that are germane to their personal and professional lives, to consider reasons why current standards are in place, and to evaluate whether current ethical standards are sufficient, workable, and understood by communication professionals. [Writing Intensive] Prerequisite: COMM-206 or COMM-307

COMM-404 - Prof Comm Capst Portfolio Proj 3-0-3
WRITING INTENSIVE: This course, designed for the senior in Professional Communication, will focus on integrating your college course work through developing a capstone portfolio. By working on a capstone portfolio that draws on prior course work and that culminates in an oral presentation and a written project, you will use your critical thinking skills in synthesizing previous course work to extend and develop your original ideas. [Writing Intensive] Prerequisite: COMM-206 COMM-307;

COMX-204 - Technologies of Communication
The social media course that's an essential component of the major. Students will consider communication technologies and how and what people communicate using those technologies. We'll examine the role of communication technologies in society and culture, with an emphasis on how they function in the information age. This will include both the social and cultural influences that have shaped the development of various emerging media, information, and communication technologies.

**CTC-200 - Relatn Trauma to Childhd Dev.**

This course integrates an understanding of typical processes and stages of childhood growth and development with an appreciation for the impact interactions by caregivers can have on the development of healthy/positive physical, intellectual, emotional, social and relational outcomes for infants, toddlers and children. Exploring what can influence positive outcomes opens minds to new awareness that in turn leads to discussions around the potential for negative outcomes, such as those connected with adverse childhood experiences and other forms of trauma. Students will identify and understand some causes of trauma and the impact of trauma on the growth, development and functioning of the brain. Discussion provides an overview of practices that influence healthy growth and development to inspire and inform such practices that can lead to the prevention of adverse experiences in childhood. An additional focus is the preparation for future exploration around the causes and impact of childhood adversity, and appropriate interventions for children and families who have experienced adversity.

**CTC-202 - Enhancing Trauma Awareness** 3-0-3

This course provides vital information on the causes of trauma, the complexity of trauma's presentation in children, and the impact of trauma on development. Common trauma-related responses in children will be explored, and suggestions for trauma-sensitive behaviors on the part of professionals and others who serve as caregivers of children will be provided. This course aims to develop a greater awareness of the potential impact of trauma on a myriad of related developmental processes. Prerequisite: CTC-200;

**CTC-204 - Applying Trauma Principles in Practice** -----  

This course focuses on trauma knowledge and skill acquisition, coupled with reflective practice to enhance students' progression toward trauma competence. Special attention is paid to the application of trauma principles within real-life situations to promote transfer of training. Prerequisites: CTC 200 & CTC-202 Prerequisite: CTC-200 & CTC-202

**CTC-230 - Enhancing App of Trauma Principles** 3-0-3

Enhancing Practical Application of Childhood Trauma Principles This course builds upon previous learning in childhood trauma, and expands upon the practical application of childhood trauma knowledge and skills through a practicum approach. Students engage in observations, planning, implementation and evaluation, and participate in Reflective Processing to enhance their development and competence. Prerequisite: CTC-200, CTC-202, CTC-204;

**DBTG-300 - Debating Global Issues** 3-0-3
Debating Global Issues is a writing-intensive course that examines current global social, political and economic trends from multiple competing perspectives, and evaluates their impacts on world societies. Students will complete individual and collaborative projects that explore the intercultural and ethical dimensions of today's most pressing international issues. As a Touchstone course in the Hallmarks Core curriculum, the course includes an upper-level review and assessment of each student's Hallmarks Folio, and addresses many of the eight Hallmarks competencies. Prerequisite: WRIT-202 or WRIT-201; 3 credits; From Subject GDIV or GCIT or Language;

DBTG-398 - TR Debating Global Issues

Debating Global Issues is a writing-intensive course that examines current global social, political and economic trends from multiple competing perspectives, and evaluates their impacts on world societies. Students will complete individual and collaborative projects that explore the intercultural and ethical dimensions of today's most pressing international issues. As a Touchstone course in the Hallmarks Core curriculum, the course includes an upper-level review and assessment of each student's Hallmarks Folio, and addresses many of the eight Hallmarks competencies.

DBTU-114 - Debating U.S. Issues 3-0-3

This is intended as a first-year course, to be taken in either semester. It is the first Touchstone course, where students will learn about the Hallmarks Folio process and review their first artifacts and reflections.

DECFRM-200 - Business Models 3-0-3

DEC 200, Business Models, 3-0-3. Students in this course apply and extend skills from DEC101, including design thinking, teamwork, and project management, within the framework of a customer-centric approach to organizations and business models. The course explores business model innovation, execution, and strategy to examine industries and organizations, and applies these concepts in financial, social, political, and environmental contexts. As a culminating assignment, student teams build and defend their own unique business models.

DECFRM-200X - Business Models 3-0-3

Students in this course apply and extend skills from DECPROC101, including design thinking, teamwork, and project management within the framework of a customer-centric approach to organizations and business models. The course explores business model innovation, execution, and strategy to examine industries and organizations, and applies these concepts in financial, social, political, and environmental contexts. As a culminating assignment, student teams build and defend their own unique business models.

DECGEN-200 - Innovation Essentials 2-2-3

DEC Innovation Essentials will introduce transfer students to tools and techniques of innovation introduced in the DEC core courses IDP and Business Models. In the first half of the class, students will learn the Integrated Design Process, which will train them in the process of identifying opportunities for innovation and developing prototypes, as well as refining and revising prototypes based on user feedback. In the second half of the class students will learn to design and evaluate a business model for their prototype using the business model canvas.

DECGEN-230 - Design Process Through Hist & Culture
Design thinking is a shared process and key component of innovation for all fields within the College of Design, Engineering and Commerce. This study abroad course will focus on how the design process can transform history and culture, and the influence that history and culture have on the design process. Students will examine how design thinking has shaped movements within art and design, services, or enterprises, and the impact of these movements within history and culture.

**DECGEN-480 - Interdisciplinary Integrative Project**  
2-2-3

This course provokes interdisciplinary activity through a client-centered team project focused on designed systems, requiring inputs from multiple disciplines for success. Types of projects might include: Interactive design + corporate brand experience, Physical design + materials science, Service/business platform design, Entrepreneurial design (design + engineering + business plan), and Software/hardware systems. Prerequisite: 2 groups take DECPROC-101 DECFRM-200 DECMTHD-300; 1 Course from DECSYS.

**DECMTHD-300 - Ethnographic Research Methods**  
3-0-3

This course explores a range of ethnographic research tools to analyze human belief, behavior and cultural practices. Students learn to formulate better research questions and conduct ethnographic research to address a contemporary social problem, and will become equipped to analyze and communicate the findings. Students reflect upon their impact in the community and on other ethical questions as part of conducting ethnographic research. Prerequisite: 2 groups WRTG-211 WRTG-215 or WRTG-217; SOC 2XX or WRIT-201 or WRIT 202 Subject from GDIV, GCIT.

**DECMTHD-300X - Ethnographic Research Methods**  
3-0-3

This writing intensive course explores a range of ethnographic research tools to analyze human belief, behavior, and cultural practices. Students will learn to formulate appropriate research questions and conduct field-based research to address a contemporary social problem. As they conduct their research, students are required to assess and consider contextual sensitivities and to analyze and communicate their findings. In this course, students reflect upon their impact in the community and on other ethical questions as part of conducting ethnographic research. Prerequisite: 2 groups WRTG-211 WRTG-215 or WRTG-217; SOC 2XX.

**DECPROC-101 - Integrative Design Process**  
2-2-3

Design thinking is a shared process and key component of innovation for all fields within the College of Design, Engineering and Commerce. In this course, students will develop and refine abilities to construct, analyze and use the process of designing within an interdisciplinary, team based environment. Integrative Design Process is a part of the DEC core and is a mandatory course for all students in the College of Design, Engineering and Commerce. This course also fulfills the Arts and Cultures requirement of the College Studies Program for students enrolled in the majors in the School of Business Administration.

**DECPROC-101X - Integrative Design Process**  
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Design thinking is a shared process and key component of innovation for all fields within the College of Design, Engineering and Commerce. In this course, students will develop and refine abilities to construct, analyze and use the process of designing within an interdisciplinary, team based environment. Integrative Design Process is a part of the DEC core and is a mandatory course for all students in the College of Design, Engineering and Commerce. This course also fulfills the Arts and Cultures requirement of the College Studies Program for students enrolled in the majors in the School of Business Administration or for students enrolled in majors in the School of Science Health and the Liberal Arts.

DECSYS-202 - Materials Selection 3-0-3
The materials available to meet design requirements for a specific application often limit performance in disciplines ranging from engineering and architecture, through industrial design, to fashion design and textiles. In fact, material selection is often the limiting performance factor in designing new products and processes. This course explores the governing principles of materials science, with a specific emphasis on using the scientific method to develop a "system approach" to materials selection at various stages of the design process. (This course can be used to satisfy a general Education Science requirement.)

DECSYS-206 - Biology for Design 3-0-3
The goal of this course is to increase the sophistication of design, engineering, business, and other students regarding how design manifests itself in nature as biological adaptation, and to use that knowledge as a launching pad for thinking about biomimetic design. Biomimicry is a hot topic in architecture and design. Work in this field is usually done by designers working in collaboration with biologists who are highly specialized in a particular area, often plant or animal physiology. However, there are certain conceptual underpinnings pertaining to design and adaptation in nature that designers are often lacking that will prepare them for further exploration of this field. The course consists of two major units, the first focusing on the biology of adaptation from an evolutionary and ecological perspective. The second section consists of a survey of biomimetic design and how biomimicry has been employed to solve a range of design problems in architecture, materials science, systems design, and technology.

DECSYS-208 - Sustainability & Eco-Innovatn 3-0-3
The emerging fields of sustainability and environmental sciences will be surveyed to highlight how entrepreneurs are capitalizing on rapid environmental transformation. The rate, scale and degree of global environmental change, key scientific feedback loops the regional differences in terms of impacts and opportunities will be analyzed. Case studies of eco-innovation strategies employed by businesses and designers will be explored so that students can create their own scientific monitoring and evaluation plan for implementing a simple eco-innovation.

DECSYS-208X - Sustainability & Eco-Innovatn 3-0-3
The emerging fields of sustainability and environmental sciences will be surveyed to highlight how entrepreneurs are capitalizing on rapid environmental transformation. The rate, scale and degree of global environmental change, key scientific feedback loops the regional differences in terms of impacts and opportunities will be analyzed. Case studies of eco-innovation strategies employed by businesses and designers will be explored so that students can create their own scientific monitoring and evaluation plan for implementing a simple eco-innovation.

DECSYS-2XX - DECSYS Placeholder
This is a Placeholder. Choose 1 DECSYS course.
DIGD-103 - Principles of User Experience

The purpose of this new course is to create an essential understanding of the User Experience (UX) design process which is a key component to becoming an Interactive Designer. This course, which is the first core-course in the newly revised Interactive Design & Development program will serve to give students an understanding of design workflow, developing sitemaps & navigation, information architecture, storyboarding, wireframes, prototyping, feature definition, documentation, and user-testing. This skill set is a fundamental requirement which will continue to be reinforced and utilized throughout all of their courses in the program.

DIGD-200 - Fundamentals of Web Programming

The purpose of this new course is to create an essential understanding of the HTML and CSS markup languages which is a key component to becoming an Interactive Designer. This course, which is a sophomore level core course in the newly revised Interactive Design & Development program will serve to give students a comprehensive understanding of how to produce functional web pages using HTML and CSS. Additionally, they will be instructed on how to debug their code, validate code, and cross-browser/device check for integrity across all platforms. These skills are a fundamental requirement which will continue to be reinforced and utilized throughout all of their courses in the program.

DIGD-206 - Foundations in Web Design and Strategy

This course will be an exploration into the design process and techniques for creating interactive experiences. This will be first step in learning to think and work as a web designer. We will cover a basic understanding of information architecture, usability, front end programming logic, and design literacy. We will also discuss the principles of raster and vector electronic imaging as a means to provide a solid foundation needed to succeed in the digital design field.
Prerequisite: ADFND-102, GRAPH-102 or DSGNFND-203

DIGD-305 - Theory of Electronic Communication Seminar I

(writing intensive) This seminar course provides students with a theoretical understanding of the role of the digital designer within the constantly evolving electronic marketplace. Issues of e-commerce, digital communication, electronic ethics and professional practice will be discussed. Special focus will be placed on how our existing culture has been, and is currently being, revolutionized by the information explosion.

DIGD-307 - Advanced Web Design & Strategy

This course exposes students to conceptual and technical aspects of Web design. Information architecture, semiotics, storyboarding and site management are taught; in addition to learning technical skills in Web production software and HTML. Additional areas of focus include typography, color theory, composition and motion graphics for the Web. The final project requires the publication of a Web site that pushes the boundaries of traditional interactive media.
Prerequisite: DIGD-206: Minimum Grade C

DIGD-314 - User Interface Design
This course provides students with a general introduction to the theory and practice of creating 2D graphical user interfaces. Students will explore the various components of user interface design for a wide range of basic interaction devices available. Emphasis will be put on usability and design standards. The course will cover effective layouts, best practices for navigation, search, registration/account management, and shopping carts. The final project requires a complete design series of a web-based or mobile application of the student's choosing. Prerequisite: DIGD-206: Minimum Grade C

DIGD-316 - Web Performance & Optimization

Creating effective user experience means having a comprehensive understanding of performance and optimization for internet based technologies. Students will learn how to effectively maintain their own webserver, address performance related issues, optimize delivery of web-based content, debug scripting errors, and optimize delivery across desktop, tablet, and mobile platforms including cross-browser testing. Prerequisite: DIGD-307 & DIGD-403: Minimum grade C

DIGD-318 - Media Production

This course exposes students to principles of basic digital photography, audio editing, and digital video design and production. Students will become versed in non-linear, video-editing software as a means to create effective digital media presentations. A series of projects develop essential skill sets such as storyboarding, basic photography & composition, audio/video capture, and editing.

DIGD-320 - Javascript Programming

This course will explore the ways in which JavaScript can be applied to websites to develop greater interaction with users, aid in design, and create better user experiences overall. Students will work with libraries like jQuery as well as many other plugins and extensions that aid in the development of web applications and websites. This will include using third party API's (Application Programming Interfaces) to retrieve and manipulate JSON objects to help users interpret data. This course will consist of several small projects leading to a final project at the end of the semester. Prerequisite: DIGD-307 Prerequisite: DIGD-307

DIGD-370 - Portfolio Development Seminar

This course provides students with an active and deep survey of constructing an effective design portfolio through various means including: print, electronic PDF, community websites, and independent websites. Students will also develop resume & portfolio and participate in presentation and interviewing exercises. This course is recommended for design students in their junior year seeking internship and seniors seeking professional employment following graduation.

DIGD-3XX - Web Design Elective

This is a placeholder. Choose one Web Design Elective in consultation with advisor.

DIGD-403 - Web Development

3-0-3
This course will explore the Web markup languages, HTML, CSS and Java Script, required for advanced control of Web design. Students will be introduced to these languages through lectures, demonstrations and practical exercises. The focus will be on writing, testing and debugging the code and its appropriate application. A series of increasingly complex exercises will gradually build the student's knowledge and understanding of these languages.

Prerequisite: DIGD-206: Minimum Grade C

**DIGD-415 - 3-D Modeling**

1-5-3

This course exposes students to the conceptual and technical aspects of three-dimensional modeling and virtual environments. Students will complete a series of specifically designed exercises of increasing difficulty leading to a final project of the student's choosing. The class will cover the basic principles of 3D modeling and animation including polygonal and NURB modeling, texturing, lighting and animation. Prerequisite: DIGD-206

**DIGD-417 - Content Mgmt Sys & E-Commerce**

1-3-3

This course introduces students to a wide variety of content management systems (CMS) that have become commonplace in the web design industry. Students will be introduced to best development practices and system architecture among several popular platforms. Additionally, advanced topics such as e-commerce platforms and application development will be explored. This course will include a series of progressively more difficult and technically complex projects leading toward a larger and more in depth final project. Prerequisite: DIGD-403.

Prerequisite: DIGD-403: Minimum Grade B-

**DIGD-498 - Interdisciplinary Capstone Project Preparation**

3-0-3

(writing intensive) This course requires students to identify and analyze potential capstone projects through a number of lenses including technical feasibility, marketability and design potential. With faculty guidance, students will form interdisciplinary teams that reflect the specific requirements of the chosen capstone project. To complete this course, a project proposal must be submitted documenting the factors that will allow the development of a successful capstone project. Research and presentation skills are a major focus of this course. Prerequisite: DIGD-314: Minimum grade C

**DIGD-499 - Interactive Design IV Capstone**

0-10-5

This capstone studio will develop the ability of the digital designer to successfully participate on an interdisciplinary team. Students from a variety of majors, already organized in the capstone preparation course, will collaborate to develop a final, working prototype of a product, service, experience or publication of their choice that synthesizes their knowledge and skills from the previous semesters. The students will develop a project that demonstrates innovation, marketability and relevance within the larger community. Prerequisite: DIGD-498: Minimum Grade B-

**DIGD-499N - Interactive Design IV Capstone**

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This capstone studio will develop the ability of the digital designer to successfully participate on an interdisciplinary team. Students from a variety of majors, already organized in the capstone preparation course, will collaborate to develop a final, working prototype of a product, service, experience or publication of their choice that synthesizes their knowledge and skills from the previous semesters. The students will develop a project that demonstrates innovation, marketability and relevance within the larger community. Prerequisite: DIGD-498: Minimum Grade B-
DIGD-4XX - Web Design Elective

This is a placeholder. Choose one Web Design Elective in consultation with advisor

DRAW-101 - Drawing Essentials 1-5-3

Drawing Essentials introduces the student to the process of visual communication using basic drawing techniques and concepts. Students will develop sound observational skills through visualization using a variety of mark-making tools. Students will learn the fundamentals of drawing (line weight, proportion, rendering and perspective techniques) and understand how it applies to design development.

DRAW-201 - Drawing II for Graphic Design 1-5-3

Advanced drawing experiences continue the study of form and structure begun in Drawing I. In addition, students are encouraged to develop individual expression in a variety of graphic media. Drawing as a means of developing graphic ideas is stressed. Prerequisite: DRAW-101

DRAW-206 - Drawing II: Figure Drawing 1-5-3

In this course, students acquire special knowledge of the human figure and anatomy. A variety of media and methods of graphic representation are explored. Perceptual skills, as well as cognitive aspects of drawing the human form, will be studied. Live models, both clothed and nude, charts, skeleton model and the self will be used as sources for study. Prerequisite: DRAW-101 or VSDRW-101;

DRAW-301 - Drawing: Design and Development 1-5-3

This is an advanced drawing course developed for designers of all disciplines who want to improve the designer's ability to apply knowledge imparted in other courses to the development of designs. Wherever possible the subject matter of the students' design studio courses will be used as the subject matter for drawing exercises. Prerequisite: 1 group INDD 102 & DRAW 201 OR INDD-102 & VSDRW-101 or DRAW-101

DRAW-303 - Drawing: Materials/Techniques 1-5-3

This course further develops the students drawing skills by introducing a variety of mark-making tools and techniques. Students will learn both traditional and experimental drawing processes within the context of historical and contemporary movements in art and design. Students will use drawing as a vehicle for design development, visual communication and creative expression. Prerequisite: DRAW-101

DSGN-261 - Japanese Craft Production 3-0-3

This is a short course for international study to explore traditional craft production in Japan. This will include: Touki (pottery), Washi (paper), Urushi (lacquer), Mokuhanga (wood block), Some / Ori (resist dyeing and woven textiles), Takezaiku (bamboo), etc. Visitation to craft studios, museums, historical gardens and traditional architectures will also provide cultural context, history of style and significance of fine hand craft production processes. Throughout the tours, the course will also emphasize the role of crafted control in mechanical / digital productions that will be utilized in students' future design developments in their major studies.
DSGN-371 - Special Topics: 3-0-3
Generic Special Topics Description - An upper-level course designed to take advantage of resident/adjunct/visiting faculty members’ expertise or a special focus wanted by the School for one or two terms. These courses might provide an in-depth treatment of recent advances in subjects of current interest in a given field whose subject matter is not necessarily needed to be offered long term. A specific “topic” may be delivered a maximum of two terms.

DSGNFND-103 - Design Foundations I 1-5-3
This foundation design course explores the basic elements and principles of 2D and 3D form and their application in the design process. Line, shape, mass, space, texture and gray value are introduced as fundamental and interrelated components necessary in structuring solutions to problems in design. Projects are introduced which encourage students to express ideas in a visual/tactile context, while exploring the interaction of ideas and materials.

DSGNFND-203 - Design Foundations II 1-5-3
Color is introduced in this foundation design course with an emphasis placed on its practical application in the design process. Projects done by students, using a variety of media, will explore the interaction of color in design with formal, biophysical and psychological implications and goals. Prerequisite: DSGNFND-103 or VSDES-101

DSGNFND-303 - Design Foundations III 1-5-3
In-depth studies emphasizing the use of color and varied media in both 2D and 3D forms are undertaken in this foundation course. The interrelationship of the elements and principles of design are addressed through solving a variety of visual problems. Processes of abstraction are explored in projects using a wide variety of media. Students will be expected to develop their abilities for critical analysis of their own work, as well as design processes and products in general. Prerequisite: DSGNFND-203

DSGNFND-423 - Design Concepts 2-2-3
Students are introduced to basic design theory as it relates to apparel design and merchandising including hands-on exercises in color, composition, presentation and critique skills. Trend forecasting and brand analysis provides an overview of the product development process. May not be taken by fashion design majors. Prerequisite: FASHMGT-101

ECON-111 - Principles of Economics 4-0-4
This course introduces the discipline of economics and provides a basic understanding of how markets function, how prices are determined and how resources are allocated. This requires a blend of economic theory, institutional material, and real-world applications. International examples will be included throughout the course. February 17 2014  2:23 PM Julia Aggreh

ECON-205 - Macroeconomics 3-0-3
Introduction to the overall functioning of an economic system with a view toward understanding the factors underlying income, employment and prices on the aggregate level. Topics include monetary and fiscal policy with primary emphasis on the impact of international trade and policy implications.
ECON-206 - Microeconomics 3-0-3
Introduction to the principles underlying the behavior of business firms, resource owners and consumers within a system of markets. Introduces the theory of value and distribution and the implications of international trade on autarchy value and distribution.

ECON-2XX - Economics Elective 
This is a placeholder. Choose 1 course from ECON-205 or 206

ECON-401 - International Economics 3-0-3
The theoretical basis for international trade is examined, as well as the economic impact of such trade on participating nations.

ENGR-101 - Introduction to Engineering 3-2-3
This course is an introduction to engineering through hands on use of design, build and test modules in mechanical, industrial and architectural fields. The course helps the students to relate basic sciences to engineering applications. The course makes an introduction to programming logic, engineering design, materials, workshop skills, engineering ethics and technical presentation. Visits to engineering industries and professional society meetings will be arranged.

ENGR-102 - Engineering Drawing 2-2-3
This course introduces students to engineering drawing, descriptive geometry, design and problem solving. Engineering drawing is a graphic language that can convey, with exactness and detail, ideas from the design engineer to the fabricator. Thus, the emphasis of the course is on communicating design ideas through engineering drawings. Prerequisite: MATH-102 MATH-110 or MATH-111;

ENGR-104 - Introduction to Computing 3-0-3
An introductory course which provides a coherent and comprehensive treatment of fundamental concepts of computer science. It describes how computing systems work and how they are applied to solve real-world problems. The main emphasis is on the design of algorithms and procedural abstraction. High-level, language-programming projects.

ENGR-210 - Introduction to Materials Science 3-0-3
A study of the relationship between structures and properties for common engineering materials, including metals, polymers, ceramics, and composites. Mechanical behavior temperature effects, heat treatment, corrosion, electrical, and other properties are covered. Prerequisite: MATH-111 CHEM-103 CHEM-103L;

ENGR-215 - Engineering Statics 3-0-3
Engineering statics describes the mechanical behavior of materials and systems in equilibrium using Newton's laws of motion. In this course, students will learn the principles of force equilibrium, how to construct free-body diagrams, understanding distributed forces, friction and introductory structural response. Prerequisite: PHYS-201, PHYS-201L; Corequisite: MATH-213
ENGR-217 - Human Factors Engineering  3-0-3
Analysis and design of computer based information systems. Definition of databases, measures of effectiveness, management-staff interfaces. Focus on analyzing the situation and its particular needs before attempting a solution. Case studies from engineering, manufacturing, and service environments used to create discussions. (ISE majors can take this course in the School of Business Administration as MIS-302) Prerequisite: MATH-112

ENGR-218 - Engineering Dynamics  3-0-3
Engineering dynamics describes the motions of particles and rigid bodies and the forces that accompany or cause those motions. Basic methods include Newton's laws, the work and energy principle, and the impulse and momentum principle. Prerequisite: ENGR-215 & MATH 225 recommended as a Co req Corequisite: MATH-225

ENGR-301 - Mechanics of Materials  3-0-3
Internal forces; stress, strain and their relations; stresses and deformations in axially loaded members; stresses and deformations in torsionally loaded members; stresses and deformations in flexural members; combined stresses; column analysis; statically indeterminate members; introduction to member design. Prerequisite: ENGR-215

ENGR-302 - Design for Manufacturability  3-0-3
This course focuses on the design process; interaction of materials, processes and design; economic considerations; design considerations for machining, casting, forging, extrusion, forming, powder metallurgy; designing with plastics; design for assembly; projects and case studies. Prerequisite: ENGR-102

ENGR-303 - Engineering Economics  3-0-3
This course is designed to provide the engineering student with the decision-making skills necessary to evaluate the monetary consequences of the products, processes and projects that engineers design. Decisions must balance economics, performance, aesthetics and resources. As the capital outlays may be significant and affect the productive potential of a firm over the long term, it is important to understand the time value of money. The course emphasizes calculations of present values, future worth, internal rates of return and replacement analysis. In addition to the specific financial concepts covered, the student will construct computer spreadsheets to do sensitivity analysis and generate graphs to enhance presentation skills. Prerequisite: take ENGR-305;

ENGR-304 - Operations Research I  3-0-3
This course addresses the philosophy and techniques of operations research. Emphasis is placed on elementary model building and concepts of optimization; structure of problem solving; linear programming, transportation and assignment algorithms; game theory; network analysis, branch and bound theory. Prerequisite: ENGR-305

ENGR-305 - Engineering Statistics  3-0-3
This course addresses the fundamentals of probability and distribution theory with application to various branches of engineering; basic probability theory, discrete random variables, continuous random variables, independent random variables, covariance and correlation and linear combinations of random variables. Statistical decision theory including significance testing and estimation, confidence intervals, design and perform tests of hypotheses on population means, standard deviations and proportions. Prerequisite: MATH-112

**ENGR-307 - Engineering Statistics II**  
3-0-3  
This course is a continuation of EN505 Engineering Statistics, and it is required for the BSISE and the BSE with minor in ISE. Application of statistical techniques to industrial problems; relationships between experimental measurements using regression and correlation theory and analysis of variance models; design of experiments with one and more than one levels; emphasis on inherent variability of production processes; control chart techniques and the use of exponential and Weibull models in reliability analysis; statistical process control. Prerequisite: ENGR-305

**ENGR-308 - Integrated Engr Product Dev. I**  
3-2-3  
ENGR 308 Integrated Engineering Product Development I The IEPD two-course sequence combines the perspectives of design, engineering and marketing in the product development process in a hands-on, collaborative environment. Throughout the course students will be working in groups to design, develop, prototype and analyze economic and marketing aspects of engineered products. Students will be prepared to use modern engineering tools including rapid prototyping, CNC machine tools, CAD based product lifecycle analysis and management, costing and market data analysis. Prerequisite: MATH-112 ENGR-104 ENGR-102;

**ENGR-309 - Integrated Engr Prod Dev. II**  
3-2-3  
ENGR 309 Integrated Engineering Product Development II In the second semester of the IEPD course students will be primarily working on their group projects. Opportunities to work on industry sponsored projects or internally developed projects of current interest will be provided. Periodically students will present their progress on the project in discussion forums. The use of engineering drawings, charts and graphs, simulations and media will be encouraged and evaluated. Industry veterans will provide guest lectures in manufacturing practices, standards, regulations, ethics and management. Through a series of guest lectures, students will also develop an appreciation for patents and intellectual property. Prerequisite: take ENGR-308;

**ENGR-311 - Fluid Mechanics**  
3-0-3  
The fundamentals of fluid mechanics. Topics include fluid statics, control-volume analysis, the Navier-Stokes equations, similitude, viscous, inviscous and turbulent flows and boundary layers. Prerequisite: ENGR-218 PHYS-203 PHYS-203L;

**ENGR-314 - Numerical Meths for Engineers**  
3-0-3  
Numerical methods are used to solve mathematical problems that are often impossible to solve analytically. Numerical methods enable formulating engineering problems so that they can be solved by arithmetic operations. Problems with large systems of equations, nonlinearities and complicated geometries that are encountered in engineering can be solved by the use of numerical methods and programming using computers. The emphasis of this course is the use of personal computers to solve mathematical problems. Prerequisite: take Math-225 Engr-104;
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGR-316</td>
<td>Intr &amp; Materials for Composites</td>
<td>2-2-3</td>
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<td></td>
<td>An overall introduction to composites will be presented including their mechanical properties and advantages. Fiber reinforcements will include pre-pregs and textile composites. Composites design and various molding techniques will be covered. The laboratory will have various manufacturing and experimental exercises. Prerequisite: ENGR-215</td>
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<tr>
<td>ENGR-317</td>
<td>Composites Manufacturing</td>
<td>2-4-3</td>
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<td>This course will be a laboratory intensive course that will include material selection and tooling types. Materials will include pre-pregs and woven and braided performs. Key issues in tool design, bond assembly jigs and secondary tooling, hand layup, tape layup and fiber placement, bag molding and autoclaving, compression molding, pultrusion, RTM, VaRTM, mechanical property tests, manufacturing defects and quality control will be covered. Prerequisite: ENGR-316;</td>
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<tr>
<td>ENGR-322</td>
<td>Fund. of Elect. Engineering I</td>
<td>3-0-3</td>
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<td>This course explores the analysis of circuits; transient and steady state phenomena; and general analysis techniques; and the fundamentals of direct and alternating circuits, transformers rotating machinery, electrical and electronic control, and electrical energy. Prerequisite: PHYS-203PHYS-203L</td>
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<tr>
<td>ENGR-371</td>
<td>Special Topics</td>
<td>3-0-3/1-5-3</td>
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<td>An upper-level course designed to take advantage of resident/adjunct/visiting faculty members' expertise or a special focus wanted by the School for one or two terms. These courses might provide an in-depth treatment of recent advances in subjects of current interest in a given field whose subject matter is not necessarily needed to be offered long term. A specific &quot;topic&quot; may be delivered a maximum of two term.</td>
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<tr>
<td>ENGR-381</td>
<td>Independent Study in Engr I</td>
<td>0-0-3</td>
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<td>For details, see description of Independent Study in &quot;University Academic Policies and Procedures: Common Academic Policies for All Students.&quot; For engineering students only Permission required. Also see appropriate form online at the University Registrar's webpage <a href="http://www.philau.edu/registrar/">www.philau.edu/registrar/</a> for more information.</td>
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<tr>
<td>ENGR-382</td>
<td>Independent Study in Engr II</td>
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<td>For details, see description of Independent Study in &quot;University Academic Policies and Procedures: Common Academic Policies for All Students.&quot; For engineering students only Permission required. Also see appropriate form online at the University Registrar's webpage <a href="http://www.philau.edu/registrar/">www.philau.edu/registrar/</a> for more information.</td>
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<td>ENGR-399</td>
<td>Engineering Design Seminar</td>
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<td>The purpose of the Engineering Design Seminar is to support student success as Engineering students prepare to move into their senior design experience. As a pre-requisite for the Engineering senior design experience, the course is built around didactic and experiential educational components, pre-project research assignments, and independent research. Included in the course are elements that teach and reinforce the project proposal process, refine technical report writing skills, and promote lifelong learning and continuing professional development. Prerequisite: ENGR-311 ENGR-322;</td>
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</table>
ENGR-3X1 - Mat. Sci/Op. Research 1
This is a placeholder. Choose either ENGR-210 or ENGR-304

ENGR-3XX - Engr Designated Elective
This is a placeholder. Choose one designated technical elective in consultation with advisor.

ENGR-404 - Composites Design Analysis 3-0-3
The factors which govern analytical composite design will be discussed. Two dimensional stress strain relationships along the planar axes of the composites, orthotropic material constitutive relationships will be investigated. The course includes instruction in finite element analysis for composites including complex structures which include core materials. The various accepted failure criteria including maximum stress, Tsai-Hill, and Tsai-Wu criterion will be compared. A procedure for laminate strength analysis and failure envelopes will be introduced. Prerequisite: ENGR-301 ENGR-316 ENGR-317;

ENGR-406 - Compo Struc Indust & Consu Ap 3-0-3
Analysis of composites for use in automotive, other mechanical structures will be addressed. The focus will be on system design, structure design and engineering economics associated with actual composite structures and systems. Prerequisite: ENGR-303 ENGR-316 ENGR-404;

ENGR-498 - Senior Design Project I 2-2-3
This course exposes the students to a series of real-world industry problems that require applications of Industrial Engineering principles. A preliminary analysis of various selected problems will be performed collectively. The students will then form a team and select their senior design project. The course also covers (through invited speakers) topics related to the engineering profession such as ethics, intellectual property, project management and social responsibility. Students will present a written and oral proposal of their senior design project preparation. Prerequisite: WRTG-2XX

ENGR-499 - Senior Design Project II 1-5-4
Students in this course will apply engineering principles to solve a real-world problem. Student works as member of a team assigned to a problem in a manufacturing, processing, service or government organization. The capstone senior design project will consist of a project that builds on engineering, business, ethics and social issues. This course requires a professional written and oral report and will serve as the program's major writing intensive course. [Writing Intensive] Prerequisite: ENGR-498;

ENGR-4XX - Engr Designated Elective
This is a placeholder. Choose one designated technical elective in consultation with advisor.

ETHIC-198 - Transfer Ethics
ETHIC-200 - Bioethics 3-0-3
This philosophy course covers ethical issues in biological research, medical research, the practice of medicine, the allocation of medical resources, public health policy, and related issues. Students will gain fluency in the basic language and tools of philosophy and will study several theories of ethical decision-making. Prerequisite: WRIT 1XX and DBTU 114

ETHIC-202 - Environmental Ethics 3-0-3
This course will cover contemporary topics in environmental ethics from a philosophical perspective. Students will gain fluency in the basic language and tools of philosophy. We will study several theories of ethical decision-making and apply them to real world situations, with a focus on issues in environmental ethics (including professional ethics, civic responsibility, and public policy). Prerequisite: WRIT 1XX and DBTU 114

ETHIC-204 - Dystopian Film & Literature 3-0-3
The Ethics of Apocalypse: Dystopian Film & Literature This course studies ethical issues of human social interaction in literature, culture, and film. The concepts of utopia and dystopia - from planned society to zombies - offers a range of topics like civilization and liberty, social control, technology and human relationships. Students will investigate social life using key philosophical concepts as a basis for study. The course emphasizes evaluation of assumptions and reasoning behind solutions and the impacts of world belief systems on moral values and behavior. Students will reflect on their own personal ethics, and apply ethical reasoning to real-world problems. Prerequisite: WRIT 1XX and DBTU 114

ETHIC-206 - Applied Professional Ethics 3-0-3
WRITING INTENSIVE: This research and writing-intensive course introduces students to numerous concepts in Western and non-Western ethics that inform decisions about what we 'ought' to do in our personal and professional lives. Students will read primary text selections from philosophers and analyze practical cases by applying what they have read. Prerequisite: WRTG-1XX or DBTU-114

ETHIC-215 - Evil and Good 3-0-3
A study of evil and good in art, literature, religion and philosophy, with attention to actual issues of evil and good in human social life. Concepts of evil and good in both Western and non-Western cultures will be surveyed. The course will also provide an introduction to strategies for ethical decisionmaking. Prerequisite: WRIT 1XX and DBTU 114

FASHDES-205 - Fashion Designers 20th Centur 1-0-1
From Coco Chanel to Issey Miyake, 20th-century designers played an integral role in the development of the fashion industry. Through the use of the Textile and Costume Collection, students will have the opportunity to learn first hand from the work of these designers, while an emphasis on historical evidence will improve analytical and writing skills. Students will leave the course with a thorough understanding of key designers and their influence on 20th-century fashion and culture. For FD student only or by permission of the FD program director. Prerequisite: ARTH-314

**FASHDES-211 - Garment Structures** 1-5-3

This is the initial course in the fashion design technical studio sequence. This course focuses on the study and production of apparel construction methods. Students have the opportunity to produce garments and design them through the imaginative use of construction details. A sample book of various industrial construction methods is developed. Note: A minimum grade of "C" will be required in order to continue in the design studio sequence. Admission into the Fashion Design Program. Fashion Industry majors need approval from FMM program director.

**FASHDES-213 - Pattern Development I** 1-5-3

This course covers the fundamentals of the flat-pattern method. Students will draft bodice, sleeve and skirt blocks to be used in creating various styles. Some patterns are cut and sewn in muslin to test fit and further enhance sewing skills. A sample book of flat-pattern techniques will be produced. In addition, two ensembles will be designed and produced. Prerequisite: FASHDES-211 Min grade C

**FASHDES-250 - Fashion Studies Abroad** 0-0-3

A "short course" that enables students to study various aspects of fashion design, production and merchandising in a major region of the world. Through a series of lectures, guided tours and visits to couture and ready-to-wear establishments, design studios, retailers, production plants and museums, students have the opportunity to experience a segment of the global fashion industry. Students carry a journal and write about their own experiences abroad. A visual record of design inspirations is required as part of the research assignments. Oral and written reports, including visuals, explore the design and business practices of apparel firms. Students also experience cooperative design and merchandising as a result of team assignments.

**FASHDES-252 - Fashion Design Research** 2-2-3

This required course focuses on methods of research and development of original concepts in the fashion design field. Visual sensitivity to the environment as a source for building observational skills, design literacy, visual documentation, and concept development skills will be addressed. Visits to design resources such as museums, architectural sites, analysis of trend forecasts and current influences will provide inspiration for development of a journal for application in future courses. Prerequisite: VSDES-101

**FASHDES-254 - Fash Des: Families of Florence** 0-3-3

Florence Italy is home to some of Europe's most enduring Fashion Design brands; Gucci, Ferragamo, Pucci. While in Florence students will study the historic rise of these fashion families through archival museums (Gucci Museo, Museo de Ferragamo, Palazzo Pucci) as well as the thriving modern brands they have become through their flagship stores along the Via Tornabuoni. Students will also research the historical and cultural impact the city of Florence has had on the development and rise of these luxury designer brands.
FASHDES-300 - Technical Design 2-4-3
This course will enable the student through hands on experience to understand the basic requirements needed to be successful in the area of technical design. Building on their knowledge of pattern, construction and design, students will learn to create technical specifications packages used for product data management. Students will further acquire an advanced understanding of terminology and technical vocabulary needed to communicate with manufacturing facilities throughout the world. Students will learn the process of developing garment specifications, conducting fittings and successful communication for quality assurance issues to vendors and manufacturing personnel worldwide. Prerequisite: take FASHDES-311 with minimum grade C and take CAD-204

FASHDES-311 - Pattern Development II 1-5-3
Students learn to drape basic bodice and skirt variations on standard industrial dress forms. Original garments are designed, draped and sewn using industrial machinery. Accurate patternmaking, sewing and attention to design fundamentals are stressed throughout the course. Prerequisite: FASHDES-213 (min grade C)

FASHDES-315 - Advanced CAD
Computer-aided design is used in every segment of the fashion industry from Concept through to design and presentation. Students will learn how to develop industry standard presentations through a variety of projects, including research and analysis of various presentation styles, advanced design and trim detail focus, incorporating technical draping and rendering of multiple fabric manipulation techniques, type tool exploration, advanced knit and textile print development, along with skills to develop a "look book" used as a Buyer resource guide. Prerequisite: CAD-204 with minimum grade C and take FASHDES-252

FASHDES-316 - Fashion Design 2-4-3
This course focuses on the key components of the fashion design process including research, trend forecasting, materials investigation and presentation of valuable, market-specific collections. Designers consider current market trends and design concepts as influences on merchandising. Extensive opportunities for the development and communication of a personal design vision in illustrated presentations helps students build portfolio-ready collections. Industry directed projects also provide opportunities to develop brand-conscious yet creative concepts and designs. CAD skills are utilized in a variety of presentational techniques. Prerequisite: FASHDES-252 CAD-204 FASHDRW-207

FASHDES-317 - Hand Knitting for Fash Desg 1-5-3
This elective course is offered to expand construction skills and design possibilities. By hand knitting and/or crocheting, students will design and produce marketable garments to augment other collections or as individual pieces. For Fashion Design Majors Only. Prerequisite: Pre-requisites: FASHDES-311 Pattern Development II & TEXT-101 Survey of the Textile Industry

FASHDES-322 - Fashion Design Problem Solving 2-2-3
This course focuses on experimental design and is a continuation of the foundation design sequence for Fashion Design majors. Students are provided the opportunity to think creatively, to develop alternate approaches in problem solving and to select optimum solutions on a cost/aesthetic/materials basis. Through materials investigation, this course promotes the use of creative answers to the basic design problem of covering the body. Prerequisite: FASHDES-252 FASHDRW-207 FASHDES-311;
FASHDES-335 - Junior Studio 1-5-3
In preparation for the Capstone courses, students will apply concept development skills in the creation of a two-piece capsule collection. Emphasis will be placed on industry standards as they apply to fit and construction techniques. Prerequisite: FASHDES-311 (Min grade C)

FASHDES-371 - Special Topics in Fashion 1-5-3
A topic of special interest to fashion students and faculty will be explored in a studio/lecture format. Topic will vary, to be chosen by the instructor.

FASHDES-3XX - Fashion Design Elective ******
This course is a placeholder. Choose one Fashion Design Elective in consultation with advisor.

FASHDES-415 - Collection Development I 1-7-4
A capstone course for senior fashion designers to develop and produce a portfolio of original designs. The collection is designed, merchandised and produced by the student in collaboration with the instructor and a visiting critic. Prerequisite: FASHDES-316 FASHDES-322 Minimum grade C in FASHDES-335

FASHDES-416 - Collection Development II 1--7-4
Students will further develop the concepts from their original sources of inspiration from FASHDES-415, Collection Development I, creating a cohesive collection of clothing. This is also an opportunity for the student who wishes to investigate designing for a different market from a new inspirational source. Prerequisite: FASHDES-415 FASHDES-335; Minimum grade C;

FASHDES-419 - Accessories 1-5-3
Fashion design majors work primarily in designing and executing garments. However, the area of accessories presents excellent opportunities for the creative designer. The accessories market (hats, scarves, belts, handbags and jewelry) is growing and is in need of creative and qualified talent. Accessories is an elective for the student interested in pursuing a career in this market and/or for the student who, as a designer, is interested in the creation and coordination of the total ensemble. Prerequisite: FASHDES-211 and VSDES-101 or FASHDES-252

FASHDES-433 - Fashion Layout & Portfolio Development 1-5-3
This elective course provides fashion design students with a professional portfolio of original work showcasing their design abilities and illustration finesse. The concept of layout and design will be presented as it relates to newspaper advertisements, editorial illustration and brochure development. Various presentational techniques will also be addressed as an effective sales tool for seasonal collections. Prerequisite: FASHDRW-207

FASHDES-441 - Couture Techniques 1-5-3
This elective teaches the various methods of creating and constructing a couture garment. Students will learn how to combine custom designing, flat pattern and draping, machine and hand skills to execute an ensemble of clothing in the style of selected couture designers. Prerequisite: FASHDES-311 FASHDRW-207
FASHDRW-207 - Fashion/Figure Drawing 1-5-3
Students review basic forms of the figure in an anatomical, gestural and design sense. In a studio setting, students develop the skills and vocabulary of design room and presentation sketching by drawing from live models, developing designer croquis and technical drawings, exploring various media and rendering fabrics. Prerequisite: DRAW-206

FASHDRW-317 - Fashion Illustration I 1-5-3
An elective for students who are interested in further developing their illustration skills and their applications in the field of fashion design. Students do extensive fashion model studies and develop several visual presentations related to concepts and techniques presented in class. Presentation techniques and portfolio presentation will also be addressed. Prerequisite: FASHDRW-207

FASHDRW-319 - Fashion Illustration II 1-5-3
This sequel to FASHDRW-317 is an elective course to challenge and refine the fashion design student's illustration skills as they relate to the professional job market. Extensive fashion-model studies will be combined with assignments similar to those found in today's industry. Professional presentation skills and portfolio development will be emphasized. Prerequisite: FASHDRW-317

FASHMGT-101 - Global Fashion Insight 3-1-3
Survey of the apparel industry presents a comprehensive overview of one of the most dynamic industries in the world including marketing strategies, product-line development, pre-production and production processes, quality assurance, international sourcing, supply chain management and distribution strategies. This course investigates the application of technology in all areas of the operations of an apparel enterprise. Survey establishes the basis for further study of the apparel industry. The term project, which simulates the formation and operation of an apparel enterprise, provides a theoretical as well as a practical learning experience.

FASHMGT-201 - Prototyping 1-5-3
Students will have a basic understanding of garment construction combined with flat-pattern concepts. The use of industrial equipment and basic slopers will be utilized to produce a sample book of construction details and garments. Any student who has received credit for FASHDES-211 or FASHDES-213 may not take this course.

FASHMGT-211 - Fashion Immersion 6-0-6
Students will experience the fashion value chain by participating in a range of activities based in a major fashion city. Through a series of industry visits and activities they will be immersed in processes related to concept/design, product development, production, merchandising and customer relationship management. Students will integrate the knowledge they have gained and apply it to the development of a product. This course is for sophomore students and is offered only in the spring semester. Students with at least 30 completed credit hours and a 2.75 GPA or higher may apply early in the fall semester to participate; seats are limited. Corequisite: DECFRM-200DECSYS-206MKTG-217

FASHMGT-211N - Fashion Immersion -----
Students will experience the fashion value chain by participating in a range of activities based in a major fashion city. Through a series of industry visits and activities they will be immersed in processes related to concept/design, product development, production, merchandising and customer relationship management. Students will integrate the knowledge they have gained and apply it to the development of a product. This course is for sophomores. Students with at least 30 completed credit hours and a 2.75 GPA or higher may apply to participate; seats are limited. Corequisite: DECFRM-200DECSYS-206MKTG-217

FASHMGT-304 - Visual Merchandising 3-0-3
Visual merchandising facilitates the communication of the retail brand to the consumer. In this course, students will learn the basic concepts, techniques and applications of visual merchandising for various retail venues.

FASHMGT-305N - Production 3-2-3
Basic operations in all segments of an apparel plant are studied from the initial receipt of raw materials through storage, inspection, marker making, spreading, cutting, sewing, pressing, warehousing, shipping and customer returns. Latest technological advances in each of these areas will be discussed with marker making performed on a Gerber Accumark 300 System. Inventory management, labor issues, ergonomics and relevant public policies are also studied. Prerequisite:FASHMGT-101FASHMGT-201 or FASHDES-211

FASHMGT-308 - Global Product Management 3-0-3
Global Product Management is a combination of classroom lectures and experiential instruction in a global environment. Student's tour design houses, mills, dye houses, production facilities, and examine international retailers. Students learn how to assess manufacturers for compliance and engage in cultural activities. Another major component of the course is to observe the economic state of the apparel industry in the specified country and study sustainable methods for manufacturing apparel, home textiles and other products. Prerequisite:take text-101;

FASHMGT-319 - Fashion Journalism 3-0-3
Formerly JSINT-311: This course introduces students to the field of fashion journalism and supports the development of creative writing styles. Students will examine reporting, criticism and commentary about fashion published in newspapers and magazines; displayed on websites and blogs; and aired on radio and television. This course also analyzes the types of publications, writers, the audience that is targeted, the subjects covered and the purpose and function of coverage. Prerequisite: WRIT-201 WRTG-211 WRTG-217 or WRTG-215;

FASHMGT-360 - The Business of Licensing 3-0-3
Licensing, building brand extensions, and adding services to the merchandise mix are strategies to enhance the brand's position at leading fashion companies. Licensing is a growing business format that has growing applications in many diverse markets. Fashion brands are identifying ways to maintain their intellectual property through copyrights, trademarks, and patents to support the brand's culture. This course will examine the laws and regulations for fashion licensing, assess the components of a license agreement, and present strategies for extending the product or service offerings in retailing.

FASHMGT-3XX - FMM Specialization Course
Choose 1 FMM Specialization course in consultation with advisor.

**FASHMGT-401 - Apparel/Textile Quality Assurance** 3-0-3
This course will develop an understanding of the intricate interdependence of fiber content, yarn properties, fabric structure and applied finish required to produce saleable products offering to the purchaser ‘fair’ value per dollar expenditure. Apparel Quality Assurance integrates the knowledge gained in textile, apparel, business and humanities courses to develop managerial talent in any ‘cut and sew’ aspect of the fashion industry. Fall only. Prerequisite: FASHMGT-305 or 305N and STAT-201 and TEXT-301

**FASHMGT-408 - Apparel/Textile Sourcing** 3-0-3
Execution and delivery of a product in today's apparel supply chain occurs within a global environment. Understanding the complexities in establishing and maintaining sourcing strategies is a critical element in a student's portfolio of course work. Prerequisite: FASHMGT-101 or FASHDES-316

**FASHMGT-437 - Integrated Technology** 3-0-3
The course will analyze the various manufacturing technologies and their implications on management philosophy, employee relations and profitability through lectures and literature searches. The student will be a member of a team that will analyze and present to top management a feasible plan for integrating manufacturing technology. Prerequisite: FASHMGT-305 or FASHMGT-305N;

**FASHMGT-451 - Operations & Supply Chain Mgmt** 3-0-3
This course provides a comprehensive survey of production and service operations management with an emphasis on the fashion/retail industry supply chain. It focuses on mathematical methods and the Case study approach to formulate, analyze and solve various supply chain problems. Areas of study include Decision Analysis, Forecasting techniques, Inventory and Scheduling models, Statistical Quality Control, Aggregate Planning, Material Requirements Planning, Linear Programming, Transportation and Transshipment problems. MS Excel will be used extensively in this course. Prerequisite: MGMT-104 or MGMT-301 and STAT-201

**FASHMGT-470 - Global Fashion Value Chain** 3-0-3
This course is designed to demonstrate agile techniques for students to examine the interrelationship between sourcing, production, and quality assurance. The course will focus on selecting the appropriate partners and suppliers for producing products in various production environments. Students will also identify the proper protocol for instituting quality assurance and quality control processes such as standards for testing throughout the supply chain process. Further topics for improving customer satisfaction through quality assurance, sustainability and social compliance will be investigated. Prerequisite: TEXT-101

**FASHMGT-499 - Apparel Merchandising Management** 3-0-3
Management of the merchandising function in an apparel company, including the development of a product line, design coordination, costing, sample making, specifications, resource selection, forecasting sales and planning inventory levels, promotion and coordination with sales and production are included. Prerequisite: FASHMGT-101 or FASHDES-316
FASHMGT-4XX - FMM Specialization Course

Choose 1 FMM Specialization course in consultation with advisor.

FINC-120 - Entrepreneurial Accounting & Finance 3-0-3
This course introduces students to accounting and financial skills necessary for entrepreneurial ventures. Fundamental accounting concepts include understanding financial statements and performing basic financial statement ratio analysis. Managerial accounting concepts useful in management decision-making will be introduced including the preparation of operating and capital budgets and cost-volume-profit (break-even) analysis. The course also addresses objectives of financing, internal and external sources of financing, forms of financing, short-term vs. long-term financing, role of stock exchanges, Islamic financing, defining working capital, and managing of working capital.

FINC-301 - Financial Management 3-0-3
This course provides an introduction to finance that examines the role of the financial decision maker at the corporate level. Four basic questions are examined: the goal of the firm, investment decisions of the firm, financing decisions of the firm and dividend decisions of the firm. The technique of discounted cash-flow analysis is developed and emphasized as it relates to corporate financial decisions. Prerequisite: ACCT-101 STAT-201;

FINC-303 - Intermediate Financial Management 3-0-3
An in-depth study of financial analysis and planning, asset management and capital structures. Financial decision making is studied by means of finance cases. Computerized financial analyses are part of the course. Prerequisite: FINC-301

FINC-318 - International Finance and Development 3-0-3
This course explores interrelations between the economic theory of growth/development and financial applications in emerging countries. Case studies are used to analyze financial issues faced by corporations operating in a global environment. Main topics covered include balance of payments, exchange rate determinants, international financial markets, managing exchange rate risk exposure using derivatives, and foreign direct investment. Prerequisite: FINC-301 ECON-111

FINC-321 - Investments and Portfolio Management 3-0-3
This course explores the process of comparative security valuation analysis. The emphasis is on risk-return trade-off, principles of portfolio management and the process of security analysis. Prerequisite: FINC-301

FINC-322 - Capital Markets and Financial Institutions 3-0-3
This course explores depository and non-depository financial intermediaries, flow of funds into the money and capital markets. Prerequisite: FINC-301

FINC-381 - Independent Study in Finance 0-0-3
This course is an intensive independent study of a chosen subject. The student is expected to read a substantial number of major works in the field, may be required to do primary research and must prepare a critical documented paper. See statement on Independent Study in the "University Academic Policies and Procedures: Common Academic Policies for All Students."

**FINC-411 - Personal Fin Plann & Risk Mgt.**  
3-0-3

In a seminar setting, drawing on the knowledge of the fundamentals and advanced concepts studied in finance classes, skills will be developed to become a better decision maker by learning how to integrate the various topics of finance. Through problem-oriented exercises, an appreciation of the importance and know-how of anticipating, recognizing and adapting to external forces in the decision-making process and organization will be developed. Finance as a functional area is dynamic, and emphasis will be placed on incorporating the most recent academic and practitioner literature, which is of theoretical and practical importance in the decision-making process. This challenging course is built around readings, finance cases, research papers and problem sets; and includes group and individual assignments and written and oral presentations. Prerequisite: FINC-321 FINC-322;

**FINC-412 - Financial Modeling**  
3-0-3

This course will cover several areas of developing and applying financial modeling, including capital budgeting and cash flow estimation models, stocks and bond valuation models, option pricing models, portfolio optimization models. Prerequisite: FINC-301 FINC-321 FINC-322;

**FREN-101 - French I**  
3-0-3

A beginner's course designed for students with very little or no knowledge of the language. The focus is on basic oral expression, listening comprehension and acquiring simple reading and writing skills, so that students can gain confidence in the language and to begin to have conversations. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

**FREN-201 - French II**  
3-0-3

A beginner's course designed for students who have completed one semester of college-level language or the equivalent. The focus is on oral expression, listening comprehension and the acquisition of simple reading and writing skills, so that students can gain confidence in the language and conduct conversations and other social interactions in the language with some level of ease. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

**FREN-301 - French III**  
3-0-3

A beginner's course designed for students who have completed two semesters of college-level language or the equivalent. The focus is on advancing oral expression, listening comprehension and the development of reading and writing skills, so that students can gain confidence and express themselves fluidly entirely in the target language. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

**FREN-401 - French IV**  
3-0-3
An intermediate course that provides students with the opportunity to communicate in a fluent and sophisticated manner. The focus is on expanding the knowledge of structures and vocabulary that students have acquired in levels I-III. In addition to constant attention to speaking, writing, listening and reading, more complex ways of expression are also emphasized. Contemporary culture is explored through authentic visual media and written materials.

FYS-100 - Pathways Seminar  
1-0-1

The Pathways Seminar provides the opportunity for all first-time freshmen to learn and practice strategies that will enable their success at Philadelphia University and beyond. Students will create personal, professional, and academic goals, as well as success strategies for learning and career development. Each course section will engage with a specific theme determined for the entering class of that year. Through engagement with these themes, students will explore the role of the professional in the community and the world, and engage with the mission and goals of a Philadelphia University education.

GCIT-208 - The Individual & the Global Environment  
3-0-3

This course will introduce students to the social sciences by focusing upon issues in the environment. By examining goals of the new environmentalism, by direct individual and community involvement and by understanding the present state of the world and future trends, the student will have the skills to prepare for a sustainable society, a society that satisfies its needs without jeopardizing the prospects of future generations. Prerequisite: WRIT-1XX and DBTU-114

GCIT-210 - Human Rights  
3-0-3

WRITING INTENSIVE: The course will examine the question of whether there are certain rights that we all possess as human beings and the prominence of these rights in international relations. Students will monitor human-rights violations in the United States and other countries in order to determine how much we have achieved as a world community and how far we have yet to go. Prerequisite: WRIT-1XX and DBTU-114

GCIT-211 - Glob. Econ:Power, Poverty & P  
3-0-3

The course will emphasize the intersection between global political relations and global economics, and how the two together impact social relations worldwide. Various complementary and competing political and economic perspectives (from capitalist to socialist) will be used to address recent trends in the development of a global economy, international trade, the formation of regional blocs such as NAFTA and the EU, and North-South political/economic relations. Prerequisite: WRIT-1XX and DBTU-114

GCIT-212 - Politics of Global Media  
3-0-3

This course introduces students to the history, theory, practices, institutions, and impact of modern communications media. We will examine both print and non-print media and address the media’s impact on society, how audiences respond to media, how people produce and consume media, and media industries and careers. Students will apply what they learn by composing in multiple mediums and other means of communication integral to contemporary communications. Prerequisite: WRIT-1XX and DBTU-114

GCIT-225 - Global Politics  
3-0-3
This course provides an overview of the forces that are shaping international politics and economics. This course will help students understand the roles of international institutions such as the United Nations, the World Trade Organization and the International Monetary Fund, as well as non-governmental actors such as Amnesty International and al Qaeda. Students will also examine the process of economic globalization in order to understand its varying impacts on different world regions. Prerequisite: WRIT-1XX AND DBTU-114

GCIT-2XX - Global Citizenship Placeholder

GCIT-398 - Transfer Global Citizenship

GDIV-198 - Transfer Global Diversity

GDIV-1XX - Global Diversity Placeholder

GDIV-200 - Comparative Modernities Global Cultures of Modernity 3-0-3
This course introduces students to modernity as a global phenomenon. Sometimes, European influence was dominant in the global circulation of modernity. However, just as often, modernity reflected diverse local/ethnic preferences and practices. The course is multi-disciplinary, drawing from history, literary studies, anthropology, art and design history, and political science. Prerequisite: WRIT 1XX and DBTU-114

GDIV-201 - Contemporary Europe 3-0-3
A multidisciplinary study of European society, history and culture with emphasis on the 20th century. Through a variety of materials and approaches including fiction, visual sources, political commentary and cultural artifacts, this course will examine the rise of the European Community and the continuing conflict between ethnic, cultural and political forces in the region. Prerequisite: WRIT 1XX and DBTU-114

GDIV-201S - Contemporary Europe (study Abroad) 3-0-3
A multidisciplinary study of European society, history and culture with emphasis on the 20th century. Through a variety of materials and approaches including fiction, visual sources, political commentary and cultural artifacts, this course will examine the rise of the European Community and the continuing conflict between ethnic, cultural and political forces in the region. This study abroad course is taught in Europe. Prerequisite: WRIT-1XX and DBTU-114

GDIV-202 - Latin America 3-0-3
A multidisciplinary introduction to Latin American history, society and culture through a variety of materials including literature, film, music, journalistic accounts and history with emphasis upon the 20th century. The course will emphasize the complex interplay between indigenous, Iberian and African influences in the forging of the continent's past, present and future. Students will examine the roots of everyday and state violence, as well as the current controversies over "liberalization" and "market" economies. Prerequisite: WRTG-1XX and DBTU-114

GDIV-203 - Class, Gender, and Race in World Societies 3-0-3
A study of theories, concepts and methods of social science, this course focuses on the nature of economic, racial and sexual stratification in the United States and around the world. The course is designed to enable one to understand and to be able to use social science to analyze and influence situations and environments. Prerequisite: WRIT 1XX and DBTU 114

GDIV-204 - Personality and World Cultures ----- 
This course examines cultural diversity by focusing on the interaction between psychological characteristics of the individual and the broader culture that provides the context for how the individual experiences the world. Students will discuss and evaluate social science theories and cross-cultural studies in order to understand how individuals and groups in different societies perceive the world and interact with their environment. In addition, they will consider how cultural and psychological development produce ethnocentrism and apply strategies for identifying and addressing cultural misunderstandings. Prerequisites: WRIT-1XX and DBTU-114
Prerequisite: WRIT-101 DBTU-114

GDIV-205 - East Asia ----- 
A multidisciplinary course examining the shifting relationship between 'tradition' and 'modernity' in East Asia. The course will explore such topics as kinship, gender relations and stratification systems in the Asian past and present. Students will investigate some of the different paths of development that Asian societies have followed in the last two centuries including communism and state-directed capitalism. The course will close with Asia's increasing significance in the globalization of capitalism. Prerequisite: WRIT-101 and DBTU-114

GDIV-208 - Africa 3-0-3
A multidisciplinary introduction to African civilization through a variety of sources including oral epics, film, music, literature, ethnographies, historical studies and visual materials with emphasis upon the 20th century. The course will investigate such topics as the cultural roots of African leadership, the enduring importance of family and community, the impact of the trans-Atlantic trade in human beings on African societies, the struggle to achieve a just, multi-ethnic society in Southern Africa, and the present continent-wide democratization process. Prerequisite: WRIT-1XX and DBTU-114

GDIV-210 - Middle East 3-0-3
The contemporary Middle East will be examined from an interdisciplinary perspective, including the region's history, geography, politics, economy, religions and cultures with emphasis upon the 20th century. The course aims to promote an understanding of the social dynamics of this region, as well as to provide the basic tools for a better understanding of world events in general. Prerequisite: WRIT 1XX and DBTU-114

GDIV-220 - Great Britain 3-0-3
An interdisciplinary study of Great Britain (England, Scotland, Wales and Northern Ireland) including social, political, economic and cultural issues with particular emphasis on the post-1945 period. Students will also learn how to understand cultural difference and to cope with culture shock. This course prepares students for study abroad programs in Great Britain. Open to all students. Prerequisite: WRIT-1XX and DBTU-114

**GDIV-221 - The Environment and World Culture**  3-0-3  
Global religions, cultures, and philosophies, both past and present, have interpreted the relationship between human society and the natural environment in a variety of ways. In this course we will study attitudes towards the environment, its protection, and sustainability through the lenses of several major religions and philosophies, and will compare how these worldviews offer differing perspectives on the role of "Nature" in everyday life. Prerequisite: WRIT-1XX and DBTU-114

**GDIV-223 - World Philosophies**  3-0-3  
This course takes a comparative approach to the study of philosophy, investigating the nature of philosophical activity in diverse cultures. The central question addressed in the course is: Is this the most reliable knowledge acquired through philosophical reasoning, scientific observation or religious devotion Prerequisite: WRIT 1XX and DBTU-114

**GDIV-225 - Exploring World Literature**  3-0-3  
In this course, students approach culture as reflected in the worlds created by individual writers in their works. The course emphasizes close reading, critical analysis and frequent writing about assigned readings. This course may be used to satisfy a College Studies requirement. Prerequisite: WRIT 1XX and DBTU 114

**GDIV-226 - Italy: Study Abroad Preparation**  3-0-3  
A multidisciplinary study of Italy including social, political, economic and cultural issues with particular emphasis upon the post-1945 period; attention is given also to Italy's role in Europe. The course also introduces students to how to learn a language and basic communication skills in Italian needed to cope with daily living in the society, with a special emphasis on issues relating to 'culture shock' when living, working and studying in Italy. Prerequisite: WRIT-1XX and DBTU-114

**GDIV-227 - India and South Asia**  3-0-3  
South Asia A multidisciplinary introduction to the Asian Subcontinent, including the countries of India, Pakistan, Bangladesh and Sri Lanka. The region's modern history, geography, politics, economies, religions, cultures and social issues are each discussed in an integrative manner. Regional popular culture, including modern music, literature and cinema, are also analyzed in order to help students understand the rapidly changing nature of this region today. Prerequisite: WRIT-101 and DBTU-114

**GDIV-229 - Intercultural Encounters**  3-0-3  
The twentieth and twentyfirst centuries have produced an unprecedented level of global migration. As individuals and groups have moved around the world, different cultures have come into close, and often uncomfortable, contact. Through the concepts of migration, diaspora, and exile this course examines the literature, film, and music that express the challenges of these encounters. Prerequisite: WRIT 1XX and DBTU-114
GDIV-231 - The Spanish Speaking World
This course examines the roles of literature, cinema, and other cultural forms in expressing Latin American and Hispanic cultures. Through direct examination of cultural artifacts, students gain insight into diverse cultures and experience different perspectives. As well as investigating specific cultures and cultural production, students will explore the interaction of distinct groups and societies to discover the dynamics and effects of cross-cultural interactions. Prerequisites: WRIT-101, DBTU-114

GDIV-233 - World Cinemas
This course examines cinematic works from around the world in order to gain insight into the social and cultural values of diverse societies. After acquiring some of the basics of film theory and considering how to watch and analyze a film, we will analyze films from a variety of world regions. Students will identify how cultural differences are reflected in cinematic works while also considering the impact of cross-cultural influences in the world of filmmaking. The focus on the cultural dimensions of cinema in this Global Diversity course is designed to help students fulfill the Empathy outcome in the Hallmarks Program. Prerequisites: DBTU-114 and WRIT-201/202

GDIV-235 - World Religions
This course provides an introduction to the historical development, scriptures, practices, and contemporary cultural influence of various world religions. It will cover some selection of Hinduism, Daoism, Confucianism, Judaism, Christianity, Islam, and other religious traditions. Students will explore the role of religion in shaping different cultures. This Global Diversity course is designed to help students fulfill the Empathy outcome in the Hallmarks Program. Prerequisite: WRIT 2XX and DBTU-114

GDIV-2XX - Global Diversity Placeholder
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GDIV-333 - Pop Culture in Global Society
This course focuses on the various ways in which popular culture, expressed through film, television, social media, and print media and other realms are used as rhetorical devices, employed to shape how peoples around the world view one another. Through the reading and analysis of a variety of images from the U.S. and abroad, students will gain a better understanding of how popular media serve to build and express national identity; further, they will also gain substantive knowledge about some of the political, social, economic, religious, and other factors which underpin relations between peoples around the globe.

GER-101 - German I
A beginner’s course designed for students with very little or no knowledge of the language. The focus is on basic oral expression, listening comprehension and acquiring simple reading and writing skills, so that students can gain confidence in the language and to begin to have conversations. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.
GER-201 - German II 3-0-3
A beginner’s course designed for students who have completed one semester of college-level language or the equivalent. The focus is on oral expression, listening comprehension and the acquisition of simple reading and writing skills, so that students can gain confidence in the language and conduct conversations and other social interactions in the language with some level of ease. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

GLOB-101 - Integrativ Sem/Global Portfo 1-0-1
This seminar prepares students to take the Global Portfolio. It introduces students to different ways of approaching global issues in contemporary society. Students must then adopt their own organizing concept that provides a framework for their individual structuring of the Global Portfolio. At the end of the seminar students will articulate their organizing concept and set up an eportfolio that will serve as a framework for course choices as they move forward with the Global Portfolio. Prerequisite: WRITING 1xx

GLOB-102 - Integrativ Sem/Globl Portfo II 1-0-1
This seminar is the culminating experience for students registered for the Global Portfolio. It allows students to curate and complete their e-portfolios. The seminar will require students to reflect on the content of the courses taken to complete the Global Portfolio. As a summative evaluation, students will also engage in individual and group reflections on their global experiences from taking the Global Portfolio. At the end of the seminar students will present their completed e-portfolios for peer and instructor evaluations. Prerequisite: WRITING 1xx GLOB-101

GLOB-103 - Integrativ Sem/Globl Portfo II ----- 
This seminar is the culminating experience for students registered for the Hallmarks Distinction in Global Perspectives. It allows students to curate and complete their e-portfolios. The seminar will require students to reflect on the content of the courses taken to complete the Distinction. As a summative evaluation, students will also engage in individual and group reflections on their global experiences from taking the Distinction. At the end of the seminar students will present their completed e-portfolios for instructor evaluations. Prerequisite: WRIT-101 and STUAB-302

GRAPH-102 - Intro to Graphic Design 0-6-3
This course is an introduction to the methods, materials and vocabulary used in the Graphic Design profession. This studio course emphasizes form analysis; visual abstraction; communication methods; visual metaphor and concepts in design. Prerequisite: ADFND-101 INDD-101 or VSDES-101; Minimum grade C

GRAPH-110 - Digital Imag for Graphic Desg 1-5-3
This course introduces the Adobe Creative Suite computer software package of Adobe Illustrator, Adobe InDesign and Adobe Photoshop as they are used in the Graphic Design industry. Students work through a series of exercises exploring the image creation and manipulation abilities of Photoshop and Illustrator followed by an introduction of InDesign as a page layout program. Good design and craftsmanship are both expected in all course work.

GRAPH-201 - Design III for Graphic Design Communicat 0-8-4
This course introduces the student to typography and its uses through sequential studies to support the building of a visual vocabulary. Students will examine the individual letterform, letters in combination, and large bodies of text with a concentration on the grid, hierarchy, legibility, and clarity of conceptual communication. Prerequisite: GRAPH-102 DSGNFND-203 ADFND-102 or INDD-102; Min grade C

**GRAPH-202 - Design IV for Graphic Design Communication**
0-8-4
This course will build on learning objectives and typographic skills. Emphasis will be placed on the complex interplay of visual meaning and form and typographic sensitivity within a historical context. Prerequisite: GRAPH-201, minimum grade of C

**GRAPH-206 - Design History Study Abroad**
3-0-3
Design History Study Abroad will provide students with the opportunity to experience first-hand and in person, accounts of extraordinary international designers, important design movements and architecture dating from the mid-1700's to the present day. Learning about these contributions to international culture, art and design history-outside of the textbooks, outside of the classroom, and in full color-will help to bring the foundation of understanding of design to life. Studying abroad will allow the student to experience the past while obtaining inspiration and insight into the future. Prerequisite: 3 groups VSDES-101 or ADFND-101 or DRAW-101 or VSDRW-101 and HIST-114 or DBTU-114; and WRIT-101 or WRTG-101;

**GRAPH-208 - History of Graphic Design**
3-0-3
History of Graphic Design  This course will chronicle the evolution of modern Graphic Design through an in-depth survey of human visual communication, beginning with the invention of writing and communication, through the creation of the Gutenberg Press and culminating with the study of the contemporary digital age. Discussion will focus on the function of Graphic Design to communicate and meet human needs with an emphasis on the influence of technology and the evolving role of design in business. [Writing Intensive] Prerequisite: take WRTG-101; ARTH-101 OR ARTH-102;

**GRAPH-301 - Design V for Graphic Design Communication**
0-8-4
This course will focus on the understanding and creation of cohesive corporate identity systems through a systems approach to design with application to such items as a logo, stationery system, packaging, advertisement and other related collateral. The continued investigation of typography and its application will be stressed. Prerequisite: GRAPH-202, minimum grade of C

**GRAPH-302 - Design Vi for Graphic Design Communication**
0-8-4
This course will build upon knowledge and skills obtained in GRAPH-301. Students will respond to complex corporate identity projects through a systems approach. Students will consider solutions that work across multiple media and experiment with unconventional points of contact with the desired target market. Prerequisite: GRAPH-301, minimum grade of C

**GRAPH-305 - Exhibit Design and Signage**
1-5-3
This course concentrates on the adaptation of graphic skills to three-dimensional structures and environments. Students will study structures and commercial systems available for product display, exhibit design and signage. Prerequisite: GRAPH-202
GRAPH-308 - Graphic Design Theory 0-5-3

(Writing Intensive) The Design Theory course will introduce students to contemporary Graphic Design theories and discourse. It will include theoretical aspects of design, including: making, visualizing and reading. Graphic Design and visual communication theories will be compared to those in other design disciplines. Students will use a case study approach to investigate contemporary design and to write critically about it from their point-of-view. Prerequisite: take WRTG-211 WRTG-211 WRTG-217 WRIT-201 or WRIT-202; take GRAPH-208;

GRAPH-310 - Digital Imaging and Photographic Manipulation 1-5-3

This course will focus on enhancing or manipulating photographic images utilizing the computer. Students may create or import their own images with a scanner or digital camera, and use Photoshop tools and filters to enhance, alter or manipulate the image for artistic or design purposes. Prerequisite: VSDES-101 INTD-202 GRAPH-202 INDD-202 or ARCH-202;

GRAPH-320 - Package Design 1-5-3

This course will allow students to apply graphic knowledge to dimensional structures. Emphasis will be placed on the interplay between graphics and structures and the ability of structural design and materials to enhance conceptual communication. Prerequisite:GRAPH-202

GRAPH-341 - Illustration 1-5-3

This course includes original image making in a variety of techniques and media, including exploration of both computer design and traditional methods. Emphasis is placed on unity of concept and media and effective use of visual translation and metaphor. Prerequisite:GRAPH-202

GRAPH-381 - Independent Study: Computer Graphics 0-0-3

For further details, see general description of Independent Study in the "University Academic Policies and Procedures: Common Academic Policies for All Students." Prerequisite:GRAPH-301

GRAPH-398 - Graphic Design Designated Elective Graphic Design ----- Communication

This is a transfer equivalency for a designated elective in the Graphic Design Communications program

GRAPH-3XX - Graphic Design Designated Elective Graphic Design ----- Communication

This is a transfer equivalency for a designated elective in the Graphic Design Communications program

GRAPH-401 - Design VII for Graphic Design Communication 0-12-6
This course will focus on developing design concepts and establishing a visual language that will be applied to various formats while utilizing a systems design approach. The character of the project will support a unified theme/concept/idea for an identified client that is geared to a specific market or interest group. There will also be research and conceptual development work towards a written proposal for faculty review in preparation for the following semester's Capstone in Graphic Design project. Prerequisite: GRAPH-302

**GRAPH-407 - Philadelphia Univ Design Wkshop**  1-5-3

This course will provide students with an opportunity to work on real projects for real clients (University, non-profit and/or industry), thus offering a chance to gain valuable, practical experience while still in school. Students will work in interdisciplinary teams, gain exposure to client relations and the professional presentation of their work and be exposed to all levels of production as it relates to these projects. The course is open to junior and senior-level Graphic Design Communication and Interactive Design and Media students only upon prior portfolio review by the instructor. Prerequisite: GRAPH-301 or DIGD-301 Minimum Grade C

**GRAPH-408 - Advanced Publication Design**  1-5-3

This course will focus on publication design and the continued development of projects with increased conceptual and physical complexity. The relationship between editorial content and design format will be explored. Original image-making through illustrative, photographic or any other means will be encouraged. The application of charts, graphs, tables and quantitative information will be investigated. Prerequisite: GRAPH-202

**GRAPH-409 - Issues in Information Design**  1-5-3

This course introduces issues in the design and communication of typical information categories through a range of design, media, and scales. Topics are raised in the categories of cartography, comparative data and diagrams. Emphasis is placed on exploration, understanding and process rather than on finished design and craft. Prerequisite: GRAPH-202 or INDD-202

**GRAPH-499 - Capstone in Graphic Design Communication**  0-12-6

Students develop projects independently and are required to demonstrate ability and understanding of communication design theory, process and principles. The final project requires research of topic, design exploration, development and final professional presentation. The syllabus also requires the development and presentation of a resume and a final portfolio of work selected from projects students have produced during their studies in the program. Prerequisite: GRAPH-401

**HALLMK-499 - Capstone Folio Workshop**  3-0-3
Capstone Folio Workshop is the final requirement in the Hallmarks Core curriculum. In this writing-intensive course, students evaluate their fulfillment of the 8 Hallmarks learning goals as they refine and complete their Hallmarks Folio in a studio work environment. Students will trace connections among their many curricular and co-curricular learning experiences and apply the concept of citizenship in a variety of contexts to articulate how the Hallmarks learning goals prepare them to contribute to their local, national, professional and global communities. In the culminating assignment, students explore a significant topic or project from their majors to define their responsibilities as citizens in relation to real-world issues that they will encounter in their careers. [Writing Intensive] Prerequisites: ADIV-2xx, GCIT-2xx, GDIV-2xx, ETHIC-2xx, ISEM-3xx, DBTG-300, Scientific Understanding requirement, and Mathematics requirement Writing Intensive Prerequisite: 3 credits from each ADIV GCIT GDIV ISEM ETHIC DBTG. DEC Students substitute DECMTHD course for ISEM

HIST-381 - Independent Study in History 0-0-3
Students will complete an intensive research on a topic in history. This course can be taken for College Studies credit. For further details, see general description of Independent Study in "University Academic Policies and Procedures: Common Academic Policies for All Students." Permission required, see appropriate form on the University Registrar’s webpage www.philau.edu/registrar/ for more information.

HOLD-199 - Place Holder ----- 
This is a place Holder.

HONOR-300 - Honors: Study Abroad 0-0-(3-12)
This non-credit option allows a student to earn Honors credit while completing a semester in another country. Students interested in pursuing Honors Study Abroad work with their academic advisor and/or school faculty to prepare a proposal to study/observe a facet of the host country’s culture. Upon return to campus, students will offer a presentation of their observations to the campus community.

HONOR-310 - Honors Summer Readings 0-0-0
This non-credit option is a very popular option. Exclusively on BlackBoard, students read, discuss, and complete assignments of selected books under the guidance of a faculty member. The course counts toward one of the seven courses required for the honors certificate. To enroll, students must be in good standing in the Honors Program. This is a noncredit option.

HONOR-355 - Honors: Community Service 0-0-0
Students interested in pursuing Honors Community Service work with the Honors director and/or campus Community Service coordinator to: 1) identify a local service effort, and 2) prepare a proposal to earn honors credit. This is a noncredit option.

HONOR-381 - Honors Independent Study I 0-0-3
Students interested in pursuing Honors Independent Study should meet with the faculty member with whom they want to study to prepare an outline of the topic, goals and objectives for the semester's work. Proposals should be turned in to the Honors director three weeks before pre-registration. See general description of Independent Study in "University Academic Policies and Procedures: Common Academic Policies for All Students." See appropriate form online at the University Registrar's webpage www.philau.edu/registrar/ for more information.

**HONOR-391 - Honors Research I** 0-0-3

Students interested in pursuing Honors Research should meet with the faculty member to plan a research project outlining the topic and inquiry. Proposals should be turned in to the Honors director three weeks before pre-registration.

**HSCI-100 - Intro to Health Professions** 1-0-1

This lecture and seminar course will familiarize the student with the concept, education, certification, legislation, and roles of a variety of health care professions. The structure of the U.S. health care system, along with ethical and current controversial issues related to that system, will be discussed.

**HSCI-230 - Intro to Healthcare** 1-1-2

This lecture and seminar course is designed to expose students in pre-health majors to the basic principles of human interaction in the clinical setting. Current issues in healthcare will be also discussed. This course also includes 50 hours of required patient contact experience in a healthcare facility.

**HSCI-302 - Clinical Research in Emergency Medicine**

This course, designed for students in undergraduate health science programs, trains students to conduct clinical research studies using a combination of didactic and hands-on learning. Students will develop the necessary skills to identify potential candidates, perform interviews, obtain informed consent, carry out data collection, and process specimens according to study protocols. Students work closely with emergency physicians, nursing staff, and research coordinators on a wide range of studies including multicenter NIH-funded and industry-sponsored clinical trials. In addition, students will participate in a variety of clinical skills sessions taught by emergency medicine faculty, including wound management, ultrasonography, as well as workshops on design in medicine hosted by JeffDESIGN faculty. STUDENTS MUST OBTAIN PERMISSION FROM THE HSCI PROGRAM DIRECTOR FOR ENROLLMENT. Students will be invited for a brief interview with the Course Director to receive approval to register for the course. During the interview, students will need to show proof of completion and approval of hospital credentialing requirements at least 8 weeks prior to the start of the term. Prerequisite: BIOL-202 BIOL-202L; Minimum grade B-;

**HSCI-303 - Public Health Issues** 2-3-4

Public Health Issues: Are Americans healthy? This upper-level science elective course examines the scientific, psychological and policy dynamics associated with public health. Students will design experiments to measure their own health in a series of hands-on interactive laboratory exercises while comparing their results to national level demographic, epidemiological, historical trends and current intervention alternatives for the nation's leading health issues. Client case studies will be used to engage students in problem-solving scientifically sound interventions that examine the environmental, socio-cultural, behavioral, and biological determinants of health. Prerequisite: 1 group PSYCH-103 or BIOL-104 BIOL-104L; Minimum grade C;
HSCI-304 - Nutrition and Health  3-0-3
This lecture and case-based discussion course provides students with an overview of principles of nutrition and the role health care providers play in the support of healthy eating goals. It has been estimated that over 1/3rd of the U.S. population is obese, with children becoming increasingly susceptible. Through lecture, research, and presentations, the concepts of the life cycle, growth and development, and how nutrition interfaces with all aspects of these processes will be presented. The major determinants of health, the causes of disease, and the impact of nutrition counseling on disease prevention and treatment will be discussed with an emphasis on supportive nutritional counseling. Prerequisite BIOL-104, BIOL-104L Prerequisite: BIOL-104 BIOL-104L;

HSCI-305 - Concepts in Fitness & Wellness  3-0-3
The link between exercise and disease prevention or progression has been well established. Yet while most Americans believe that physical activity can promote better health, approximately half of all US adults do not achieve the recommended amount of daily physical activity. Through lecture, research, and hands-on skills this course aims to give students in health and science majors the background in exercise physiology, fitness and wellness principles, and measure of physical fitness in order to recommend and implement a sound fitness and wellness program for people of all ages to prevent or limit progression of a variety of medical conditions. Prerequisite: take BIOL-104 BIOL-104L;

HSCI-306 - Introduction to Exercise Physiology  3-0-3
This course is designed to provide the student with applied knowledge relative to the human's physiologic responses to exercise and other environmental stresses. Topics include: nutrition, energy metabolism, respiratory, cardiovascular, and neuromuscular physiology, environmental factors, and applied physiology. Basic laboratory procedures and tests in the field of exercise physiology are designed to complement the lecture area. Prerequisite:BIOL-201 BIOL-201L BIOL-202 BIOL-202L;Minimum grade C;

HSCI-307 - Introduction to Kinesiology  3-0-3
This course provides an introduction to the discipline of kinesiology and an examination of the study of physical activity from the perspectives of experience, research, and professional practice. Specifically, it is an introduction to the fundamental biophysical principles of human movement and their relationship to fitness and activity. The class also introduces students to the sub-disciplines of Kinesiology including Sport Psychology/Sociology, Motor Behavior/Motor Learning, Biomechanics, Exercise Physiology among other topics. Prerequisite:BIOL-201 BIOL-201L BIOL-202 BIOL-202L;Minimum grade C;

HSCI-320 - Clinical Interactions  0-6-3
Clinical Interactions  This experiential, independent-study course includes an extended community-service volunteer experience (150 hours) in a health care setting. Students are required to complete and submit activity logs, a final paper, and an evaluation from their supervisor.

HSCI-330 - Medical Terminology  3-0-3
Medical Terminology and Documentation This course is designed for students in undergraduate health science programs and focuses on the structure and use of medical language and common documentation formats. It also includes an introduction to medical informatics. Clinical cases are utilized to illustrate the use of medical terminology in the health care setting. This course provides a more indepth examination of this subject than PAS-400.

HSCI-398 - Transfer Health Sci Elective

HSCI-3XX - Health Sci Elective
Choose 1 Health Science Elective

HUMN-130 - Interpreting Jazz 0-2-1
Study various styles, techniques and vocabulary in the idiom of jazz music. Development of improvisational skills, including modal and ii-V7-I chord progression, including instrumental performance.

HUMN-215 - Evil and Good 3-0-3
A study of evil and good in art, literature, religion and philosophy, with attention to actual issues of evil and good in human social life. Concepts of evil and good in both Western and non-Western cultures will be surveyed. The course will also provide an introduction to strategies for ethical decisionmaking. Prerequisite: WRTG-101HIST-1XX

HUMN-223 - World Philosophies 3-0-3
This course takes a comparative approach to the study of philosophy, investigating the nature of philosophical activity in diverse cultures. The central question addressed in the course is: "Is this the most reliable knowledge acquired through philosophical reasoning, scientific observation or religious devotion?" Prerequisite: WRTG-101HIST-1XX

HUMN-225 - Exploring World Literature 3-0-3
In this course, students approach culture as reflected in the worlds created by individual writers in their works. The course emphasizes close reading, critical analysis and frequent writing about assigned readings. This course may be used to satisfy a College Studies requirement. Prerequisite: WRTG-101HIST-1XX

HUMN-381 - Independent Study in the Humanities 0-0-3
Intensive research on a topic that does not fall within a particular discipline in the humanities or that is interdisciplinary in nature. Can be taken for College Studies credit. For further details, see general description of Independent Study in 'Academic Policies' section.

HUMN-382 - Independent Study in Languages 0-0-3
See the statement on Independent Study in the "University Academic Policies and Procedures: Common Academic Policies for All Students." Permission required. See appropriate form online at the University Registrar's webpage www.philau.edu/registrar/ for more information.
IENGR-315 - Operations Research II  
3-0-3  
The course explores dynamic programming; decision theory involving one stage problem; probabilistic models of operations research; inventory theory; Markov chains; queuing theory and simulation.

IENGR-413 - Simulation Systems  
3-0-3  
The course explores procedures and rationale for planning, designing and implementing computer simulation experiments used to analyze human-machine systems in engineering, business and social sciences. Prerequisite: IENGR-315

IENGR-414 - Manufacturing Quality Control  
3-0-3  
This course covers the methods used for statistical quality control, capability analysis, monitoring and improvement. Students will learn the techniques, as well as the software available (Minitab, Excel, and SPSS) required to implement these techniques. Prerequisite: TAKE ENGR-305;

IENGR-415 - Production Planning & Control  
3-0-3  
This course covers several techniques that focus on efficient operations management within any organization. The topics include forecasting, inventory management, production systems - MRP, JIT, CONWIP - aggregated workforce planning, production scheduling and supply chain management. Even though the topics seem to be oriented to the manufacturing industry, the concepts taught in this course are applicable to any type of organization, including service, health care, manufacturing, financial and others. Prerequisite: take ENGR-307; ENGR-498

IENGR-418 - Systems Engineering  
3-0-3  
This course focuses on implementation of continuous process improvement within an organization. The purpose of the course is to provide the students with a comprehensive treatment of different tools employed successfully by industries for creating value while eliminating waste (non-value added activities). The course includes lean thinking, value stream mapping, cellular manufacturing, cycle time reduction, Kaizen training, Kanban production systems and six-sigma. Corequisite: ENGR-498

IENGR-420 - Integrating Business & Engr.  
3-0-3  
IENGR-420 Integrating Business and Engineering The course is designed to help students understand how business and engineering work together in an organization. This course will cover the fundamental concepts of financial reports, marketing, strategic planning, and product life-cycle management. The focus of the course is to prepare the engineering students to make decisions related to technology, product and process development, in a way that combines technical, financial, marketing and strategic dimensions. (First offered Spring 2011) Prerequisite: engr-303 iengr-418;

IENGR-426 - Supply Chain Modeling and Analysis  
3-0-3
This course is a designated elective that can be selected as one of the two required designated electives for the BSISE. The course provides a broad introduction to many critical facets of supply chain. Students in this course will apply industrial engineering tools learned through the curriculum to design, analyze and optimize the supply chain such as, mathematical optimization, inventory management, transportation and network location, facilities planning and material handling. Then, more advanced topics are interrelated such as the value of information sharing in the supply chain, and customer value strategic alliances, international issues and decision support systems. Prerequisite: IENGR-413 and IENGR-415

IENGR-427 - Facility Planning and Material Handling 3-0-3
Facility Planning and Material Handling: Physical organization of work places and departments to optimize objectives such as material movement, safety and worker satisfaction. Review of ISE methods for work-place design and productivity measurement and economic decision-making. Computer solutions for layout problems and mathematical models for location problems. Analysis and design of material handling, warehousing and distribution systems. Prerequisite: ENGR-307, ENGR-498

INDD-101 - Design 1 for Industrial Design 0-8-4
This studio is an introduction to design for undergraduate majors in industrial design. The course will provide an intensive introduction to design as an iterative problem-solving process. It will also introduce strategies for making and analyzing form, and present basic techniques of two-dimensional visualization and documentation of three-dimensional objects and principles of design critique, testing and research.

INDD-102 - Design 2: Industrial Design 0-8-4
This studio introduces methods, materials and vocabulary of the industrial design profession, as well as design as a rational, iterative process of problem solving based on working creatively within constraints. Working with materials, digital and hand tools, shop processes and presentation techniques used by professionals are emphasized. It is intensive in industrial design drawing, including sketches, development drawings, orthographic, axonometric and perspective renderings, as well as beginning drafting as used in industrial design, with dimensioned assembly and parts drawings. Prerequisite: INDD-101, ADFND-101, DSGNFD-103 or VSDES-101; Minimum grade C

INDD-106 - Materials and Processes Fabrication 1-3-3
This course introduces shop techniques as they pertain to industrial design model-making and prototype construction. All industrial design students must take this course for shop equipment safety training and pass a safety test. Throughout the semester, attention is given to safety precautions for the shop, along with demonstrations of shop equipment and fabrication processes. A major portion of the course will consist of developing an understanding of the materials and machinery commonly used by industrial designers for producing both working and appearance models.

INDD-201 - Design 3: Industrial Design 0-8-4
This course focuses on creative problem-solving techniques using drawing, sketch modeling and basic shop skills. Students are exposed to a wide choice of materials, which industrial designers use to move their projects forward. Students will use several media for the purpose of documenting projects in progress, for duplication and for presentation purposes. Emphasis is placed on the improvement of craft in the execution of projects. Prerequisite: INDD-102
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>INDD-202</td>
<td>Design 4: Industrial Design</td>
<td>0-8-4</td>
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<td></td>
<td>During the fourth in a series of eight studios,</td>
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<td>designs are conceived which explore the dynamics</td>
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<td>between objects and the user's senses and</td>
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<td>emotions. Students are challenged to improve</td>
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<td>their ability to define problems, generate</td>
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<td>concepts, evaluate these and offer refinements</td>
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<td>of solutions. Students will use basic imaging</td>
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<td>techniques in the presentation of design</td>
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<td></td>
<td>solutions. Prerequisite: INDD-201</td>
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<td>INDD-203</td>
<td>Lighting Design for Luminaires</td>
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<td></td>
<td>This course focuses on luminaire design,</td>
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<td>specifically for the lighting trade market,</td>
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<td>which requires knowledge of codes and</td>
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<td>regulations, lighting metrics, and fundamentals</td>
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<td>of Lighting Design. A review of the Lighting</td>
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<td></td>
<td>Design market, including residential, corporate,</td>
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<td>industrial, retail, as well as interior vs.</td>
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<td>exterior lighting. Students will increase their</td>
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<td></td>
<td>knowledge of how light is used in the built</td>
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<td></td>
<td>environment, and the different types of lamp</td>
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<td>sources, luminaires and their functions.</td>
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<td>Emphasis will be placed on recent development</td>
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<td></td>
<td>in solid state lighting and controls. Prerequisite: INDD-202 or DSGN-371</td>
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<td>INDD-204</td>
<td>Lighting Design As Public Experience</td>
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<td>This course focuses on lighting in Public Space,</td>
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<td>in the form of large scale installations of</td>
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<td>light, digital projection, media facades, and</td>
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<td>other means of place-making which transforms our</td>
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<td>cities into digital urban design. We will review</td>
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<td>how historically light has shaped the landscape</td>
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<td>of our public environments, with a focus on</td>
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<td>new technologies that allow for the rapid</td>
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<td>upgrade we are seeing in urban areas. Students</td>
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<td>will learn software that allows them the ability</td>
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<td>to program light shows, and use digital mapping.</td>
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<td>Students will participate in full scale</td>
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<td>temporary lighting installations.</td>
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<tr>
<td>INDD-205</td>
<td>Rendering for Industrial Design</td>
<td>1-4-3</td>
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<td></td>
<td>An introduction to the traditional techniques</td>
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<td></td>
<td>and materials that industrial designers use to</td>
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<td>develop and represent three dimensional concepts</td>
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<td>and ideas. Students become proficient in the use</td>
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<td>of pencils, markers, pastels and airbrush on a</td>
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<td></td>
<td>variety of media. Emphasis is placed on</td>
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<td>understanding the significance of color and</td>
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<td>graphic applications for industrial design.</td>
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<td></td>
<td>Prerequisite: DRAW-201 VSDRW-101 DRAW-101 or</td>
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<td></td>
<td>ADFND-103;</td>
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<td>INDD-207</td>
<td>Materials and Processes: Manufacturing</td>
<td>1-3-3</td>
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<td></td>
<td>This course is concerned with the exploration</td>
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<td></td>
<td>of materials used in the mass production of</td>
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<td>products, the processes used to shape these</td>
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<td>materials and the applicability of these</td>
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<td>materials to product-design solutions. Students</td>
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<td>should be prepared to visit a number of</td>
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<td>manufacturing facilities. A survey of rapid</td>
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<td>prototyping technologies completes the course.</td>
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<td></td>
<td>Prerequisite: INDD-101; Minimum grade C;</td>
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<td>INDD-210</td>
<td>Ergonomic Studies</td>
<td>2-2-3</td>
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<td>This course analyzes human factors as related</td>
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<td>to broad aspects of design development. It</td>
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<td>explores the issues of operator/user human</td>
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<td>factors and their impact on design. The outcome</td>
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<td>of this course will be to ascertain the</td>
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<td>relationship of basic human dimensions on</td>
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<td></td>
<td>product design. Subjects include systems</td>
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<td>reliability, sensory and motor processes, basic</td>
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<td>research techniques and anthropometric studies.</td>
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<td>Prerequisite: INDD-106</td>
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INDD-301 - Design 5: Industrial Design 0-8-4
The fifth in a series of eight studios, this course focuses on ideas of designs derived from an understanding of consumer behavior. Emphasis is placed on user needs, ease of use and product culture, without ignoring the practicalities imposed by manufacturer's markets, manufacturing process constraints and investment concerns. Students will demonstrate control of the process of design to develop meaningful concepts that employ appropriate technology for their eventual realization. Prerequisite: INDD-202

INDD-302 - Design 6: Industrial Design 0-12-6
In this sixth in a series of eight studio courses, students design and develop consumer products in a virtual product development consultancy. Students learn about the complexities of the design development process, during which supply-chain and assembly requirements, marketing issues, materials and sustainability all affect the initial intent of their designs. Prerequisite: INDD-301. Prerequisite: INDD-301

INDD-302N - Design 6: Industrial Design
In this sixth in a series of eight studio courses, students design and develop consumer products in a virtual product development consultancy. Students learn about the complexities of the design development process, during which supply-chain and assembly requirements, marketing issues, materials and sustainability all affect the initial intent of their designs. Prerequisite: INDD-301. Prerequisite: INDD-301

INDD-304 - Design History/Theory 3-1-3
This writing intensive seminar will serve as a forum for students to explore the context and scope of the practice of industrial design through readings, research, critical discussions, written presentations and papers. This course is intensive and incorporates a workshop component in which students will use various theoretical frameworks to examine their own attitudes and design work through papers and spoken/graphic presentations. Prerequisite: INDD-324

INDD-306A - Intercultural Innov: Stdy Abr 6-36-1
During a short experience in a foreign country, students will observe and document cultural and demographic differences between countries through formal lectures, and field observation and team exercises. The work in this class is informed by the use of user-based observational research techniques. Documentation from this phase is brought back to the US for use in the INDD 306B Intercultural Innovation: Interdisciplinary Project Component class. Students should plan on taking BOTH classes.

INDD-306B - Intercultural Inovn: Project 0-2-2
This is the second in a two-course sequence. This class builds on work done in the INDD 306A Intercultural Innovation: Study Abroad Component course. Students should plan on taking BOTH classes. In INDD 306B, students bring research by interdisciplinary teams outside the Us into well-documented opportunities for new products, business playforms or systems. In a series of team meetings and design critiques, they then turn them into cohesive proposals including both design and business elements.

INDD-307 - Advanced Materials and Processes for Manufacturing
This course builds on concepts and information which is presented in Materials and Processes II-Manufacturing with a much deeper investigation of development workflow, regulatory considerations, designing for particular performance parameters, and designing for assembly and validation. Students will be introduced to considerations in design such as structural robustness and environmental sealing against moisture and dust, along with development and modeling strategies which facilitate iterative solutions which can be easily modified as testing and validation takes place. The focus of the course will be on development of an actual product design which will be taken to the point where a fully functioning prototype can be fabricated and tested. Prerequisite: INDD-207 & CAD-206

INDD-308 - Biomimicry in Industrial Dsgn 0-6-3

This January term travel course to Costa Rica is offered as an upper-level Industrial Design course that may be of interest to other majors. During this Study Abroad Short Course, students are introduced to principles of Biomimicry; the practice of looking at the world in ways that inspire innovation based on processes that take place in nature; specifically those found in the tropical biodiversity of the diverse ecosystems of the Neotropics, including coral reefs, mangroves, tropical dry forest, rainforest, and cloud forest. Field research will act as the inspiration for innovation design solutions to meet the needs of neighboring communities. Prerequisite: Completion of the Study Abroad application and policy guideline process; GPA ' 2.5; Completion of INDD 201 and DECSYS or permission of instructor. Prerequisite: take INDD-201; take 1 courses; from subject DECSYS;

INDD-324 - History of Design and Communication 3-0-3

This lecture course begins with industrialization and leads to the development of modern design and philosophy. Aspects of industrial design and graphic communication will be critically reviewed. Current design events will be studied interactively and discussed as a continuation of past design inquiries.

INDD-371 - Soft Goods Development ----- 

This course will introduce students to the Soft---goods and Accessories industry through the following professions: footwear design, bag design and outdoor gear. Through this course students will develop a keen understanding of the following: history, design skill---sets, materials, introductory construction techniques, research methodologies, product development, manufacturing practices, and exposure to the international community involved within this fast paced and exciting industry.

INDD-381 - Independent Study in Industrial Design 0-0-3

For further details, see general description of Independent Study in 'Academic Policies' section. Prerequisite:INDD-202

INDD-3XX - ID Concentration Elective ----- 

This is a placeholder. Choose 1 concentration course in consultation with advisor

INDD-401 - Design 7: Industrial Design 0-12-6
The seventh in a sequence of eight studios, this course focuses on the development, expression, and function of design in the context of human culture. It focuses on industry-leading, critical, and entrepreneurial design practices. This studio incorporates development of proposals for the Capstone Project. Prerequisite: INDD-302. Prerequisite: INDD-302

**INDD-401N - Design 7: Industrial Design**  

The seventh in a sequence of eight studios, this course focuses on the development, expression, and function of design in the context of human culture. It focuses on industry-leading, critical, and entrepreneurial design practices. This studio incorporates development of proposals for the Capstone Project. Prerequisite: INDD-302. Prerequisite: INDD-302

**INDD-402 - Design 8: ID Capstone**  
0-12-6

The last in a sequence of eight studio courses, this course is dedicated to the student's capstone project. It is structured to include all aspects of client/designer dynamics, literature review and user research, project management and dissemination, and professional issues. Students present the outcome of their projects at the Kanbar Showcase. Prerequisite: INDD-401. Prerequisite: INDD-401 Corequisite: INDD-494

**INDD-402N - Design 8: ID Capstone**  

The last in a sequence of eight studio courses, this course is dedicated to the student's capstone project. It is structured to include all aspects of client/designer dynamics, literature review and user research, project management and dissemination, and professional issues. Students present the outcome of their projects at the Kanbar Showcase. Prerequisite: INDD-401. Prerequisite: INDD-401

**INDD-494 - Professional Practice II**  
2-2-3

The second in a two-course sequence begins with management concerns related directly to the capstone project. Assignments serve to research project design solutions. The second half of the course focuses on presentation preparations for the capstone project, the integration of the project into the portfolio and the development of this portfolio in digital media. Students are exposed to various issues related to finding gainful employment. Prerequisite: INDD-401 INDD-493 Minimum grade of C Corequisite: INDD-402

**INDD-4XX - ID Concentration Elective**  

This is a placeholder. Choose 1 concentration course in consultation with advisor

**INTD-102 - Design 2 for Interior Design**  
0-8-4

This interior design foundation studio is a synthesis of fundamental design principles and an introduction to research as a tool for understanding programming and design. Lectures and demonstrations will utilize the case-study methodology to investigate various design strategies and to chart the historical course of modernism within the context of residential design. This first interior design studio introduces students to methodologies, processes, color theory, and design elements relevant to interior design. Prerequisite: ADFND-101 with minimum grade of C

**INTD-106 - Technical Drawing and Graphic Representation**  
1-4-3
Following one semester of drawing, this course focuses on the fundamentals of creative graphic representation. Specific topics of emphasis include the construction of orthographic and paraline projections including floor plans, elevations, sections, and one-point and two-point perspective. Prerequisite: ADFND-103DRAW-101

INTD-201 - Design 3 for Interior Design 0-8-4
This studio examines the elements, principles and theories of interior design within the framework of residential and hospitality design. Students will explore and synthesize conceptual, theoretical, functional, and aesthetic issues. Additional foci include the organization and interrelationship of multi-level interior spaces, elements of enclosure, human behavior issues, symbolism and socio-cultural factors. The craft of making and the role of color, materials, furniture, fixtures and equipment in defining spaces and environmental experience will be emphasized. Prerequisite: ADFND-109; INTD-102; Minimum grade C;

INTD-202 - Design 4 for Interior Design 0-8-4
Through diverse design projects, this studio introduces students to the conceptual, theoretical, functional and aesthetic issues related to civic/educational and commercial interiors for contrasting populations. The integration of intuitive and structured design processes will be emphasized. The development of spaces, selection of furniture, fixtures, equipment and materials will be made in relation to performance and experiential requirements. This course incorporates collaboration, research, writing, and analysis to explore human behavior and needs in the built environment. Prerequisite:INTD-201

INTD-206 - Interior Building Technology 1-4-3
This course focuses on construction and installation as it specifically relates to interior design. Students will be introduced to the nature and characteristics of interior detailing in relation to interior construction such as architectural woodwork, millwork, partitions, floors, ceilings, stairs, custom cabinetry, furniture and specialty elements. The influence of interior finish materials on interior form and detailing will be explored. Additional foci include human factors, building codes, accessibility requirements, fire safety, materials regulations and construction documentation. Prerequisite:ARCHDSN-210INTD-201

INTD-208 - Presentation Techniques 2-2-3
This elective course explores several types of rendering techniques for interior design and architectural spaces. It consists of discussion, demonstration and experimentation of freehand and drafted ink work, graphite, color pencils, markers, watercolors, pastels and various reproduction presentation methods. Prerequisite:INTD-201

INTD-301 - Design 5 for Interior Design 0-12-6
This interior design studio challenges students with increased complexity of three-dimensional interior space, program, concept, and design process in the context of community oriented commercial/retail design. Students will translate their design thinking into comprehensive solutions that address place making, branding, construction technology, materiality, lighting design, human factors, furniture selection/planning, building codes and standards. This studio incorporates collaboration to enhance understanding of teamwork in design practice. Prerequisite:INTD-202

INTD-302 - Design 6 for Interior Design 0-12-6
This studio concentrates on contemporary issues relating to business/office typologies, building technology, and sustainable design. Design and technological issues are addressed through: an understanding of office culture, form making, construction systems, solar considerations, indoor environmental quality, HVAC systems, space planning, material and finish selection, lighting design, and integration of systems furniture and equipment. Solutions emphasize holistic and sustainable design thinking, organization of complex spatial responses, and the understanding that design is inherently constructive in nature. Prerequisite: INTD-301

INTD-304 - Integrated Community Service  
0-1-.5
This integrated community service course is required in the Interior Design major. It is an opportunity for students to use and apply their acquired knowledge in a 'real world' setting and to work in integrated and collaborative teams. Students will experience the reciprocal nature and responsibility of community service work as fully participating citizens within the greater Philadelphia region. Prerequisite: take INTD-202 with a minimum grade of C or by permission

INTD-305 - Interior Building Systems  
2-2-3
This mandatory course will focus on the understanding and application of a broad range of mechanical, electrical, lighting, acoustical, plumbing, HVAC, security and other building systems in the context of interior design. Students will be introduced to the nature and characteristics of fire detection, protection and suppression in building interiors. The critical role of interior building systems in establishing and maintaining the health, safety and welfare of users will be emphasized. Prerequisite: INTD-202

INTD-306 - Advanced Visualization: Interiors  
1-4-3
This course teaches advanced digital three-dimensional modeling, rendering, and animation techniques with a focus on interior environments. Emphasis is placed on accurate and realistic representation of interior spaces, forms, materials, furniture, color, and lighting effects, and the creation of virtual walkthroughs. These professional level skills enhance design representations and presentations. Students complete a series of exercises and projects covering a series of advanced digital techniques. Prerequisite: take ARCHDSN-208; & take INTD-202 with min grade C

INTD-308 - Cad 2 for Interior Design  
1-4-3
Following Visualization 1: Digital Modeling, the introductory computer-aided design course, CAD 2 for Interior Design further develops students’ design communication and documentation skills utilizing AutoCAD and BIM software. Students will have the opportunity to produce interior design working drawings and advance their knowledge of professional interior design construction and specification documents. Prerequisite: ARCHDSN-208

INTD-309 - Visual 4: Construction Documentation  
1-4-3
Following Visualization 3: Digital Modeling, this computer-aided design course, further develops students’ design communication and documentation skills utilizing AutoCAD and BIM software. Students will have the opportunity to produce interior design working drawings and advance their knowledge of professional interior design construction and specification documents. Prerequisite: ARCHDSN-208 or ARCHDSN-209

INTD-310 - Textiles and Materials for Interiors  
3-0-3
This course introduces the role of textiles in the creation of commercial and residential interiors. Key topics include the selection, specification and application of textiles based on their properties and performance criteria; sources of textiles and fabrics; the concept of sustainable resources; appropriate installation methods and maintenance requirements of textiles in interior applications; codes; regulations and standards related to use of textiles in interiors; and estimating material requirements such as carpeting, wallpaper and ceiling finishes. Prerequisite: INTD-201

**INTD-325 - Furniture Design**  
2-2-3

This beginning-level elective course is intended to provide students with a basic knowledge of the aspects involved in furniture design. The goal is to expose students to the various means through which one engages in product design. Emphasis is on the fabrication process in addition to protootyping, testing and revision. The course consists of readings, brief lectures, class discussions and studio projects that cover the range of information that designers need to know to be able to specify, design and evaluate furniture-related products for the built environment. A significant amount of class time will be devoted to the development, design and revision of projects. Prerequisite: ARCH-201 INDD-201 LARCH-201 or INTD-201; Minimum grade C;

**INTD-398 - INTD Designated Elective**  
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This is a transfer equivalency for a designated elective in the Interior Design Program

**INTD-3XX - INTD Designated Elective**  
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This is a transfer equivalency for a designated elective in the Interior Design Program

**INTD-401 - Design 7 for Interior Design**  
0-12-6

This advanced comprehensive studio emphasizes the resolution of design issues in a semester-long specialized project. It spans from schematic design through design development and construction documentation and builds upon the knowledge acquired in all previous design, history/theory, and technical courses. Students synthesize their research and design ideation and apply their knowledge of typology, program, function, form making, planning, human behavior, construction, materials, building systems, acoustics, lighting, FF&E, codes and standards in a comprehensive final presentation. Prerequisite: INTD-302

**INTD-412 - Interior Profil Practice and Contract Design**  
2-1-2

In this seminar, the interior design student will analyze the specialized services performed by the professional designer by studying the administrative, legal, ethical and financial aspects of professional practice. Contract documents, specifications, safety standards and building codes will be studied within the context of a non-residential (contract) design project. Prerequisite: INTD-206 INTD-302

**INTD-487 - Capstone Res & Prog. for ID**  
1-4-3
This course gives students the opportunity to assess their inclinations in the field and to select a project that addresses their specific interest. Students are expected to generate individualized research and programming to be used for design and development in their Capstone Project the following semester. They will produce a Capstone Research & Programming Document, which will be the result of research, analysis, and the synthesis of information. It will articulate a clear definition of project parameters and programming. The process of generating this document will recapitulate and augment the research and programming process, which students have been exposed to in previous interior design studios. Prerequisite: INTD-302

**INTD-488 - Capstone Project Interior Des. 0-12-6**

The interior design Capstone semester provides students with an opportunity to focus on an area of concentration in a design project, which will be independently developed with a designated faculty member. The student must demonstrate aptitude and understanding of architectural and interior design theory, principles, and technology, as well as, overall design competence. The Capstone project includes research in the student's selected problem area, development of the design concept, detailing and creative presentation of the design investigation. Prerequisite: INTD-401, intd 487 with minimum grade of C

**INTRN-493Z - Internship 0-.5-.5**

.5 Credits Academic internships at Philadelphia University aid students in professional preparation through a work experience directly related to their major and career goals. Three credit registration options exist in 0.5 credit, 3 credit and 6 credit increments. All are completed as elective academic courses, including a course syllabus focused on professional skill-building and written assignments. While the primary emphasis on the course is on the internship work experience, course assignments are incorporated to prompt reflection on the internship. This reflection is an integral component of experiential learning and students' overall career and professional development. The Career Services Center and designated Faculty Internship Advisor (FIA) from the student's major provide support and guidance during the semester of participation. Career Services staff is also available to assist students with internship search strategy prior to the internship. At the conclusion of the internship semester, all students are evaluated both by their employer and FIA, receiving a grade derived from successful performance as determined by the employer, the quality of academic assignments submitted to faculty, and completion of minimum required hours. All internships, regardless of credit registration, are a minimum of twelve weeks in length. Academic internships are offered during the fall, spring and twelve week summer semesters. The deadline to register for academic internships is the last day to add classes for the semester of intended participation, as established by the Registrar's Office (refer to the academic calendar for specific deadlines). Students are strongly encouraged to apply early and contact Career Services for assistance, providing the best success in finding an appropriate experience in time to meet registration deadlines. To learn more about academic internships at Philadelphia University, visit www.philau.edu/career or contact Career Services. Minimum requirements for participation: Undergraduate: . Students must maintain full-time status during the regular academic year. Completion of 60 credits by the start of the internship experience (90 credits for Architecture and Landscape Architecture majors). 2.5 cumulative GPA in the semester preceding the internship and in good academic standing at the university. Students on academic probation are ineligible. If a transfer student, at least 15 credits earned at PhilaU International: . Meet criteria above as relevant. Determine if eligible for Curricular Practical Training (CPT) by contacting the office for International Student Programs. Note: Students not meeting minimum requirements may be considered by submitting a formal appeal and should contact Career Services for further instructions.

**ISEM-300 - Ethnographic Research Methods 3-0-3**
This course explores a range of ethnographic research tools to analyze human belief, behavior and cultural practices. Students learn to formulate better research questions and conduct ethnographic research to address a contemporary social problem, and will become equipped to analyze and communicate the findings. Students reflect upon their impact in the community and on other ethical questions as part of conducting ethnographic research. [Writing Intensive]

Prerequisite: WRIT 2XX and a GDIV or GCIT course

ISEM-302 - Telling Stories, selling Stories  3-0-3
We are constantly surrounded by stories in our daily lives - at home, at play, and in the workplace - and every day we create just as many stories of our own as we move through all of these spaces. In this course, we analyze, evaluate, and create narratives. We learn and discuss the parts that make up a narrative, and consider how these components are used by storytellers across media and disciplines to create narratives that are (or are not) effective, compelling, ethical, and successful at achieving their purpose. [Writing Intensive] Prerequisites: WRIT-20x, GDIV-2xx or GCIT-2xx Prerequisite: WRIT-2XX and 1 course from GCIT or GDIV or Language

ISEM-304 - Cultures of Health & Illness  3-0-3
How do cultures and societies shape experiences of illness and health? How do cultures affect and communicate conceptions of illness, health, and medicine? In this writing-intensive course, students will study social and cultural dimensions of health, illness and medicine to research the wider contexts in which individuals and societies view and respond to illness and health. Students will draw from multiple disciplines such as literature, rhetoric, anthropology, sociology, history, and philosophy to investigate and propose solutions to current medical and cultural issues that impact citizens and healthcare practitioners in the U.S. and around the globe. [Writing Intensive] Prerequisite: WRIT-2XX, GCIT-2XX or GDIV-2XX Prerequisite: WRIT-2XX and 1 course from GCIT or GDIV or Language

ISEM-340 - Sustainability-Non Westn World  3-0-3
This course examines sustainability issues in non-Western countries around the world. Students will consider how local economic, political and cultural factors help shape sustainability strategies and examine the relationship between economic development and sustainability in a comparative framework. [Writing Intensive] Prerequisites: WRIT-201/202 and GDIV-2xx or GCIT-2xx Prerequisite: WRIT-201 or WRIT-202 1 course from GDIV, GCIT or World Languages

ISEM-360 - Human Behv/Physical Environ.  3-0-3
This course provides an introduction to a range of viewpoints, concepts, and characteristics of human behavior in existing designed spaces. Cultural, social, and psychological factors are examined, e.g., relationships to water, responses to open and enclosed spaces (both interior and exterior), roles of textures and aromas, etc. Various theories and methods of environmental assessment and design are studied that are based on an understanding of mutually supportive relationships between people and their physical environment. All people use various types of spaces in different ways and reaction to varying stimuli differently-why not understand the underlying cultural and psychological factors? [Writing Intensive] Prerequisite: WRIT 2XX and 1 course from GCIT or GDIV or Language

ISEM-398 - Transfer Integrative Seminar

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ITAL-101 - Italian I
3-0-3
A beginner's course designed for students with very little or no knowledge of the language. The focus is on basic oral expression, listening comprehension and acquiring simple reading and writing skills, so that students can gain confidence in the language and to begin to have conversations. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

ITAL-201 - Italian II
3-0-3
A beginner's course designed for students who have completed one semester of college-level language or the equivalent. The focus is on oral expression, listening comprehension and the acquisition of simple reading and writing skills, so that students can gain confidence in the language and conduct conversations and other social interactions in the language with some level of ease. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

ITAL-301 - Italian III
3-0-3
A beginner's course designed for students who have completed two semesters of college-level language or the equivalent. The focus is on advancing oral expression, listening comprehension and the development of reading and writing skills, so that students can gain confidence and express themselves fluidly entirely in the target language. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

ITAL-401 - Italian IV
3-0-3
An intermediate course that provides students with the opportunity to communicate in a fluent and sophisticated manner. The focus is on expanding the knowledge of structures and vocabulary that students have acquired in levels I-III. In addition to constant attention to speaking, writing, listening and reading, more complex ways of expression are also emphasized. Contemporary culture is explored through authentic visual media and written materials. Prerequisite: ITAL-101, ITAL-201, ITAL-301;

ITXA-100 - Intro to Textual Analysis
3-0-3
Students in this course will learn strategies for reading and thinking critically, analyzing evidence from a variety of academic sources, and retaining content. Students will complete assignments in academic reading, note taking, review techniques, and critical thinking skills. Students must earn a "C" or better to receive credit for this course. Students required to take ITXA-100 must not register for HIST-114/DBTU-114 in the same semester.

ITXA-100G - Intro to Textual Analysis Global
3-0-3
This course parallels Introduction to Textual Analysis [ITXA-100] but is designed for students who did not learn English as their first language. As with ITXA-100, its main focus is on strategies for reading and thinking critically, analyzing evidence from a variety of academic sources, and retaining content along with vocabulary expansion. Students will complete assignments in academic reading, note taking, review techniques, and critical thinking. Students must earn a "C".

**JAPN-101 - Japanese I**  
3-0-3  
A beginner's course designed for students with very little or no knowledge of the language. The focus is on basic oral expression, listening comprehension and acquiring simple reading and writing skills, so that students can gain confidence in the language and to begin to have conversations. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

**JAPN-201 - Japanese II**  
3-0-3  
A beginner's course designed for students who have completed one semester of college-level language or the equivalent. The focus is on oral expression, listening comprehension and the acquisition of simple reading and writing skills, so that students can gain confidence in the language and conduct conversations and other social interactions in the language with some level of ease. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

**JAPN-301 - Japanese III**  
3-0-3  
A beginner's course designed for students who have completed two semesters of college-level language or the equivalent. The focus is on advancing oral expression, listening comprehension and the development of reading and writing skills, so that students can gain confidence and express themselves fluidly entirely in the target language. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

**JAPN-401 - Japanese IV**  
3-0-3  
An intermediate course that provides students with the opportunity to communicate in a fluent and sophisticated manner. The focus is on expanding the knowledge of structures and vocabulary that students have acquired in levels I-III. In addition to constant attention to speaking, writing, listening and reading, more complex ways of expression are also emphasized. Contemporary culture is explored through authentic visual media and written materials.

**JSINT-360 - Human Behv/Physical Environ.**  
3-0-3  
This course provides an introduction to a range of viewpoints, concepts, and characteristics of human behavior in existing designed spaces. Cultural, social, and psychological factors are examined, e.g., relationships to water, responses to open and enclosed spaces (both interior and exterior), roles of textures and aromas, etc. Various theories and methods of environmental assessment and design are studied that are based on an understanding of mutually supportive relationships between people and their physical environment. All people use various types of spaces in different ways and reaction to varying stimuli differently—why not understand the underlying cultural and psychological factors? Prerequisite: WRTG 2XX SOC 2XX.
### JSINT-378 - Ethnographic Research Methods 3-0-3
This course explores a range of ethnographic research tools to analyze human belief, behavior and cultural practices. Students learn to formulate better research questions and conduct ethnographic research to address a contemporary social problem, and will become equipped to analyze and communicate the findings. Students reflect upon their impact in the community and on other ethical questions as part of conducting ethnographic research. Prerequisite: WRTG-211 WRTG-215 or WRTG-217; 1 courses; From rule DA.SSC1;

### JSINT-384 - Applied Professional Ethics 3-0-3
WRITING INTENSIVE: This research and writing-intensive course introduces students to numerous concepts in Western and non-Western ethics that inform decisions about what we 'ought' to do in our personal and professional lives. Students will read primary text selections from philosophers and analyze practical cases by applying what they have read. Prerequisite:WRTG-2XXSOC-2XX

### JSINT-3XX - Integrative Prof. Seminars 3-0-3
(writing intensive) Integrative Professional Seminars offer an in-depth examination of specific topics or themes related to the University's professional majors. Geared for a general audience, these courses allow students to explore topics from a variety of perspectives, including those from the disciplines of history, the social sciences and/or the humanities. As advanced writing-intensive courses within the College Studies program, these courses prepare students for senior capstone courses in College Studies and the majors by developing their research, communication and critical-thinking skills. To view current course offerings in this category, go to www.PhilaU.edu/JuniorSeminars. Prerequisite:WRTG-2XXSOC-2XX

### JSLA-360 - Creative Writing 3-0-3
WRITING INTENSIVE: In this hands-on course, students develop their knowledge of how to shape narrative and experience through forms of creative written expression such as poetry and fiction. Students will read and analyze work in these forms; experiment with these forms through writing their own creative drafts and revisions; and develop critiquing skills in a workshop environment. Students showcase their work in a final portfolio and a reading open to the University community. Prerequisite:WRTG-2XXSOC-2XX

### JSLA-361 - From Fiction to Film 3-0-3
WRITING INTENSIVE: The study of the interrelationships between literature and film through case studies of the translation of significant novels (focus on 19th and 20th century) into works of cinema. Prerequisite:WRTG-2XXSOC-2XX

### JSLA-362 - Artist & Society in Lit & Film 3-0-3
WRITING INTENSIVE: An examination of the enigmatic figure of the artist depicted in literature (the short story, the novella and the novel). The genesis and complexity of artists as literary figures will be considered as they find themselves in conflict with society. Prerequisite:take WRTG-211 WRTG-215 or WRTG-217;TAKE 1 COURSE;FROM RULE DA.SSC1;

### JSLA-363 - Shakespeare & Popular Culture 3-0-3
WRITING INTENSIVE: What role does Shakespeare's writing play in popular culture today? How and why have modern filmmakers, artists, and writers "reinterpreted" Shakespeare's plays? Students read and discuss selected plays and examine various film adaptations of them. In addition to comparing different interpretations of Shakespeare's plays to the originals, the course investigates some of the larger issues surrounding Shakespeare and contemporary culture. Prerequisite: WRTG-2XX/SOC-2XX

JSLA-370 - U.S. Recent Past

WRITING INTENSIVE: This course focuses on social, cultural, political, and economic changes within the United States since 1945. Topics such as beatniks and hippies, the New Left, the civil rights movement, student and anti-war movements, the women's movement, the politics of conservatism, and the fate of labor will be studied in the context of an increasingly ethnically and racially diverse society. Students will be encouraged to explore and write from a wide range of sources from across the disciplines. Prerequisite: WRTG-2XX/WRIT-2XX/SOC-2XX

JSLA-380 - Human Rights

WRITING INTENSIVE: The course will examine the question of whether there are certain rights that we all possess as human beings and the prominence of these rights in international relations. Students will monitor human-rights violations in the United States and other countries in order to determine how much we have achieved as a world community and how far we have yet to go. Prerequisite: WRTG-2XX/SOC-2XX

JSLA-381 - Gender Studies

WRITING INTENSIVE: This course focuses on recent developments in gender studies, examining how gender has been conceptualized and analyzed, historically and in the present day. Topics considered include the formation of masculinities and femininities, the intersections between gender, sexual orientation, class, and race, and the significance of gender in personal and professional contexts. Readings are drawn from a variety of disciplines depending on the instructor. Prerequisite: WRTG-2XX/SOC-2XX

JSLA-390 - The Urban Experience

WRITING INTENSIVE: This course discusses the origins and development of urban life. Special focus will be upon Philadelphia as it represents trends in the American experience of cities. Prerequisite: WRTG-2XX/SOC-2XX

JSLA-391 - The African Amer. Experience

WRITING INTENSIVE: This course explores African Americans' struggle for freedom and equality in American society. It examines the social, economic, political, and cultural realms of African American life with some exploration of cultural origins in West Africa. Students read in primary sources and use literary evidence in an interdisciplinary effort to understand the past and explore contemporary issues in American society. Prerequisite: WRTG-2XX/SOC-2XX

KNIT-201 - Knit Technology I

The understanding of both weft- and warp-knit fabrics through an investigation of knit construction, machinery, principles, and knit fabric analysis. Lectures are complemented with a series of lab exercises on hand-flat equipment and fabric-analysis projects designed to fully acquaint the student with the principles of knit-fabric design and production. Prerequisite: TEXT-101 or TEXT-104;
KNIT-203 - Knit Design Studio I  1-5-3
Students will learn through individual development how to create a range of texture and color effects within knit design. Independent needle selection and the use of the presser foot will be explored within design areas involving Jacquard, held-stitch and tuck-stitch structures. Design ideas will be developed through to swatch/sketch proposals suitable for sweater production. Prerequisite: KNIT-201

KNIT-205 - Knit Technology II  4-2-4
A further investigation into the construction, design and production of both weft- and warp-knit fabrics. Lectures will be complemented with lab work involving the design, production and analysis of knit fabrics upon power-knitting equipment. Prerequisite: KNIT-201

KNIT-213 - Knit Design Studio II  1-5-3
A knit design studio elective for Textile or Fashion majors specializing in the knit-design area. Original design ideas will be developed through swatch/sketch presentations. Garment ideas will be developed through technical sketches and specifications into completed sweaters. Prerequisite: KNIT-326

KNIT-307 - Advanced Warp Knitting  3-3-4
Covers all facets of warp-knitting technology with particular emphasis on the variety of machines and fabric construction in relation to end-use applications and markets. Tricot and raschel warp-knit fabric constructions are made in the knitting laboratory to illustrate the basic warp-knit stitches and lapping motions. A variety of warp-knit fabric samples are analyzed to illustrate basic fabric geometric parameters used in the design and production of warp-knit constructions. Also, students are required to research a unique warpknit process/product. Prerequisite: KNIT-201

KNIT-326 - Advanced Weft Knitting  1-5-3
An exploration of the principles involved in knit design using CAD systems and electronic-knitting equipment. Students will design, write computer programs and knit their own fabrics on sweater- and jersey-knitting equipment. Fabric constructions such as Jacquard, links-links, cables, pointelle and presser-foot designs will be developed. Prerequisite: KNIT-203

KNIT-401 - Fashion Knit Design  1-5-3
An elective course in which students may explore the development of knit design. Design ideas will be developed on hand equipment through to swatch/sketch proposals suitable for product design. Students can take this course as a single elective and develop design work suitable for inclusion in their portfolio or take further knit-design electives in order to further their skills. Cannot be taken as a replacement for KNIT-201.

LANG-1XX - Language Placeholder
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This is a placeholder course. Choose 1 language course in consultation with advisor

LANG-2XX - Language Placeholder II
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This is a placeholder course. Choose 1 language course in consultation with advisor

**LARCH-102 - LA Desgn 2: Landscape Architecutr Fndtn** 0-8-4
This foundation design studio is a synthesis of fundamentals of landscape architecture design principles, introduction to programmatic research and an in-depth study of design process, methodologies and craft. All explorations use the landscape as the subject of the studio. Form, texture and spatial organization are emphasized along with social, psychological and spiritual experiences of place. Prerequisite: ADFND-101; Minimum grade C;

**LARCH-201 - LA Design 3: Site Design** 0-8-4
The focus of this design studio is sustainable site-scale planning and design. Students explore site planning theories, methods and resources used in analyses for sustainable settlement, preservation or management of the land. Natural, cultural and experiential data are integrated into the decision-making and design processes. Prerequisite: take larch-102;

**LARCH-203 - Graphics for Landscape Architecture** 1-4-3
In this course, the student gains proficiency in various landscape architecture graphic conventions used in generating, evaluating and presenting design ideas. Included are principles and application of graphic language, color theory, diagramming, plan and section graphics, and oblique and perspective drawings.

**LARCH-206 - History of Landscape Architecture 1** 3-0-3
This survey course covers significant examples of landscapes and landscape design from the eastern, central Asian, and western regions of the world, produced from ancient times through the 19th centuries. Students will be introduced to the cultural and social history of each epoch as a means of critically analyzing key historical works of landscape design and addressing the ideas and concepts imbedded in the term landscape. Prerequisite: WRTG-101

**LARCH-207 - LA Technology: Grading** 2-2-3
This course focuses on the principles and techniques of landform manipulation for design and drainage. Students develop an understanding of contours, contour manipulation, and site-construction methodologies. Topics include topographic and grading problems in landscape engineering: drainage plans, grading plans, spot elevations, road alignment, sections and profiles and cut-and-fill calculations. Prerequisite: LARCH-102 or ADFND-102;

**LARCH-212 - Local Flora** 3-1-3
An introduction to regional native plants used in landscape architecture and ecological restoration. Characteristics, terminology and keys used in identifying plants and plant families will be taught as well as sight recognition of common species. Other topics include plant growth, development and propagation, optimal habitats, and recognition of best management practices. Field work at local/regional sites constitutes a significant part of the course.

**LARCH-300 - La Design 4: Urban Dsgn I** 0-12-6
This design studio focuses on urban design at the site scale. It reinforces design principles learned in earlier semesters, while introducing students to increasing complexity in both program and the design process. The primary philosophic underpinning of the studio is design within a sustainable urban context. Prerequisite: LARCH-201 minimum grade C

LARCH-301 - LA Design 5: Urban Dsgn I 0-12-6
This design studio focuses on urban design at the site scale. It reinforces design principles learned in earlier semesters, while introducing students to increasing complexity in both program and the design process. The primary philosophic underpinning of the studio is design within a sustainable urban context. Prerequisite: LARCH-204, Minimum grade C;

LARCH-303 - La Tech: Advanced Grading 2-2-3
This Advanced Grading course augments what the students have learned in their first Grading course, plus covers in more depth other sustainable aspects of landform manipulation for design and stormwater management. Computer applications will be used as a learning tool. Field trips to sites that are particularly appropriate for observing, measuring, and experiencing the sculptural qualities and capabilities of landform are also an integral component of this course. Prerequisite: take LARCH-207; minimum grade C-

LARCH-304 - LA Design 5: Community Design 0-12-6
This studio focuses on sustainable community design with the physical environment viewed as a catalyst for community enhancement and revitalization. Issues include community identification, social cohesiveness, social, economic and political factors, the role of open space in urban neighborhoods, and community safety and livability. Emphasis is placed on learning methods and techniques for developing physical-design solutions and implementation strategies when working with school, neighborhood and communities groups. An important component of the experience is community participation. Prerequisite: LARCH-300 or LARCH-301

LARCH-305 - Plant Community Ecology 2-2-3
This course investigates how interactions within plant species, between species, and between species and their environment influences plant community structure. Questions explored include: How many species are in a given habitat type' Why these species and not others' How do they interact with each other plants' What controls their abundances in natural and urban landscapes' Students will learn how plant distributions are influenced by environmental conditions with a particular emphasis on the urban environs. In-the-field exercises constitute a significant portion of this course.

LARCH-307 - History of Landscape Architecture 2 3-0-3
This course is the third of a four-term sequence of history/ theory courses. It surveys key examples of landscape architecture from the mid-19th century to the present time. Students strengthen their vocabulary for analyzing and evaluating the designed landscape. Students are also introduced to the influential personalities, projects, events, concepts and thoughts that were pivotal in the philosophical and ethical development of the profession of landscape architecture. [Writing Intensive] Prerequisite: LARCH-206 OR AHIST-205;

LARCH-310 - GIS for Landscape Analysis 1-4-3
Students are introduced to Geographic Information Systems (GIS) applications appropriate to landscape analysis. GIS is an increasingly important software tool for organizing digital spatial data in an accessible and logical manner for site design, recreation master planning, visual analysis, comprehensive planning, resource management and public advocacy.

**LARCH-312 - Sustainable Planting Design**  
2-2-3  
In this course students apply the ecological needs of plants to real situations such as greenroofs, xeriscaping, habitat management, brownfield restorations, meadows and highway plantings. The course stresses ecological relationships among plants and how those relationships are used in the design of these environments. In order to design and maintain these environments students need to understand planting design as well as ecology. Prerequisite: take LARCH-305; LARCH-208 or ECBIO-208;

**LARCH-400 - La Design 6: Restoration Mgmt**  
0-12-6  
This studio course focuses on restoration management methodologies and ecological landscape design principles as they apply to a damaged urban landscape. Students explore sustainable restoration methodologies, how to determine values and make choices, while being cognizant of the costs and public perception. Techniques, practices and materials both sustainable and conventional are evaluated as part of the planning and design processes. Prerequisite: LARCH-300 minimum grade C;

**LARCH-401 - LA Design 7: Interdisciplinary Design**  
0-12-6  
LA Design 7 is an interdisciplinary studio for landscape architecture and other design students who will work in interdisciplinary teams. Specific studio topics may include brownfield redevelopment, co-housing development, waterfront redevelopment, community revitalization. Prerequisite: ARCH-301 LARCH-301 or LARCH-304; Minimum grade C;

**LARCH-409 - LA Tech: Materials and Methods**  
2-2-3  
This course develops concepts, methods and techniques for understanding construction materials and assembly techniques related to landscape architecture construction. Students are introduced to materials commonly used in landscape construction (wood, stone and brick, concrete, and asphalt), with an emphasis on sustainable landscape construction materials and practices. Methods, concepts, and principles for developing construction details are also covered, including conventional and digital communication techniques. Specialized aspects such as structural mechanics for various materials and uses are emphasized. Prerequisite: 2 group; LARCH-207; LARCH-201 or LARCH-202;

**LARCH-412 - LA Tech: Urban Hydrology**  
3-0-3  
Urban hydrology examines sustainable water resource issues as they relate to landscape planning and site planning and design within the urban or urbanizing context. This includes the theory and techniques associated with soil and water conservation comprehension of the why, when and where that leads to sustainable planning or design strategies. Topics include surface water hydrology, stormwater runoff estimation, sustainable stormwater management techniques, watershed planning, flood routing and impact mitigation, and erosion and sedimentation control tools and regulations. Prerequisite:LARCH-303

**LARCH-414 - Intro to Horticulture Therapy**  
3-0-3
This course introduces students to the profound interaction between people to plants and the therapeutic benefits of horticulture on mind, body and soul. Students learn the history, principles, practices, basic skills, applied research and recent development of horticultural therapy. They will become familiar with physically, mentally and emotionally challenged populations in different settings including special schools and correctional facilities through site visits. 
Prerequisite: WRITING 2XX

LARCH-506 - Professional Practice for LA 3-0-3
Professional Management for Landscape Architecture introduces the ethical, legal, and administrative issues and procedures encountered in numerous forms within landscape architecture practice. Topics include: types of practice, project management, the ethical and legal frameworks in which professional landscape architecture practice occurs, contractual documents, proposal preparation and fee structuring. The preparation of an effective resume and portfolio concludes the course. Prerequisite: LARCH-401 or LARCH-400;

LARCH-507 - Cultural and Landscape Preservation 3-0-3
This course covers theories and practices of historic and cultural preservation as a component of a more comprehensive framework for environmental and resource management. Students study the importance of designating historic districts, buildings and landscapes, as well as accomplishing preservation goals, within the existing regulatory environment. Also covered are interpretive methodologies for understanding current cultural and social patterns and practices in the landscape, with an emphasis on sustainability. Prerequisite: LARCH-206 or ARCH-421;

LARCH-515 - Advanced GIS for Landscape Analysis 2-2-3
This is an advanced course in Geographic Information Systems (GIS). Students continue their studies in GIS applications appropriate to landscape analyses. GIS is an increasingly important tool for organizing digital spatial data in an accessible and logical manner for site design, recreation master planning, visual analysis, comprehensive planning, resource management and public advocacy. Prerequisite: LARCH-310

LARCH-516 - LA Tech: Construction Docs 2-4-4
This is the final course of the construction technology series. The major emphasis is the preparation of a complete set of technical construction documents with specifications, sustainable practices, and cost estimates. Specific topics include: site demolition, layout and dimensioning, and specification writing. Prerequisite: take LARCH-303 LARCH-409;

LARCH-521 - Environmental Policy 3-0-3
Environmental problems are essentially social, economic and political problems. This course traces the evolution environmental policy, legislation and regulations, both in the U.S. and worldwide, including the background and context of environmental policymaking. Students will also examine the substantive problems and political process of environmental movements, and contemporary environmental thought with regard to issues of sustainability and environmental justice. Prerequisite: TAKE WRTG-211 WRTG-215 or WRTG-217;

LARCH-599 - LA Design 10: Capstone Project 0-12-6
This course is the last in a series of studios specific to the landscape architecture program curriculum. Students work independently and/or in groups. The Capstone Project requires individual/team research, inventory and analysis, programming, and design concept development through final design. Prerequisite: LARCH-400 or LARCH-401; Minimum grade C;

**LAW-101 - Introduction to Law and Society** 3-0-3
An interdisciplinary introduction to legal systems and the law. Laws are created by social and cultural systems and affected by social, economic and political environments. This course will help students understand the development and impact of legal systems through case studies of many current legal issues and debates. There will also be an introduction to international comparisons.

**LAW-103 - Crime and Justice** 3-0-3
This course provides an introduction to criminal justice in America. Students will examine the criminal justice system and process in the social context of justice and democratic society. They will study the police and criminal courts as political institutions that make decisions with an eye to the press and popular opinion as well as to race, class and justice.

**LAW-105 - American Government** 3-0-3
This course provides an introduction to Law and American Government in action. In the course students will investigate the structures and processes of American Government and the relationships between the three branches of government within the context of how public policy is made and implemented.

**LAW-1XX - Law & Soc Designated Elective**
This is a placeholder for a Law & Society Designated Elective (3 credits). Consult advisor or checksheet for specific course requirements

**LAW-201 - Constitutional Law** 3-0-3
This course provides an examination of the sources, growth, development, and interpretation of the United States Constitution. It also examines the role of the Supreme Court in addressing issues of constitutionality, and considers key cases, historically and currently.

**LAW-203 - Comparative Legal Systems** 3-0-3
This course provides an introduction to comparative law, and how different legal systems approach the law, legal analysis and legal culture. This course provides an examination of comparative legal systems, which consist of legal processes, institutions and culture, through a series of thematic comparative case studies. It also examines the role of dispute resolution processes in different legal cultures; addresses issues of civil, criminal and administrative law; and considers key cases, historically and currently. Prerequisite: WRTG-101 or WRIT-101;

**LAW-205 - Philadelphia Law & Politics** 3-0-3
This course provides a critical introduction to local law and politics. This course will focus on social change in cities, focusing on Philadelphia, in the context of structural urban problems. It provides an examination of the Philadelphia legal and political system by having students learn about processes, institutions and culture, through readings and real world experiences in and around the city of Philadelphia. Students will experience local law and politics through readings and discussions as well as by interacting with members of the legal and political community. Prerequisite: 1 group WRTG-101 HIST-114 or WRIT-101 DBTU-114;

**LAW-207 - Forensic Law**  
3-0-3  
Forensic Science is the collection, study and presentation of scientific evidence in a court of law used in both criminal and civil trials. The goal of forensics is the dispassionate use of science to reliably establish facts free of claims of bias or mistake. The mission of this course is to introduce many of the techniques used daily in courts of law to establish the admissibility of evidence and to examine the benefits of forensics in the creation of this admissible evidence as well as its limitations and potential for misuse. Prerequisite: LAW-101 and WRTG/WRIT 2XX;

**LAW-210 - Law In/For the Workplace**  
3-0-3  
Employment Law is the study of the major human resource legal issue that every entrepreneurial student (from fashion, design, graphic arts, architecture business to law) must know before opening up their own business and should keep squarely in mind as their business grows. Further, knowledge of employee rights gained in this course will empower students who work in another's business. Topics include analysis of the following issues: wages, hiring and firing, anti discrimination laws, worker benefits, union issues, abitration, anti-complete clauses and trade secrets.

**LAW-212 - Intro to Law Enforcement**  
3-0-3  
Introduction to Law Enforcement addresses the role that police officers play in society and the Criminal Justice System. The course is designed to highlight the structure and history of police; the nature of police work; police discretion and misconduct; the major trends and issues facing law enforcement; different types of policing strategies, and the future of the Law Enforcement field. The goal is to present students with potential situations that 21 century law enforcement is faced with and provide hands on real world techniques to understand and deal with challenges of the profession. Prerequisite: take WRIT-101 or WRTG-101;

**LAW-213 - Consp Theories:history,analysis,deconstr**  
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Students will examine popular and iconic conspiracy theories, real and imagined including 9/11, the JFK assassination and Watergate with the purpose of deconstructing the evidence, investigating the reason for their creation and analyzing their effect on American Society, culture and politics. Prerequisite is Writ 101 Prerequisite: take WRIT-101 or WRTG-101;

**LAW-300 - International Law**  
3-0-3  
This course provides an introduction to the international law system that examines the rules binding the international conduct of states and non-state actors. The course covers topics related to the sources and functions of international law, and related issues of jurisdiction and standing. It also focuses on international institutions, and specific issues in international law such as the rules of warfare and peacekeeping; human rights; international trade and communication. Prerequisite: LAW-101 and WRIT 2XX
LAW-302 - Law and Ethics 3-0-3
WRITING INTENSIVE: This course examines the intersection between ethical issues and law in the context of the United States. The course will consider contemporary cases that illustrate the intersection of contemporary legal and ethical issues. There will be a service-learning component to this class. [Writing Intensive] Prerequisite: LAW-101 and WRIT 2XX

LAW-304 - Law, Media & Society 3-0-3
This course examines the dynamic interactions between law, technology and media and how they affect a variety of global social and legal issues, including the democratic process, civil rights, and how individuals relate to each other legally, socially, economically, and sexually.

LAW-306 - Legal Res, Wrtg & Moot Court 3-0-3
WRITING INTENSIVE: This course will introduce students to the basics tenets of legal research, writing and persuasive arguing by way of a moot court appellate competition focusing on current controversial topics that affect both American law and society. [Writing Intensive] Prerequisite: WRTG 2XX and LAW 101

LAW-308 - Law, Women and Gender 3-0-3
This course will examine how the courts and the democratic process have confronted issues of civil rights in the area of law and gender. Using court cases and legislative acts, students will study: (1) The historical denial of basic civil rights to women; (2) Gender discrimination and the law's efforts combat this discrimination; (3) Abortion rights; (4) Same-sex marriage, and (5) Violence against women and sexual assault. Students will learn how the law affects gender discrimination and analyze how well the law allows us to challenge discrimination. Prerequisite: WRT 2XX and DBTU-114 or HIST-114

LAW-398 - Law Designated Elective ----- This is a transfer equivalency for a designated elective in the Law & Society program

LAW-3XX - Law Designated Elective ----- This is a transfer equivalency for a designated elective in the Law & Society program

LAW-411 - Senior Sem in First Amendment 3-0-3
This course examines the first amendment rights of speech, press and association, and focuses on landmark Supreme Court rulings and scholarly commentary. The course will provide students with skills to critically interpret the First Amendment and apply lessons learned to their own lives. It will cover such issues as libel law, obscenity, symbolic speech, and freedom of the press and freedom of association. Prerequisite: LAW-201

LAW-499 - Sr Cap:Public Policy Advocacy 1-2-3
This capstone course for the Law and Society major combines a classroom seminar (50 minutes per week) on advocacy skills with a real-world public policy advocacy project within either a self-selected pre-existing organization or an initiative of the student's own creation and design. Students will also receive 100 minutes of designated instruction time, via the web, during which their E-Reports will be reviewed and the status of their projects will be discussed. Students will review and integrate the skills and knowledge they developed during previous courses in the Law and Society curriculum while also applying the principles of public policy theory and oral and written advocacy to the student's selected project. [Writing Intensive] Prerequisite: take law-411;

MATH-099 - Fundamentals of College Mathematics 5-0-3
This course covers those topics in arithmetic and algebra that are essential to further work involving mathematics. Students will study fractions, decimals and percentages, signed numbers, linear and quadratic equations, exponents and scientific notation, factoring, techniques of graphing, equations of straight lines and linear systems of equations. There will be an emphasis on applications. Use of the scientific calculator will be discussed. Credits earned may not be applied toward graduation requirements. Students must earn a 'C' or better to receive credit for fundamentals courses. See 'Fundamentals Courses' in the section 'Academic Policies.' Students required to take MATH-099 must pass the course before taking CHEM 103, Chemistry I.

MATH-100 - College Algebra 5-0-3
While the content of MATH-100 is identical to that of MATH-101, more time is devoted during the semester to the review and use of elementary mathematical operations. See MATH-101 for content.

MATH-101 - College Algebra 3-0-3
MATH-101 is a concentrated study of the topics traditionally found in College Algebra. Topics of study include algebraic equations and inequalities, absolute value, polynomial, rational, exponential and logarithmic functions, systems of equations and inequalities, matrices and determinants. Emphasis is place on applications in business and economics. Additional topics may include conic sections, sequences and series, combinatorics, probability, modeling with functions, and mathematical induction.

MATH-102 - Pre-Calculus 3-0-3
The fundamentals of college algebra, analytic geometry and trigonometry will be covered, with particular emphasis on those topics necessary for the calculus sequence.

MATH-103 - Applied Calculus 3-0-3
An introduction to the differential and integral calculus of polynomials, rational functions, exponentials and logarithms. Emphasis is placed on the use of calculus in the study of rate of change, determination of extrema and area under the curve. Prerequisite: MATH-100 MATH-101 or MATH-102/MATH-110

MATH-104 - Analytical Geometry ----
This is a course in plane analytic geometry emphasizing the correspondence between geometric
curves and algebraic equations in both 2D and 3D. This correspondence makes it possible to
reformulate problems in geometry as equivalent problems in algebra, and vice versa. Curves
studied include straight lines, circles, parabolas, ellipses, and hyperbolas. Other topics include
coordinate transformations, polar coordinates, and parametric equations. Sequences, series, and
selected topics in solid analytical geometry are also studied. The course assumes a sound
background in algebra, geometry, and trigonometry. Pre-requisite: MATH102 or MATH103 with a
C- or better. Prerequisite: MATH 102 or MATH 103

**MATH-110 - Pre-Calculus for Sci & Engrs**

6-0-4

The fundamentals of college algebra, analytic geometry and trigonometry will be covered, with
particular emphasis on those topics necessary for the calculus sequence.

**MATH-111 - Calculus I**

4-0-4

Functions, slope and rate of change, limits, derivations of algebraic functions, maxima and
minima applications, indefinite integration, integration by substitution, sigma notation, area
between two curves. Knowledge of algebra, geometry and trigonometric functions is assumed.
Prerequisite: take Math-102 or MATH-110 or Placement

**MATH-112 - Calculus II**

4-0-4

Differentiation and integration of transcendental functions. Theory and methods of integration and
applications. Infinite series, convergent tests, Maclaurin and Taylor series. Convergence of Taylor
series. Prerequisite: MATH-111

**MATH-205 - Theory of Computation**

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This course provides an introduction to theoretical, philosophical, and applied issues in
computation. We define abstract mathematical models of computational devices (automata) and
characterize their computational power by studying the formal languages that they can recognize.
We explore the limitations of even the most powerful computational devices, from problems that
require too many resources to compute to tasks that are strictly uncomputable. Prerequisite:C or
better in MATH-100 or higher

**MATH-213 - Calculus III**

4-0-4

Study of analytic geometry in 3D-space; algebra of vectors, differentiation and integration of
vectors; partial differentiation, multiple integrals; infinite series. Prerequisite: MATH-112

**MATH-214 - Linear Algebra**

3-0-3

Theory and solution techniques for systems of linear equations; vectors, matrices, determinants;
eigenvalues and eigenvectors; vector spaces; linear transformations. Prerequisite: MATH-112

**MATH-225 - Differential Equations**

3-0-3

First-order equations; constant-coefficient, nth-order homogeneous and non-homogeneous
equations; special nonlinear equations; elementary applications; power series solutions. May also
include elementary numerical techniques for solutions of ordinary differential equations and other
computer topics. Prerequisite: MATH-112;
MATH-301 - Data Visualization

This course introduces techniques and methodologies for creating effective visualizations based on principles from graphic design, visual art, perceptual psychology, and cognitive science. Topics include: data and image models, color, graph layout, communication design, infographics, identification of "chart junk", matters of scientific integrity, and optimization of data-ink in multivariate data sets. Although there is no pre-requisite for this course, basic working knowledge of, or willingness to learn, data analysis tools (e.g., R, Excel, Matlab/Octave) will be useful.

MATH-316 - Partial Differential Equations 3-0-3

How modeling physical phenomena leads to partial differential equations; the heat conduction, wave propagation and potential equations; classification of linear second-order equations; boundary-value problems; Fourier series; separation of variables and special functions. Prerequisite:MATH-225

MATH-317 - Real Variables 3-0-3

Study of topics related to functions of a real variable, including measure and integration; differentiation; abstract spaces; general measure and integration theory. Prerequisite:MATH-225

MATH-318 - Complex Variables 3-0-3

Study of analytical functions; Cauchy-Riemann equations; power series; infinite series; calculus of residues; contour integration; conformal mapping. Prerequisite:MATH-225

MATH-321 - Probability and Statistics 3-0-3

Fundamentals of probability, discrete and continuous random variables, probability distributions, hypothesis testing. Prerequisite:MATH-112

MATH-323 - Mathematical Statistics 3-0-3

This course is designed to give the student some of the background needed to pursue more advanced courses that use statistical techniques. The content of the course will include topics from probability theory that are necessary for an understanding of the mathematical foundations of statistics. These topics will include: probability distributions, likelihood functions, properties of expectation operators, moment-generating functions, the central-limit theorem, confidence intervals and hypothesis testing. The student will be expected to be familiar with the topics of calculus through multiple integrals. Prerequisite:MATH-321

MATH-326 - Modern Algebra 3-0-3

Study of sets and mappings; group, ring and field theory; homomorphisms and isomorphisms; Lagrange’s theorem; abelian and cyclic groups; symmetric groups; polynomial rings. Prerequisite:MATH-214

MATH-331 - Mathematical Methods in Chemistry, Physics and Engineering 3-0-3

This is an advanced course covering topics chosen from the following: matrix algebra, Fourier series, Sturm-Liouville systems, boundary-value problems for ordinary differential equations, Laplace’s equation, introduction to Bessel’s equation and Bessel functions. Prerequisite:MATH-225
MENGR-301 - Machine Design  3-2-3
Kinematics and dynamics of machinery, including analytical kinematics, force analysis, cam design and balancing. Application of elementary mechanics of solids to analyze and size machine components for stress and deflection. Introduction to finite element analysis with emphasis on beam and plate models. Prerequisite: ENGR-218

MENGR-325 - Engineering Vibrations  3-0-3
Vibrations will be a thorough treatment of vibration theory and its engineering applications, from simple degree to multi degree-of-freedom system. Topics will include harmonic excitation, forced responses, multiple degree-of-freedom systems, design for vibration suppression, distributed parameter systems, vibration testing and experimental modal analysis, and finite element method. Prerequisite: ENGR-218

MENGR-399 - Mechanical Engineering Design Seminar  -----  
The purpose of the Mechanical Engineering Design Seminar is to support student success as Mechanical Engineering students prepare to move into their senior design experience. As a prerequisite for the Engineering senior design experience, the course is built around didactic and experiential educational components, pre-project research assignments, and independent research. Included in the course are elements that teach and reinforce the project proposal process, refine technical report writing skills, and promote lifelong learning and continuing professional development. Prerequisite: ENGR-311 ENGR-301;

MENGR-405 - Intro to Mechatronics  3-1-3
This course will prepare students in the interdisciplinary field of engineering that comprises the integration of mechanics, electronics and computer technology coordinated by control architecture. Emphasis on computer-integrated electromechanical systems will help the students understand the design, analysis and practical approach of system integration. Prerequisite: take ENGR-322;

MENGR-407 - Thermo. Dynam. & Heat Transf. I  3-0-3
This course considers fundamental laws governing the transformation of heat into mechanical energy. Properties of gases and vapors and the processes between states are explored as are applications of the first and second laws of thermodynamics. A study of the transfer of heat by conduction, convection and radiation in steady and unsteady flow is also conducted. Prerequisite: take MATH-112 PHYS-201 PHYS-201L;

MENGR-427 - System Dynamics and Controls  3-0-3
Students will study modeling of physical systems including electromechanical systems; reduction of block diagrams; signal flow graphs and Mason's gain formula; response of second order systems; natural frequency and damping ratio and how they relate to risk-time, peak-time, settling-time, and overshoot; stability and the Routh-Hurwitz criterion; steady-state error and sensitivity; root locus; and Design of cascade compensators using root locus and frequency response. Prerequisite: TAKE ENGR-218;

MENGR-428 - Thermodynamics II  3-0-3
This course covers energy analysis; vapor and gas power cycles; vapor and gas refrigeration cycles; thermodynamic properties of mixtures and solutions; psychrometry and air-conditioning; reacting mixtures and combustion. Prerequisite: MENGR-407

MGMT-104 - Management Foundations 1.5-0-1.5
Designed for majors in C-DEC, this course enables students to understand the role of managers in diverse, global, and competitive organizations, and within the context of 21st Century management theory. Topics include decision-making, motivation, leadership, human resources, ethics and social responsibility, and management in a global environment. Students will explore these topics through assignments and exercises designed to enhance their managerial skills.

MGMT-111 - Essentials of Entrepreneurship 3-0-3
This course will give students a realistic look at the demands of starting a viable business and help students evaluate their own skills, talents, and potential role in the entrepreneurial eco system. Concepts highlighted in this course include: networking, building the right team, legal business structures, venture funding options, and planning for growth. Prerequisites: MKTG-102 or MKTG-104, MGMT-301 or MGMT-104 Prerequisite:1 groups; MKTG-102 or MKTG-104; MGMT-301 or MGMT-104;

MGMT-301 - Principles of Management 3-0-3
Effective management is fundamental for the successful operation of all types of enterprises. The course will present the principles, techniques and concepts needed for managerial analysis and decision making. Functions highlighted include planning, organizing, staffing and controlling.

MGMT-307 - International Management 3-0-3
Introduces students to the special aspects of managing a company in the global environment. Issues involved in understanding and applying the international and cross-cultural dimensions of the traditional management functions, such as organization, control, motivation, human resources and labor relations; and organization theory are studied. Lectures, readings, exercises and cases will be used. Prerequisite: take MGMT-301 or MGMT-104;

MGMT-309 - Systems Analysis 3-0-3
This course introduces the structured approach to design of new applications software, software systems, networks, and/or World Wide Web installations. It deals with the usual life cycle for such operations. Analysis includes approaches to specifying input and output, file structures, trade-off techniques, implementation, documentation and testing. Other approaches such as rapid application development and object-oriented analysis are discussed. Prerequisite:MIS-202

MGMT-310 - People & Teams in Organizations 3-0-3
The course includes an in-depth exploration of topics such as communication, group dynamics, group roles, team building, power and politics, leadership, and negotiation and conflict resolution. In addition, issues of organizational culture and diversity are examined. Through readings, discussions, class activities and projects, students learn how to be effective organizational communicators, team members and leaders. Students also gain an understanding of culture and diversity issues, and how to effectively manage them. Prerequisite: MGMT-301 or MGMT-104;
MGMT-311 - Colloquium in Management 3-0-3
Consideration of selected relevant issues in management and society that are of serious interest to students and faculty, such as technology of the future, impact of data banks, management and public policy, planning systems, education and human resources.

MGMT-315 - Comm, Negotns & Creative Econ 3-0-3
This is a course in organizational politics, power, influence, conflict and conflict management. It has two goals: first, to develop students' skills in recognizing politics and conflict situations; and second, to teach students to use negotiating to achieve personal organizational goals. Through readings, discussion and role-plays, a wide range of conflict and negotiating contexts will be considered. These include situations in interpersonal, interorganizational and union-management relationships. Prerequisite: take MGMT-301 or MGMT-104

MGMT-320 - Human Resource Pract & Tools 3-0-3
This course surveys the roles, policies and procedures of human resource management (HRM) in organizations today. Students learn the steps to staff and motivate a workforce, and appreciate the role of quantitative and qualitative decision making in HRM. Course materials deal with environmental impacts on HRM, equal employment opportunity, human resource planning, selection, performance evaluation, wage and salary administration, training and other relevant topics. Prerequisite: take MGMT-301 or MGMT-104;

MGMT-381 - Independent Study in Management 0-0-3
Students will complete intensive independent study of a chosen subject. The student is expected to read a substantial number of major works in the field and to prepare a critical documented paper. See also the statement on Independent Study under "University Academic Policies and Procedures: Common Academic Policies for All Students."

MGMT-398 - Transfer Management  ----- 

MGMT-3XX - Management Elective  ----- 
This is a placeholder course. Choose 1 Management Elective in consultation with advisor

MGMT-401 - Operations Management 3-0-3
This course is a comprehensive survey of production and service operations management, topics and functions. Topics include methods and work measurement, materials management, plant location and layout, production planning and control, maintenance, quality control, "Total Quality," Japanese management styles, "Systems Approach," and decision tools such as PERT, linear programming, queuing theory, sampling and simulation. Service-delivery applications and activities are also highlighted. Prerequisite: STAT-201; MGMT-104 or MGMT-301;

MGMT-405 - Apparel/Textile Supply Chain Management 3-2-4
This course will bring into sharp focus the global relationship that exists between all of the elements of the textile-apparel-retail supply chain. Areas covered: traditional management functions of control over timeliness of production, and quality and labor relations in the global marketplace. Prerequisite: FASHMGT-401

MGMT-411 - Venture Creation 3-0-3
From opportunity finding to launch, this course provides students the opportunity to apply concepts that cover all major elements of entrepreneurship in the role of the venture creator. Concepts used in the exploration of a venture opportunity include: customer identification and development, business model development and testing, proof of concept evaluation, and pursuing appropriate funding opportunities. Prerequisite: MGMT-111

MGMT-412 - Current Management Topics 3-0-3
This course is designed for senior management majors, and integrates and extends concepts learned in other upper-level management courses. The dynamic nature of management is emphasized through reading, analyzing and discussing recent literature in terms of the current business environment. Students examine topics including 21st-century career management; the role of education and technology in organizations; and future trends in management and organizations. The course includes individual and group readings, cases, and research projects that are presented as written and oral assignments. Prerequisite: 2 groups - MGMT-301 or MGMT-104; MGMT-310;

MGMT-490N - Business Policy and Strategy 3-0-6
WRITING INTENSIVE: The process and techniques of strategy formulation, implementation and evaluation are studied and applied. Case studies of domestic and international companies and not-for-profit organizations are used to integrate strategic management concepts with knowledge acquired in other functional area courses. Includes extensive written individual and team assignments and oral presentations. Students taking this course cannot take MGMT-491 for credit.

MGMT-491N - Textile, Retail and Apparel Business Policy and Strategy 3-0-6
WRITING INTENSIVE: The process and techniques of strategy formulation, implementation and evaluation are studied and applied as they pertain to the textile, apparel and retail industries. Case studies of domestic and international companies are used to integrate strategic-management concepts with knowledge acquired in other functional area courses. Includes extensive written individual and team assignments and oral presentations. Students taking this course cannot take MGMT-490 for credit.

MGMT-498 - Business Capstone I 3-0-3
WRITING INTENSIVE. In this course, students evaluate relevant professional, ethical, and social responsibilities of individuals and organizations. The definitions and roles of sustainable practices, social enterprise, and social entrepreneurship in organizations are explored, and students apply these concepts to real-world business opportunities. An individual writing-intensive assignment ties the course to students’ areas of specialization. The course also includes a critical review of the functional areas of business.

MGMT-498N - Business Capstone: Strategy Simulation -----
In this course, students will be introduced to the fundamentals of business strategy and strategic decision-making. Students will demonstrate their functional knowledge of core business areas including: accounting and finance, management, and marketing, as well as product development and operations. The process and techniques of strategy formulation, implementation and evaluation are studied and applied as student teams operate competing companies in a computer-simulated business environment. This course builds on themes from the DEC Core.

**MGMT-499 - Business Capstone II**  
3-0-3  
The process and techniques of strategy formulation, implementation and evaluation are studied and applied using real-world domestic, international, and not-for-profit company examples. This course builds on themes from the DEC core as they apply to the capstone experience.  

**MGMT-499N - Business Capstone: CSR**  
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In this course, students explore and evaluate the role of business in society. They demonstrate their understanding of ethics, social responsibility, and responsible management in a capstone business project that illustrates their comprehension of business strategy within the context of their major. This course builds on themes from the DEC Core.

**MIS-202 - Management Information Systems**  
3-0-3  
This course is designed for future managerial end users of e-business information systems who will both use and manage information technology (IT). The course addresses the strategic, tactical and operational uses of IT in business for problem solving and identifies and explains MIS applications including customer relationship management systems, enterprise systems, e-commerce applications, transaction processing systems, business analytics, and emerging technologies. Computer assignments complement the topics discussed in class. Prerequisite: STAT-201;

**MKTG-102 - Principles of Marketing**  
3-0-3  
Principles of Marketing A basic course in which the main functions, institutions and concepts of marketing are studied. Attention is focused on providing an analytical and corporate framework for studying and understanding the marketing system within changing environmental forces.

**MKTG-104 - Marketing Foundations**  
1.5-0-1.5  
A basic course in which the main functions, institutions and concepts of marketing are studied. Attention is focused on providing an analytical and corporate framework for studying and understanding the marketing system within changing environmental forces.

**MKTG-115 - Fashion Merchandising**  
3-0-3  
Fashion Merchandising A survey course that provides knowledge of the industries and services that comprise the fashion business. Interrelationships of the men's, women's and children's industries are developed. An interdisciplinary approach to the fashion business as it relates to cultural, historical and economic features is a central theme.

**MKTG-207 - Consumer in the Market Place**  
3-0-3
Consumer Behavior This course provides comprehensive understanding of the many dimensions of consumer behavior and the contributions of behavioral science to this discipline. The focus will be on understanding consumer needs. Prerequisite: MKTG-102 or MKTG-104

**MKTG-217 - Retailing Strategy and Structure** 3-0-3
Retailing Strategy and Structure A comprehensive understanding of retail strategy in the dynamic retailing environment. Special attention is given to retailing structure since it underlies the strategic decision making of retailing management. Prerequisite: MKTG-102 or MKTG-104;

**MKTG-302 - Prod Devp & Innovation** 3-0-3
Product Development and Innovation This course is designed to expose students to the concept of innovation and an understanding of the process of product/service development and innovative marketing. Students learn how a product is conceptualized and ultimately commercialized. They will understand the factors that play a central role in the process. Prerequisite: MKTG-102 or MKTG-104;

**MKTG-305 - Contemporary Brand Mgmt.**
In this course students will learn the terminology, concepts and activities of brand management, including gaining an understanding of the brand equity concept, including steps that can be taken to create and grow the brand's value, identifying & establishing the brand values & positioning, planning & implementing brand marketing programs, measuring & interpreting brand performance, and continuing to grow & sustain brand equity over the long-term. Prerequisite: MKTG-102 OR MKTG-104;

**MKTG-310 - Integrated Mktg Communication** 3-0-3
Integrated Marketing Communication This course examines the vital role of marketing communications in the development of marketing strategy. Integrated marketing communications (IMC) is emphasized as students explore the use of advertising, personal selling, sales promotions, Internet marketing, database marketing, public relations, etc., to enhance brand equity. The strategy and planning involved in the development of integrated campaigns is emphasized. Prerequisite: MKTG-102 or MKTG-104;

**MKTG-315 - Mktg in a Digital Environment** 3-0-3
Marketing in a Digital Environment This course investigates the ways in which new technologies are changing the field of marketing. Major topics include Internet advertising, database marketing, sales-force automation and customer relationship-management software tools. Other topics include the impact of new technologies on distribution strategies, online pricing models, mass-customization strategies, data mining and media implications. Prerequisite: MKTG-102 or MKTG-104;

**MKTG-318 - Sales Management** 3-0-3
Sales Management Sales management is the planning, direction and control of the selling activities of a business. Topics include recruiting, selecting, training, equipping, assigning, routing, supervising, compensating and motivating the sales force. This course focuses on business-to-business marketing. Prerequisite: MKTG-102 or MKTG-104;
MKTG-324 - International Marketing  3-0-3
This course applies fundamental marketing concepts in a global context. We will study marketing practices used by businesses to adapt to the international environment and how to scan the globe for opportunities in other countries. The impact of technological advances, monitoring the changing business environment, and developing effective global marketing strategies is also presented. Prerequisite: MKTG-102 or MKTG-104;

MKTG-328 - Merchandise Buying/Operations  3-0-3
Merchandise Buying/Operations The course provides the student with the understanding of the interdependence of the merchandising and operations functions. Students have a comprehensive understanding of the retail business from gross sales to net profit. To achieve this understanding, students are required to prepare a merchandising/operations plan that integrates all of the elements of doing business in the retail environment. Prerequisite: MKTG-217

MKTG-381 - Independent Study in Marketing  0-0-3
Independent Study in Marketing Intensive independent study of a chosen subject. The student is expected to read a substantial number of major works in the field and to prepare a critical, documented paper. See the statement on Independent Study under 'Academic Policies.' Prerequisite: MKTG-102 or MKTG-104;

MKTG-391 - Marketing Research  3-0-3
Marketing Research Exposure to marketing-research techniques and procedures used in gathering, recording, analyzing and reporting of data related to marketing problems. Prerequisite: MKTG-207 STAT-202;

MKTG-408 - E-Business Strategy  3-0-3
Survey of E-Commerce This is an introductory course in which the size, scope and impact of e-commerce is explored. This course includes discussions about how technology impacts business processes and transactions. A significant part of the course will discuss the e-business technology platform. Additional topics include business-to-business market exchanges, online auctions, electronic-payment systems, market valuation of e-commerce firms, and government policies and issues concerning e-commerce such as privacy, regulations and ethics. Prerequisite: MKTG-102 or MKTG-104;

MKTG-412 - Marketing Strategy Seminar  3-0-3
Marketing Strategy Seminar Skills will be developed for making better decisions by learning to integrate various topics of marketing. The importance and know-how of anticipating, recognizing and adapting to external forces on the decision-making process and organization will be discussed. Emphasis will be placed on incorporating the most recent literature, which is of theoretical and practical importance, in the decision-making process. The course is built around readings, marketing cases, research papers and problem sets. A comprehensive marketing plan will be developed. Prerequisite: TAKE MKTG-391;

PAS-400 - Medical Terminology  1-0-1
Medical Terminology  This competency-based course covers the structure, definition and utilization of basic medical terminology for students entering the health professions. The course is designed for students with some health care experience. Independent reading, workbook exercises, case studies and interactive computer software are the learning modalities used in this experience.

**PAS-403 - Evidence Based Medicine**  
2-0-2  
This lecture/seminar course provides a foundation for clinical decision making that will be necessary for the future practice of the physician assistant student. The course teaches the basic principles of evidence-based medicine and how to apply them to clinical decision making. Students will learn basic principles of evidence-based medicine, how to formulate a good clinical question, how to access and search the literature, how to evaluate the validity of the literature and how to apply it to answer a clinical question. After the foundational principles have been presented through lectures, students will work in small groups to practice using case based scenarios to apply the principle that they have learned.

**PAS-410 - Medical and Professional Ethics**  
2-0-2  
Medical and Professional Ethics Understanding the philosophical principles related to biomedical ethics, patient-practitioner relationships and the role of the physician assistant provider within the health care system are the main topics encompassed in this lecture and discussion seminar course.

**PAS-411 - Applied Behavioral Science**  
3-0-3  
Applied Behavioral Science The topics of developmental psychology, abnormal psychology, human sexuality, stress responses, behaviors related to psychological health and illness and the diagnosis and management of common psychological disorders are the focus of this lecture course.

**PAS-413 - Medical Physiology and Pathophysiology**  
3-0-3  
Medical Physiology and Pathophysiology This lecture course is designed to teach the principles of human medical physiology along with the physiological mechanisms of common disease states. Prerequisite: BIOL-202 and BIOL-202LBIOL-221 and BIOL-221L

**PAS-417 - Physical Diagnosis**  
4-2-5  
Medical History and Physical Diagnosis This lecture and practical laboratory course will introduce the physician assistant student to the techniques for eliciting a medical history and performing a complete physical examination on humans. The interpretation of history and physical examination findings as applicable to physiological and disease states will also be discussed. Laboratory sessions, hospital experiences and writing assignments will enhance the learning experience.

**PAS-421 - Genetics, Immunology and Microbiology**  
2-0-2  
Medical Genetics and Microbiology This lecture course presents current concepts and issues in medical genetics, immunology and microbiology. It focuses on diseases of genetic origin, the function of the immune system and emerging trends in disorders caused by microorganisms. Prerequisite: BIOL-221 and BIOL-221L
**PE-00 - Varsity Athlete** 0-1-5

Varsity Athlete Students who have participated on one of the University's 12 intercollegiate sports teams for one season will satisfy the requirement for this course. Students must register for this course in the semester they expect to receive the course credit. Students may register for this course two times.

**PE-02 - Recreation and Wellness** 0-1-5

Copy and paste this link to view PE 02 offerings: http://recreation.philau.edu/landing/index

Students participate in 15 or more hours of recreation and wellness activities offered through the Department of Athletics. Opportunities include participation in intramural sports, recreational courses in team and individual sports, and wellness courses such as yoga, stress management, and tailored exercise programs. All activities must be validated by a representative from the Department of Athletics to earn credit. Students must register for the course at the beginning of the semester to receive course credit.

Note: For PE 02 Credit, all students must complete the Recreation/Wellness form with at least 15 signatures from the group exercise instructor to verify completion of 15 hours. At the end of the semester based on your completed form verifying completion of 15 hours, your PE grade of CR will be recorded. This form can be picked up at the Gallagher Center Front Desk or may be printed from the web.

**PHOTO-101 - Intro to Photo: Black & White** 2-3-3

This course introduces the technical aspects and controls of a manual 35mm camera together with silver-based black & white film developing and printing methods. Students will develop a fundamental vocabulary for constructive critique of photographs and will generate a photographic portfolio piece, exploring a subject of interest.

**PHOTO-102 - Intro to Photography: Digital** 2-2-3

This course is an introduction to the conceptual and technical aspects of digital photography through projects, presentations, critiques and lectures based on both classical and constructed methods of image creation. Topics include: basic camera functions, importing files from digital media, color management, image improvement and manipulation using Adobe Photoshop, Bridge, and Light Room and preparing final images for print and/or screen presentation.

**PHOTO-201 - Studio Photography** 2-2-3

This course introduces students to the fundamentals of photographic image making within the controlled environment of the studio. Emphasis is given to lighting techniques using professional strobe equipment; single-lens reflex digital capture on the computer, software for capturing digital photographs, as well as the role of props and setting in the generation of portraiture, fashion and still-life images.

**PHOTO-204 - Intro to Photo Graphic Design** Graphic Design Communication 1-5-3

Required for Graphic Design Communication majors, this course focuses upon photography as a tool for graphic designers. Students are introduced to: film and digital camera use, exposure, image processing, and printing; table-top setup with professional studio lighting equipment; and digital documentation of work for portfolios. Prerequisite: DSGNFND-203/GRAPH-102 or permission of prog director.
PHOTO-205 - Photography as Communication

Photography is, quite arguably, the most persuasive form of communication today. In this course we will examine both the history and current role of the camera in news gathering, media and communications, giving special attention to the varied uses of narrative visual storytelling in journalism, marketing, advertising, and social activism. We will analyze the subtle but important differences between photojournalism and documentary photography, with attention to both the ethical standards of the profession and the technical elements of the single-lens digital camera.

PHOTO-302 - Architectural Photography

2-2-3

In this course students acquire the skills to apply a documentary methodology to thematic explorations of subject matter, specifically related to architecture and the built environment, interiors and cultural landscapes. Students learn to critique photographs of buildings and spaces and to produce high-quality black and white prints.

PHOTO-303 - Photographic Media Experimentation

2-2-3

Alternative printing processes, including salted paper, cyanotype, tintype and platinum/palladium, are examined as a complement to contemporary methods. Emphasis upon medium format and the view camera as tools for documentation, narration, and expression supplement consideration of photography's technical aspects. Through exploration of traditional subjects including architecture, landscape, still life and portraiture, students learn exposure, film processing, film scanning, and large scale inkjet printing.

PHOTO-307 - History of Photography

3-0-3

(writing intensive) Since its invention in 1839, photography has played a pivotal role in the formation of modern visual culture. Focusing upon chronological, thematic and technological developments, this course investigates the diverse expressions and applications of the photographic image within a nexus of philosophical, social, economic, scientific and aesthetic contexts. Particular emphasis is placed upon: debates concerning the nature and function of images; the medium's impact upon portraiture, high art, popular culture, fashion and social documentation; and the rise of photojournalism and advertising. Photography as a discrete language of signs, symbols and metaphors with implied narratives is emphasized.
Prerequisite: WRITING 2xx

PHOTO-381 - Independent Study in Photography

0-0-3

Independent Study in Photography is a one term student-initiated project limited to those students who have finished the full sequence of photography courses. A student proposes a project and works independently with guidance from the instructor.

PHOTO-436 - Historic Pres Doc: Photography

2-2-3

Begun in 1933, the Historic American Building Survey (HABS) is the first federal preservation program established to document America's architectural heritage. In this course students learn the fundamentals of HABS documentation methods for the production of archival records of historic structures and places, utilizing the 4 x 5 large-format camera. Through field work and labs, students photograph, print, research and narrate comprehensive, technically proficient photographic essays that represent the salient aspects of historic structures, complexes and sites in accordance with HABS standards.
PHYS-101 - General Physics 3-2-3
(for non-science majors) The basic laws of mechanics and thermodynamics are covered. The emphasis will be on understanding the major laws of physics and the way they manifest themselves in practical applications and in laboratory experiments. The areas of importance for architecture and interior design, such as sound and illumination, are discussed. Prerequisite: MATH-102 MATH-103 MATH-111;

PHYS-111 - Algebra-based PHYC I - Mach & Thermodyn 3-2-4
An algebra-based course covering the basic laws of mechanics and thermodynamics. The emphasis will be on understanding the major laws of physics and the way they manifest themselves in practical applications and in laboratory experiments. Topics include Newton's laws, conservation laws, statics, torque, and viscous fluid dynamics. Prerequisite: take MATH-102 or MATH-110;

PHYS-112 - Algebra-Based PHYS II - Electricity & 3-2-4
An algebra-based course covering the concepts of electricity, magnetism, and optics. This course uses real world examples to enhance comprehension of physical principles. Additional topics will include radiation, imaging, and basic atomic theory. Prerequisite: take PHYS-111;

PHYS-201 - Physics I 3-0-3
(required for science and Engineering majors) A calculus-based course emphasizing Newton's three laws of motion and the conservation laws of energy, linear momentum and angular momentum as first integrals of the dynamics. Additional topics in mechanics include stress and strain, simple harmonic motion and hydrostatics. Absolute temperature scales, thermal expansion, specific heats, methods of transfer of heat energy, ideal gases and real gases are considered before studying the first and second laws of thermodynamics, with the concept of entropy emphasized in the latter. Prerequisite: MATH-111 Corequisite: PHYS-201LMATH-112

PHYS-201L - Physics I Lab 0-3-1
In this one-credit laboratory course students perform, analyze and submit lab reports based on experiments which test the theories developed in mechanics and heat and they take quizzes based both on the lab instructions and material from the lectures. Prerequisite: PHYS-201 Corequisite: PHYS-201LMATH-112

PHYS-203 - Physics II: Waves, Elec, &mag Magnetism, Light 3-0-3
The mathematical representation of traveling sinusoidal waves and standing-wave patterns is emphasized. Applications are made to sound waves. Electrostatics include Gauss's law, electric potentials and the potential gradient equation. The field concepts are used to interpret elementary D.C. circuits including Kirchhoff's Rules. Capacitors as circuit elements and dielectrics are also studied. The effects of the magnetic field, its sources, induced EMFs and magnetic materials are considered. Series AC circuits conclude electromagnetism. Geometric optics includes lenses, mirrors and optical instruments. Physical optics includes interference and polarization of light waves. Prerequisite: PHYS-201PHYS-201L Corequisite: PHYS-203L

PHYS-203L - Physics II Lab 0-3-1
In this one-credit laboratory course students perform, analyze and submit lab reports based on experiments which test the theories developed in waves, electricity and magnetism, and light. They take quizzes based both on the lab instructions and material from the lectures. Prerequisite: PHYS-201 PHYS-201L Corequisite: PHYS-203

**PHYS-314 - Elements of Quantum Mechanics**  
3-0-3
The experimental background of quantum mechanics is reviewed before its postulates are introduced, and the theory is used to solve one-dimensional examples including the harmonic oscillator, then in three dimensions the hydrogen atom, electron spin and atomic spectra. Applications to chemistry are stressed. Prerequisite: MATH-225 PHYS-201

**PRINT-101 - Intro to Print Design**  
1-5-3
This course introduces the basic concepts and processes of analog and digital printing methods. Students will learn the hands on process of screen-printing as well as the technical process of large format digital printing. This class explores the use of printing as a vehicle for both creative expression and visual communication. This course is closed to all Textile Design majors. Prerequisite: ADFND-102 DSGNFND-203 VSDES-101 or INDD-102;

**PRINT-301 - Printing Practices**  
1-5-3
This course introduces production of printed textiles by hand-screen and digital fabric printing methods. Students will learn a technical process of color separations, screen making and printing in both digital and conventional (hands-on) modes. Integration of digital and hands-on printing are encouraged toward the end of the course. The main focus is placed on aesthetics of color and styling in textile design on fabric. Sketchbook study will be required to document design processes, ideas and drawings. Prerequisite: PRINT-303

**PRINT-303 - Print Design Studio I**  
1-5-3
Techniques, materials, tools and basic information needed for the design on paper of printed fabrics for the apparel and home furnishing fields are studied. Hands on approaches with gouache and watercolor are used to prepare colorway and repeats. Students prepare a portfolio and learn to keep a sketchbook. A brief introduction to printing methods is included. Prerequisite: DRAW-303

**PRINT-305 - Textile Printing Technology**  
3-2-3
The theory and practice of all aspects of industrial printing techniques are presented in a lecture/demonstration/lab format. Cloth preparation and finishing, machinery, dyestuffs and various print styles are included. This course offers practical background knowledge to students with primary interest in textile design, styling, marketing, quality control and textile manufacturing.

**PRINT-307 - Printing Technology**  
2-2-3
The course consists of lecture and lab that focuses on the principles, techniques and chemical processes involved with printing technologies. This course covers printing mechanisms, chemistry, coloration systems and styles for impact, non-impact, additive and subtractive printing. Media preparation, post treatment (fixation) and industrial testing standards are also examined. At the same time, the course also introduces the principal of surface Imaging supply chains, including design, manufacturing, marketing, product distribution and as well as ecological practices. This is an undergraduate elective course for all students. At the same time, it is one of designated elective courses for Textile Design major.
PRINT-315 - Print Design Studio II  1-5-3
Print Design Studio II This course focuses on creative use of CAD in surface patterning, which integrates with hands-on design applications that students acquired in PRINT-303 Print Design I. Digital workflow, which includes scanning croquis, designing pattern on CAD, digital color matching and color ways will be introduced. At the same time, strong emphasis is placed on making croquis, which develop from drawings and paintings in the sketchbook. Students will create printed textile designs and patterns for Jacquard designs on paper with digital printers for apparel and home furnishing fields. Throughout the semester, sketchbook study will also be required to document the working process, as well as drawings and paintings.
Prerequisite:PRINT-303

PRINT-331 - Print Design Studio III  1-5-3
Advanced course to give students further necessary experience in developing and producing creative designs for special markets, end uses and fabrics. Market research is required before projects are begun. Prerequisite:PRINT-315

PSYCH-101 - Introduction to Psychology  3-0-3
This course is an introduction to the methodology, concepts, principles and issues in the study of behavior. Topics to be covered include: the biological bases of behavior; sensory and perceptual processes; learning, memory and cognition; motivation and emotion; personality, psychopathology and psychological approaches to therapy; and social interactions. This course is a requirement for enrollment in all higher-level psychology courses.

PSYCH-103 - Physiological Psychology  3-0-3
This course will expand upon the biological bases of behavior. An emphasis will be placed on the relationship between the brain and behavior. Topics will include synthesis of neurotransmitters, an introduction to drugs and behavior and neural substrates that underlie behaviors. Prerequisite:PSYCH-101

PSYCH-201 - Abnormal Psychology  3-0-3
Consideration of the various classifications and symptomatology of psychopathological disorders and their origin, assessment, prognosis, treatment and prevention. Prerequisite:PSYCH-101

PSYCH-210 - Forensic Psychology  3-0-3
Students will examine the interplay between the disciplines of psychology and law. The course will examine the psychological and behavioral issues that impact the legal and criminal-justice systems, and how law and justice affect human behavior. Topics to be covered include crime and criminal behavior, victims, law enforcement, trials, witnesses, mental illness and criminal justice, corrections, family law, crime intervention and prevention. Prerequisite:PSYCH-101

PSYCH-211 - Learning Theory  3-0-3
Students will study the acquisition, activation, direction and retention of human and animal behavior. Topics to be covered include instincts, drive, conditioning and instrumental learning, human verbal learning and language learning and memory processes. Prerequisite:PSYCH-101
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PSYCH-212</td>
<td>Cognitive Psychology</td>
<td>3-0-3</td>
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<td></td>
<td>Study of human thinking, memory, problem solving and the relationship between damage to the cortex and information processing. Empirical research and applied examples and demonstrations will be presented to address such topics as the content of memory, memory improvement, strategies and approaches for solving different kinds of problems, and pathologies and problems of thought. Prerequisite: PSYCH-101</td>
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<tr>
<td>PSYCH-213</td>
<td>Developmental Psychology</td>
<td>3-0-3</td>
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<td></td>
<td>Students will analyze the process of human development and change throughout the lifespan. Research on both humans and animals will be presented to promote understanding of human physical, social, emotional and cognitive development. Topics include prenatal and postnatal development, issues and theories of human development, genetic influences and personality and issues related to the aging process. Prerequisite: PSYCH-101</td>
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<tr>
<td>PSYCH-214</td>
<td>History of Psychology</td>
<td>3-0-3</td>
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<td></td>
<td>Students will study the historical development of significant psychological concepts, theories and systems. The focus and far-ranging content of this course serves to provide an overall synthesis of the major subfields of psychology. Prerequisite: PSYCH-101</td>
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<tr>
<td>PSYCH-21X</td>
<td>Experimental Psych Elective</td>
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<td>This is a transfer equivalency for approved Psychology distribution electives in the Experimental Psych area</td>
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<tr>
<td>PSYCH-220</td>
<td>Clinical Psychology</td>
<td>3-0-3</td>
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<td>This course will provide students with an opportunity to use current theories to address individuals with mental-health issues. Topics will include professional duties and skills of the clinical psychologist, treatment procedures and resources, and the diagnosis and management of common psychological disorders. Emphasis will be placed on humanistic and behavioral theories of etiology, treatment and the enhancement of psychological well-being. Prerequisite: PSYCH-201</td>
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<tr>
<td>PSYCH-221</td>
<td>Personality Theory</td>
<td>3-0-3</td>
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<td>This course is a survey and comparative analysis of the major representative theories of personality, both traditional and contemporary. Special topics such as the effects of genetic predisposition, physical status and environmental factors on personality configurations will also be discussed. Prerequisite: PSYCH-101</td>
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<tr>
<td>PSYCH-222</td>
<td>Counseling Psychology</td>
<td>3-0-3</td>
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<td>This course provides an overview and general understanding of the field of counseling psychology. The course is designed to familiarize students with the basic concepts, interventions, scientific research, professional practices and contemporary issues of the profession of counseling psychology. Students will learn a variety of theoretical approaches and psychotherapy techniques to counseling, including psychoanalytic, behavioral, cognitive and humanistic approaches. The course contains both didactic and skill application to encourage competency in the performance of counseling skills. Prerequisite: PSYCH-201</td>
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<tr>
<td>PSYCH-223</td>
<td>Marriage and Family</td>
<td>3-0-3</td>
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This course is a survey of family systems and theories underlying marriage and family counseling. The course will explore the history of marriage, the choosing of a partner, parenting styles, and issues that create marital discord and divorce. Specific course objectives are to provide information about the therapeutic process and the practical elements of counseling interactions with families, to identify differences between individual- and system-oriented therapies, and to encourage the integration of theoretical and experiential learning.

**Prerequisite:** PSYCH-101

**PSYCH-224 - Psychology of Addiction** 3-0-3

This course is a survey of current psychological theories of the addiction process and treatment modalities based on each. Physiology and neurobiology will be considered, but are not the primary focus of the course. Theoretical models include: the disease model, psychoanalytic formulations, conditioning theory, social-learning theory, family-systems theory and the opponent-process model. Sociocultural perspectives, including deviance theory, will also be discussed.

**Prerequisite:** PSYCH-101

**PSYCH-226 - Psychology of Trauma** 3-0-3

Psychology of Trauma provides a survey of the phenomena of psychological trauma. Discussion includes the conceptualization of trauma, defining a trauma event, and the identification of major types of trauma, as well as human responses in the neurobiological, cognitive and behavioral, and relational domains.

**Prerequisite:** PSYCH-101

**PSYCH-22X - Clinical Psych Elective**

This is a transfer equivalency for approved Psychology distribution electives in the Clinical Psych area.

**PSYCH-230 - Industrial Organizational Psychology** 3-0-3

Students will study the more recent methods in testing, interviewing and selection of workers. Training, motivation, performance appraisal, job satisfaction, morale, job analysis, decision making, leadership and organization theory are other topics discussed.

**Prerequisite:** PSYCH-101

**PSYCH-231 - Psychological Assessment** 3-0-3

This is a methods course concerning the basic concepts and techniques of psychological assessment tools (tests) as they are used in the profession if psychology in employment, school, clinical and medical settings. Emphasis will be placed on understanding test design, or what goes into a test, as well as understanding test scores and profiles, or what comes out of a test. Many specific tests will be highlighted throughout the course to help students appreciate psychological tests and become aware of their functions and limitations.

**Prerequisite:** PSYCH-101

**PSYCH-232 - Social Psychology** 3-0-3

Students will study the experimental analysis of the individual as subjected to the social influence of other individuals or social groups. Topics to be covered include persuasion, conformity, aggression, altruism, prejudice and interpersonal attraction and an analysis of the research methods used to study these behaviors.

**Prerequisite:** PSYCH-101

**PSYCH-233 - Interpersonal Relations and Small Group Dynamics** 3-0-3
This course is designed to provide a theoretical and experiential exposure to group formation, group process and group dynamics, as well as to interpersonal relationships within and between groups.

**PSYCH-234 - Cultural and Social Diversity**  3-0-3

The ability to work with individuals from different cultures is increasingly recognized as an essential skill for success, particularly in the fields of human services, business, communications, and medicine. Still, most people have not mastered a cross-cultural skill set. This course examines the changing demographics of the United States, teaches the core competencies for successful cross-cultural interactions, and prepares students for cross-cultural teamwork and leadership.

**PSYCH-23X - Soc/Org Psych Elective**  -----  

This is a transfer equivalency for approved Psychology distribution electives in the Social/Organizational Psych area

**PSYCH-240 - Comparative Psychology**  3-0-3

This course will provide a survey of the study of animal behavior as related to psychology. Students will become familiar with approaches, fundamental concepts and contemporary research findings of the field. Topics include patterns and development of behavior in animals, neural and hormonal influences, animal learning and cognition and the evolution of behavior. Prerequisite: PSYCH-101 or BIOL-104;

**PSYCH-241 - Psychopharmacology**  3-0-3

Students will study the basic principles of drug action in the central nervous system. Topics will include effects of stimulants, depressants, intoxicants and drug abuse on behavioral function. The clinical use of drugs in the treatment of psychological and psychiatric disorders will be discussed. Prerequisite: PSYCH-103 or BIOL-201;

**PSYCH-242 - Sensations and Perceptions**  3-0-3

Sensations refer to information about the environment gathered through the senses. Perception is the process by which sensory information is interpreted and made meaningful. This course will provide a survey of the study of sensation and perception from structural, functional and cognitive viewpoints. Prerequisite:PSYCH-101

**PSYCH-243 - Human Sexuality**  3-0-3

This course involves a rigorous examination of the biological, behavioral and mental aspects of human sexuality. Among the topics to be studied are anatomy and physiology, conception and contraception, sex roles, love, sexual communication, sexual dysfunctions and social issues such as pornography.

**PSYCH-24X - Biol. Behavior Psych Elective**  ----- 

This is a transfer equivalency for approved Psychology distribution electives in the Biological Basis of Behavior Psych area
PSYCH-2XX - Psych Designated Elective

This is a placeholder. Choose 1 Psych elective in consultation with advisor.

PSYCH-322 - Research Methods for Behavioral Sciences 2-2-3

This course introduces psychology as an experimental science in which hypotheses are generated and tested. Major topics will include various types of experimental designs, subject selection and randomization. Students will be introduced to various data collection methods and research designs specific to the different branches of psychology. Prerequisite: STAT-321 or STAT-220.

PSYCH-371 - Selected Topics in Psychology 3-0-3

An in-depth consideration of a particular topic, issue or problem in psychology that is of special interest to students and faculty. Recent sections have discussed topics such as educational psychology, psychosexual development and the psychology of trauma. Topic selection will be done in advance of registration. Prerequisite: PSYCH-101.

PSYCH-381 - Independent Study in Psychology 0-0-3

For further details, see general description of Independent Study in 'Academic Policies' section.

PSYCH-391 - Advanced Research in Psychology 3-0-3

This course will involve an in-depth exploration of research methods in psychology. Students will conduct an original research project individually or as part of a research team. Through this course, students will apply their psychological training to designing, conducting, analyzing, discussing and presenting their own research project. [Writing Intensive] Prerequisite: PSYCH-322.

PSYCH-3XX - Psych Designated Elective

This is a placeholder. Choose 1 Psych elective in consultation with advisor.

PSYCH-410 - Senior Colloquium in Psychology 3-0-3

This course is a senior-level seminar dealing with current controversial issues in psychology. Students will perform a search of the scientific literature on issues chosen from a list provided by the instructor and organize, analyze, orally present and discuss material with the class. Finally, students will propose a question generated from this activity and design a research structure to answer it. Prerequisite: PSYCH-391.

PUBH-101 - Intro to Public Health 3-0-3

This is the foundation course of the Public Health major and provides students with a general overview of principles of public health. The course explains and draws from the interdisciplinary focus of public health theory and practice. Presented will be the concepts of health, population health, and the structure and activities of modern public health systems. The major determinants of health, the causes of disease, and concepts of disease control and prevention are discussed.

SCI-101 - Environmental Science 3-2-3
Environmental Science is the study of how humans and the natural environment interact. Critical issues that affect our daily lives such as clean drinking water, urban renewal, energy availability, pesticides, global warming, acid rain and recycling are explored from social, ecological, chemical and political perspectives. Students will tackle a real-life environmental problem in a professional manner using critical thinking and analytical skills, library research skills, teamwork and presentation skills.

**SCI-102 - Exploring Science**  
2-3-3  
(for non-science majors) This hands-on science course delves into public health issues. Field and laboratory sessions focus on data analysis based on issues from students' daily lives which leads to an examination of alternatives. How do you quit smoking? What is in the water you drink and the food you eat? The course culminates in a project that explores the historical, political, and environmental aspects of an unsolved scientific problem and presents the findings to a regional scientific agency.

**SCI-106 - Biology for Design**  
3-0-3  
Biology for Design: From biological adaptation to biomimetic design  
The goal of this course is to increase the sophistication of design, engineering, business, and other students regarding how design manifests itself in nature as biological adaptation, and to use that knowledge as a launching pad for thinking about biomimetic design. Biomimicry is a hot topic in architecture and design. Work in this field is usually done by designers working in collaboration with biologists who are highly specialized in a particular area, often plant or animal physiology. However, there are certain conceptual underpinnings pertaining to design and adaptation in nature that designers are often lacking that will prepare them for further exploration of this field. The course consists of two major units, the first focusing on the biology of adaptation from an evolutionary and ecological perspective. The second section consists of a survey of biomimetic design and how biomimicry has been employed to solve a range of design problems in architecture, materials science, systems design, and technology.

**SCI-108 - Sustainability & Eco-Innovatn**  
3-0-3  
The emerging fields of sustainability and environmental sciences will be surveyed to highlight how entrepreneurs are capitalizing on rapid environmental transformation. The rate, scale and degree of global environmental change, key scientific feedback loops the regional differences in terms of impacts and opportunities will be analyzed. Case studies of eco-innovation strategies employed by businesses and designers will be explored so that students can create their own scientific monitoring and evaluation plan for implementing a simple eco-innovation.

**SCI-108X - Sustainability & Eco-Innovatn**  
3-0-3  
The emerging fields of sustainability and environmental sciences will be surveyed to highlight how entrepreneurs are capitalizing on rapid environmental transformation. The rate, scale and degree of global environmental change, key scientific feedback loops the regional differences in terms of impacts and opportunities will be analyzed. Case studies of eco-innovation strategies employed by businesses and designers will be explored so that students can create their own scientific monitoring and evaluation plan for implementing a simple eco-innovation.

**SCI-110 - Landscape Ecology**  
2-2-3
Landscape Ecology combines the spatial approach of the planner and designer with the functional approach of the ecologist. As a field it is an integrative and multidisciplinary science that combines geology, botany, zoology and human settlements at the "landscape" scale. For this course the focus will be various land use scales, i.e., the block, neighborhood, city, and region and how ecological processes function at each scale. Students learn the key principles of landscape ecology and then how to apply them to preservation, conservation, planning and the design process.

**SCI-112 - Materials Selection**

3-0-3

The materials available to meet design requirements for a specific application often limit performance in disciplines ranging from engineering and architecture, through industrial design, to fashion design and textiles. In fact, material selection is often the limiting performance factor in designing new products and processes. This course explores the governing principles of materials science, with a specific emphasis on using the scientific method to develop a "system approach" to materials selection at various stages of the design process. (This course can be used to satisfy a general Education Science requirement.)

**SCI-1XX - Science Placeholder**

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This is a Placeholder for a Science Course. Please consult checksheet or advisor/program director for specific course requirements

**SCI-2XX - Science Placeholder**

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This is a Placeholder for a Science Course. Please consult checksheet or advisor/program director for specific course requirements

**SCI-300 - Basic Pharmacology**

3-0-3

This course introduces the student to the basic principles of pharmacology including pharmacokinetics and pharmacodynamics. The course will cover frequently prescribed medications, their uses, actions and common side effects. The student will learn about the various drug classification systems, as well as the effects of those drug classes on specific patient populations, and the process of preventing medication errors deriving from the use of pharmacologic agents. Prerequisite: BIOL-104

**SCI-381 - Independent Study in Science**

0-0-3

Students interested in pursuing independent study in science must submit a proposal to the academic associate dean of undergraduate programs in the College of Science, Health and the Liberal Arts for approval at least two weeks before pre-registration. Detailed guidelines for development of the proposal may be obtained from the College. See "Independent Study" in "University Academic Policies and Procedures: Common Academic Policies for All Students."

**SCI-382 - Independent Study in Science**

0-0-3

Students interested in pursuing independent study in science must submit a proposal to the academic associate dean of undergraduate programs in the College of Science, Health and the Liberal Arts for approval at least two weeks before pre-registration. Detailed guidelines for development of the proposal may be obtained from the College. See "Independent Study" in "University Academic Policies and Procedures: Common Academic Policies for All Students."
SCI-399 - Selected Topics Abroad in Science

SCI-399 Selected Topics Study Abroad in Science (1-6-4) International experience is invaluable in all scientific disciplines and strongly encouraged by the School of Science & Health. Students will collect, analyze and present data in a scientific discipline both in the host country and to the Philadelphia University community. All students will have assignments and immersion in the cultural, social, environmental and historic foundations of the host country. Prerequisite: take 6 credits: From SCI-101 SCI-102 BIOL-101 BIOL-103 CHEM-101 CHEM-103 PHYS-101 PHYS-201.

SCI-3XX - Designated Science Elective

This is a Placeholder for a Science Designated Elective. Please consult checksheet or advisor/program director for specific course requirements.

SCI-402 - Science Seminar

This communication intensive course covers recent advances in biological, physical, and medical sciences by way of presentation, journal reviews, and discussions involve both students and invited faculty. This course is designed to sharpen students' critical thinking skills through evaluation of modern scientific discoveries and analysis of their impact on society and humanity as a whole. Integration of knowledge and ideas from various sources is required. [Writing Intensive] Prerequisite: take CHEM-202 CHEM-202L BIOL-104 BIOL-104L; Minimum grade C-;

SDEU-350 - Surface Imaging Design Essential

This is an elective course for undergraduate students to introduce fundamental skills and applications of Surface Imaging. It covers the basic principals of design process and development as well as material selection and fundamental printing processes for Surface Imaging. Prerequisite: take cad-201.

SDEU-370 - SDE Special Topics

This is an upper-level course designed to take advantage of resident/adjunct/visiting faculty members' expertise or a special focus wanted by the School for one or two terms. These courses might provide in-depth treatment of recent advances in subjects of current interest in a given field whose subject matter is not necessarily needed to be offered long term. A specific "topic" may be delivered a maximum of two terms.

SDEU-371 - SDE Special Topics

This is an upper-level course designed to take advantage of resident/adjunct/visiting faculty members' expertise or a special focus wanted by the School for one or two terms. These courses might provide in-depth treatment of recent advances in subjects of current interest in a given field whose subject matter is not necessarily needed to be offered long term. A specific "topic" may be delivered a maximum of two terms.

SDEU-373 - SDE Special Topics

This is an upper-level course designed to take advantage of resident/adjunct/visiting faculty members' expertise or a special focus wanted by the School for one or two terms. These courses might provide in-depth treatment of recent advances in subjects of current interest in a given field whose subject matter is not necessarily needed to be offered long term. A specific "topic" may be delivered a maximum of two terms.
SDEU-376 - SDE Special Topics

This is an upper-level course designed to take advantage of resident/adjunct/visiting faculty members’ expertise or a special focus wanted by the School for one or two terms. These courses might provide an in-depth treatment of recent advances in subjects of current interest in a given field whose subject matter is not necessarily needed to be offered long term. A specific “topic” may be delivered a maximum of two terms.

SDEU-380 - SDE Independent Study

This course will allow students to pursue individual areas of interest while working jointly with a faculty member. Enrollment is subject to the availability and approval of both the program director and faculty member. For further details, see general description of Independent Study in the "University Academic Policies and Procedures: Common Academic Policies for All Students."

SDEU-381 - SDE Independent Study

This course will allow students to pursue individual areas of interest while working jointly with a faculty member. Enrollment is subject to the availability and approval of both the program director and faculty member. For further details, see general description of Independent Study in the "University Academic Policies and Procedures: Common Academic Policies for All students."

SDEU-383 - SDE Independent Study

This course will allow students to pursue individual areas of interest while working jointly with a faculty member. Enrollment is subject to the availability and approval of both the program director and faculty member. For further details, see general description of Independent Study in the "University Academic Policies and Procedures: Common Academic Policies for All students."

SDEU-386 - SDE Independent Study

This course will allow students to pursue individual areas of interest while working jointly with a faculty member. Enrollment is subject to the availability and approval of both the program director and faculty member. For further details, see general description of Independent Study in the "University Academic Policies and Procedures: Common Academic Policies for All students."

SERVE-101 - Serv Learning in Philadelphia

Through the completion of a 10-hour service project, online journaling, attending four class meetings, and participation in a service-learning showcase, students will serve the greater Philadelphia community in an area of interest and explore the reciprocal nature and responsibility of citizenship for the individual and community. This course may be taken in place of the two-course physical education requirement, and it may be taken an additional three times for free elective credits.

SERVE-102 - Serv Learning Outside Philadelphia

1-0-1
Through the completion of at least 10 hours of a service project, online journaling, attending at least 4 hours of class meetings, and participation in a culminating service-learning showcase, students will serve people in need and explore the reciprocal nature and responsibility of citizenship for the individual and community. SERVE 102 is a study away course that will be offered in various destinations in the United States and abroad. This course may be taken in place of the two-course physical education requirement, and it may be taken an additional three times for free elective credits. As off-campus study is a component of the course, a GPA of 2.5 is required.

**SOC-201 - Class, Gender, and Race in World Societies** 3-0-3
A study of theories, concepts and methods of social science, this course focuses on the nature of economic, racial and sexual stratification in the United States and around the world. The course is designed to enable one to understand and to be able to use social science to analyze and influence situations and environments. Prerequisite: WRTG-101HIST-1XX

**SOC-204 - Personality and World Cultures** 3-0-3
This course is an introduction to the social sciences through the focused study of personality and culture. Material will illustrate quantitative and qualitative methods of social science research. We will explore concepts, theories and research representing psychological and anthropological approaches, using both classic and contemporary texts. Students will gain an appreciation of cross-cultural variability in personality. Prerequisite: WRTG-101HIST-1XX

**SOC-208 - The Individual & the Global Environment** 3-0-3
This course will introduce students to the social sciences by focusing upon issues in the environment. By examining goals of the new environmentalism, by direct individual and community involvement and by understanding the present state of the world and future trends, the student will have the skills to prepare for a sustainable society, a society that satisfies its needs without jeopardizing the prospects of future generations. Prerequisite: WRTG-101HIST-1XX

**SOC-211 - Glob. Econ:Power, Poverty & P** 3-0-3
The course will emphasize the intersection between global political relations and global economics, and how the two together impact social relations worldwide. Various complementary and competing political and economic perspectives (from capitalist to socialist) will be used to address recent trends in the development of a global economy, international trade, the formation of regional blocs such as NAFTA and the EU, and North-South political/economic relations. Prerequisite: WRTG-101HIST-1XX

**SOC-225 - Global Politics** 3-0-3
This course provides an overview of the forces that are shaping international politics and economics. This course will help students understand the roles of international institutions such as the United Nations, the World Trade Organization and the International Monetary Fund, as well as non-governmental actors such as Amnesty International and al Qaeda. Students will also examine the process of economic globalization in order to understand its varying impacts on different world regions. Prerequisite: WRTG-101HIST-1XX

**SPAN-101 - Spanish I** 3-0-3
A beginner's course designed for students with very little or no knowledge of the language. The focus is on basic oral expression, listening comprehension and acquiring simple reading and writing skills, so that students can gain confidence in the language and to begin to have conversations. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

SPAN-201 - Spanish II
3-0-3
A beginner's course designed for students who have completed one semester of college-level language or the equivalent. The focus is on oral expression, listening comprehension and the acquisition of simple reading and writing skills, so that students can gain confidence in the language and conduct conversations and other social interactions in the language with some level of ease. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

SPAN-202 - Medical Spanish
3-0-3
Medical Spanish is a second-semester course designed for students to gain conversational competence to communicate effectively at a basic level with Spanish-speaking patients in a medical setting. The course focuses on practical vocabulary, grammar, idiomatic expressions, medical terminology as well as developing students' oral communication skills. A main component of the class is the focus on cultural issues relevant to Spanish-speaking patients and particular health concerns relating to the Hispanic community in the U.S.

SPAN-301 - Spanish III
3-0-3
A beginner's course designed for students who have completed two semesters of college-level language or the equivalent. The focus is on advancing oral expression, listening comprehension and the development of reading and writing skills, so that students can gain confidence and express themselves fluidly entirely in the target language. The course will also develop cultural understanding, a key element to language learning, through the analysis of authentic visual media, written materials and cross-cultural interactions.

SPAN-302 - Intermediate Medical Spanish
3-0-3
Intermediate Medical Spanish 302 is a third-semester elementary-intermediate Spanish course designed for students to gain conversational competence to communicate effectively with Spanish-speaking patients in a medical setting. The course builds on Spanish 202 and focuses on practical vocabulary, grammar, idiomatic expressions, medical terminology as well as developing students' oral communication skills. A main component of the class is the focus on cultural issues relevant to Spanish-speaking patients and particular health concerns relating to the Hispanic community in the U.S.

SPAN-401 - Spanish IV
3-0-3
An intermediate course that provides students with the opportunity to communicate in a fluent and sophisticated manner. The focus is on expanding the knowledge of structures and vocabulary that students have acquired in levels I-III. In addition to constant attention to speaking, writing, listening and reading, more complex ways of expression are also emphasized. Contemporary culture is explored through authentic visual media and written materials.
STAT-201 - Introduction to Statistics 3-0-3
Descriptive statistical measures and probability theory are combined to provide the basis for statistical decision-making techniques. Areas covered: data presentation; measures of central tendency; measures of variability; basic probability laws, Bayes' theorem; binomial; Poisson; 't,' and normal distributions; confidence intervals; hypothesis testing. Prerequisite:MATH-100 or MATH-101 or MATH-102 or MATH-103 or MATH-111

STAT-202 - Applied Business Statistics 3-0-3
Review of sampling distribution, confidence intervals and hypothesis tests for two-samples; simple linear regression, multiple linear regression with emphasis on computer output; one- and two-way analysis of variance; application of the Chi-square statistic; non-parametric statistical techniques. Prerequisite:STAT-201

STAT-220 - Statistics for the Behavioral Sciences 3-0-3
This course will provide an understanding of descriptive and statistical procedures commonly used in psychological research. Descriptive statistic topics include the presentation of data, probability, measures of central tendency and variability, and correlation. Inferential statistics topics will include an introduction to hypothesis testing, t-tests, correlation, analysis of variance, regression and various non-parametric statistics. Particular emphasis will be placed on the interconnection between experimental design in psychology and statistical principles. Prerequisite:PSYCH-101

STAT-301 - Biostatistics 3-0-3
This course will cover principles of experimental design and statistics for biologists in environmental and medical fields. Hypothesis testing; data collection and sampling; data analysis and graphing; univariate; bivariate and multivariate analysis including regression and ANOVA. Students will design an experiment and compare and contrast the results of several different statistical approaches to data analysis and interpretation. Prerequisite:MATH-111 or MATH-112

STUAB-300 - Study Abroad 0-0-(3-12)
Study Abroad

STUAB-300SUM - Study Abroad -----

STUAB-301 - Study Abroad Project Documentation 0-0-3
This course will be a vehicle for students to analyze and document their study abroad experience and then share it with the university community. Similar to an independent study, students will be required to keep a journal while abroad. When they return, they will document their individual academic and personal experience as well as working on group projects to produce a public exhibition. Prerequisite:STUAB-300

STUAB-302 - Study Abr:Discovery & Reflect -----
This is a 0.5 credit course that will be assessed on a credit/no credit basis. This course is only available to students who are actively participating on a Philadelphia University approved study abroad program. It is a closed course, and permission to enroll must be provided by the Study Abroad Program Manager. Throughout this course, students will be expected to actively engage with their foreign environment and post bi-weekly journal entries responding to specific arguments or questions posed by the instructor, as a method for processing the study abroad experience and identifying the impact it is having on the student's international and global perspective. Prerequisite: STUAB-300

SUST-100 - Fundamentals of Sustainability  3-0-3
As the gateway to the Environmental Sustainability major, this course introduces students to the core concepts of sustainability theory and practice. Students will explore the ethical principles, social structures, technologies, and political and economic processes necessary for humans to live sustainably in community with each other, other species and our natural environment.

SUST-102 - Water Resources and the Envir  4-0-4
This course introduces students to different types, amounts, and integrity of water resources on Earth. Through the lens of sustainability, students study the availability and scarcity of types of water, as well as systems that harness them for human use. Topics in the course include water quality, water pollution mitigation, ownership and distribution of water resources, and the legitimacy of water uses. As they explore these issues, students will also learn and apply principles of chemical, geological, and biological science. First offered Spring 2015

SUST-104 - The Atmosphere & the Environ.  3-0-3
Human disturbances to the atmosphere include degraded ambient air quality, photochemical smog, the greenhouse effect and climate change, radiative incidence and ozone depletion, air pollution-related health effects and dose-response modeling. This course explores the physical structure and chemical composition of the atmosphere and introduces fundamental concepts of chemistry, including atomic and molecular structures, ions and molecular bonding, stoichiometry, acid/base reactions, and basic reaction thermodynamics.

SUST-120 - Sustainable Food Chains  3-0-3
This course examines one of the most fundamental sustainability challenges that we will face this century: how to feed 9-10 billion people without depleting the planet's soils, water supplies, oil resources and biodiversity. Sustainable Food Chains explores the environmental impact of modern industrial agriculture and examines alternative approaches to food production that reduce the use of non-renewable resources, respect natural processes, and work in harmony with local ecosystems, communities and economies.

SUST-200 - Energy Systems & Politics  3-0-3
The rising international demand for fossil fuels, the increasing concerns about dwindling energy reserves and the growing evidence of climate change are combining to accelerate the search for alternative energy sources. This course will analyze the environmental, economic and political dynamics of the existing energy regime, and help students evaluate the potential and drawbacks of possible energy alternatives. Prerequisite:TAKE HIST-11X OR DBTU-114

SUST-202 - Ecological Economics  3-0-3
This course introduces students to general economic theory and how it can be applied to the analysis of sustainability issues. Topics include the economics of sustainable development, cost-benefit analysis related to environmental initiatives, and the evaluation of policies for more sustainable production and consumption. Prerequisite: HIST-11X OR DBTU-114

SUST-204 - Sustainable Planning & Land Use 3-0-3
This course examines land use and urban planning questions from the perspective of sustainability. Topics include: "smart" growth/development, wilderness conservation, community activism, environmental justice, brownfield and grayfield redevelopment, greenfield preservation, zoning for mixed-use neighborhoods, mass transit planning, and transit-oriented development (TOD). Prerequisite: WRTG-101 or WRIT 101/HIST-1XX/DBTU-114

SUST-206 - Environmental Policy
Environmental problems are essentially social, economic and political problems. This course traces the evolution of environmental policy, legislation, and regulations, both in the U.S. and worldwide, including the background and context of environmental policymaking. Students will also examine the substantive problems and political process of environmental movements, and contemporary environmental thought with regard to issues of sustainability and environmental justice.

SUST-300 - Sustainable Tech for Arch 3-0-3
This course provides students with the skills and vocabularies to converse and enhance their ability to collaborate with professionals. This course is intended as an introduction to sustainable architecture and its technologies that are typically used in practice. Prerequisite: 2 groups; HIST-114 or DBTU-114; WRTG-101 or WRIT-101;

SUST-302 - Life-Cycle Thinking & Analysis 3-0-3
Industrial Ecology is the study of how industrial processes affect the environment. Students will learn approaches and tools to evaluate products, processes, and systems in their entire life-cycle, including: material flow analysis, design for environment, input-output analysis, life-cycle assessment, industrial symbiosis, and sustainable consumption. Prerequisites: 2 courses from the Science Group and WRTG 21x Prerequisite: One course from science & one course from WRTG-2XX

SUST-303 - Global Environmental History 3-0-3
WRITING INTENSIVE: Global Environmental History allows students to develop an historical perspective on the relationship between human societies and the natural environments that surround and support them. As this course illustrates, some societies have succeeded in living in balance with local ecosystems, and some have failed. By analyzing these historical examples, students learn how various cultural, economic and political factors can combine to produce an environmentally sustainable society or a catastrophic ecological collapse. [Writing Intensive] Prerequisite: 1 SOC, GDIV or GCIT Course

SUST-305 - Sustainability Metrics & Reporting 3-0-3
This course teaches metrics and reporting frameworks that support evaluation and communication of sustainability. With an eye toward program analysis and business analytics, the course approaches sustainability challenges as data and metrics problems confronting public officials, citizen groups, private companies, and colleges and universities. It teaches students to design sustainability communications, including isolating factors driving unsustainability, selecting metrics and marshaling data appropriate for goal setting, and forecasting the impact of initiatives intended to improve sustainability. In the final project students apply course skills to communicate sustainability using metrics and reporting. Prerequisites: WRIT-2xx Prerequisite:WRIT/WRTG 2XX

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>SUST-398</td>
<td>Sustainability Designated Elective</td>
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<td>This is a transfer equivalency for an Environmental Sustainability Elective</td>
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<td>SUST-3XX</td>
<td>Sustainability Designated Elective</td>
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<td>SUST-400</td>
<td>Sustainability-Non Westn World</td>
<td>3-0-3</td>
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<td>This course examines sustainability issues in such non-European nations as China, Mexico, Brazil and Ghana. It looks at how local economic and cultural factors help shape sustainability strategies and examines the relationship between economic development and sustainability in a comparative framework. Prerequisite:TAKE SOC-2XX GDIV or GCIT</td>
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<td>SUST-402</td>
<td>Managing Sustainability in Org</td>
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<td>This course answers the question, How can we effectively manage sustainability in organizations' current and future approaches to sustainability within the context of management and organizations both within and beyond the traditional management framework of planning, organizing, leading, and controlling. Prerequisite:MGMT-301/104 and 1 course from GDIV or GCIT</td>
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<tr>
<td>SUST-404</td>
<td>Environmental History</td>
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<td>WRITING INTENSIVE: Global Environmental History allows students to develop an historical perspective on the relationship between human societies and the natural environments that surround and support them. As this course illustrates, some societies have succeeded in living in balance with local ecosystems, and some have failed. By analyzing these historical examples, students learn how various cultural, economic and political factors can combine to produce an environmentally sustainable society or a catastrophic ecological collapse. Prerequisite:one SOC 2XX GCIT or GDIV</td>
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<tr>
<td>SUST-421</td>
<td>Environmental Policy</td>
<td>3-0-3</td>
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<td>Environmental problems are essentially social, economic and political problems. This course traces the evolution of environmental policy, legislation, and regulations, both in the U.S. and worldwide, including the background and context of environmental policymaking. Students will also examine the substantive problems and political process of environmental movements, and contemporary environmental thought with regard to issues of sustainability and environmental justice. Prerequisite:SOC 2XX and one JSLA</td>
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SUST-497 - Capstone Seminar I 3-0-3

Through study of project management techniques, this course helps students explore environmental problems and identify a problem ripe for solution development. Students then translate sustainability into practice by developing a pilot-scale improvement initiative. Connecting to earlier coursework across the curriculum, this course also asks students to practice integrative thinking and to frame their initiative using one or more lenses in the discourse of sustainability. As part one of a two-course capstone sequence for Environmental Sustainability majors, Capstone I concludes with students producing a plan of action to be implemented and evaluated over the course of the following semester. Prerequisite:SUST-305;

SUST-498 - Capstone: Sustainability Analy 3-0-3

This capstone course for the Environmental Sustainability degree program uses case studies and a real-world project to review and integrate the skills and knowledge developed in the previous courses in the Environmental Sustainability curriculum. Applying the principles of systems thinking and other analytical tools, students solicit, develop, present, and implement a client-based sustainability initiative. Prerequisite:take sust-402;

TENGR-306 - Text Engr I-Lin/Assem/Fib/Yarn 3-2-3

The molecular structure and morphologies of fibers are explored. The physical, chemical and mechanical properties and behavior of fibers is studied. Fiber-production processes are reviewed. An ex-amination of systems employed in conversion of fibers into textile structures is conducted. Relationships between material/process constraints and product functional quality are analyzed. The labo-ratory explores the methods of evaluating fiber and yarn properties. Prerequisite: PHYS-203 CHEM-103;

TENGR-308 - Textile Engr II:planar Assemb 2-2-3

Development and production of basic and complex designs, multiple layer, tubular, and near net shape structures will be discussed for wovens and knits. Additionally, fabric surface and mechanical characteristics will be covered. Prerequisites are: TENGR-306 Prerequisite:TENGR-306

TENGR-310 - Textile Engr III:Nonwovens & 3-2-3

Textile Engineering III: Nonwovens and Chemical Processing. This lab-based course will focus on the production and evaluation of nonwoven fabrics, including web forming and bonding methods, and on coloration techniques, including dyeing and printing, as well as aesthetic and functional finishing. Prerequisites are: TENGR-306 and CHEM 103 Prerequisite: TENGR-306;

TENGR-320 - Textile Engr IV:Adv Fibrous 3-2-3

Textile Engineering IV: Advanced Fibrous Materials Mechanics and processes for producing functionally advanced fibrous materials. Architectural, aerospace, recreational, and biomedical applications of textiles, and concepts of advanced fiber composites will be covered. Prerequisites are: TENGR-306, TENGR 308, and TENGR 310 Prerequisite: TENGR-306 TENGR-308 TENGR-310;

TEXT-101 - Survey of Textile Industry 3-1-3
Introduction to the language and process flow of fibers through finished products. Topics include fiber classification, formation and variants; spun and filament yarn processing, numbering systems, texturing and novelty yarns; woven, knit and nonwoven fabric formation, processing equipment and basic design elements; printing, dyeing and finishing processes; product evaluation; as well as government legislation related to textiles. A laboratory experience provides support for the lectures. Corequisite: TEXT-101L

**TEXT-104 - Foundation Fiber & Yarn Studies** 2-2-3

TEXT-104 Fiber and Yarn Studies This course introduces the basic knowledge of fiber and yarn technology. Included are the proper use of fiber/yarn terms and definitions, the construction parameters of the various fiber and yarn types and detailed analysis of performance properties of each. This information is then used in the proper selection of fibers and yarns for various fabrics and ultimately for various end use products in apparel, household and industrial applications.

**TEXT-113 - Yarn** 4-2-4

The processes necessary for the manufacture of continuous filament, staple, novelty, bulk and stretch yarns are studied. Staple yarn manufacture, including the processing of natural and man-made fibers on the carded cotton, combed cotton, woolen and worsted staple yarn manufacturing system is covered. Quality-control procedures are emphasized. The laboratory experience exposes the student to all aspects of fiber to yarn formation. Prerequisite: TEXT-101

**TEXT-201 - Textile Production I** 2-2-3

This course will focus on the following performance properties of textiles: strength, elongation, thermo-physiological comfort, sensorial-comfort body movement, aesthetic qualities, appearance, maintenance properties, and health/safety/protection properties. The process of achieving desired fabric properties through the use of appropriate fiber-, yarn and fabric-production technology will be analyzed through theoretical studies and production laboratory exercises. Any student who has received credit for TEXT-113, WEAV-201, KNIT-201, and/or TEXT-321 may not take this course. Prerequisite: TEXT-101

**TEXT-204 - African Textiles Short Course** 3-0-3

This course is an international study tour of the textiles of Africa. Students will tour textile facilities including: an indigo dye village, traditional weaving centers, printing workshops, and cotton cultivation centers. Visits to artisan cooperatives and museums will provide cultural context and history of style, pattern, color and technique, including study of West African Mosse strip cloth. Additionally, the course will explore the role of village weaving cooperatives in the developmental process and will examine the growing role of Africa in the global textile industry.

**TEXT-219 - Textiles for Interiors and Architecture** 3-0-3

Focuses upon the unique problems and considerations of servicing the residential and contract textile-products market composed of upholstered furniture, window/wall coverings, carpets/rugs and furnishing accessories. Special textile requirements mandated by government agencies, building codes and industry-performance standards for residential, public and institutional interior spaces are emphasized. Prerequisite: TEXT-101

**TEXT-301 - Coloring & Finishing** 3-0-3
This lecture-based course will focus on coloration techniques, including dyeing and printing; as well as aesthetic and functional finishing. Any student who has previously received credit for PRINT-305 and/or TEXTCHM-242 may not take this course for credit. Fall only. Prerequisite: TEXT-101 and CHEM-101

TEXT-305 - Advanced Fabric Performance Evaluation 2-2-3
The objective evaluation of fabric-mechanical properties influencing hand and performance are explored. Comfort contributing qualities, such as thermal conductivity and air permeability, are also addressed. The influence of fabric-mechanical properties on formability and seaming is assessed with special attention to their role in automated assembly. Prerequisite: TEXT-307 or TEXT-331

TEXT-307 - Textile Materials 3-2-4
The interrelationship of fiber selection, yarn processing, fabrication and finishing parameters is used to predict and measure fabric performance for specific end uses. A laboratory experience in textile product evaluation provides practical application of theory. The impact of textile-related government regulations is also emphasized. Prerequisite: TEXT-101 or TEXT-104

TEXT-313 - Textile Costing 3-0-3
The cost of materials, labor, overhead and waste is studied in relation to textile production and finishing. Case studies illustrate cost systems used in textile mills. Interrelationships between labor, machines and facilities are analyzed to determine their relative importance in cost-reduction programs. Costing factors for domestic and imported fabrics are considered. Prerequisite: WEAV-201 KNIT-201

TEXT-314 - European Textile Printing 0-0-3
A two-week study tour in the textile printing areas of France, Switzerland and Northern Italy introduces Textile Design and Engineering Technology majors to the expertise of important European printers, screen engravers and studios in the areas of printed textile design, style, color and printing technology. Visits to the two important French historic textile museums and other related textile plants are also included. Prerequisite: PRINT-301 or PRINT-305 or PRINT-315 or Permission of Program Director

TEXT-315 - Interior Fabric Performance 1-4-3
Evaluations of fabrics and materials intended for end use in home furnishings are covered in this course. The use of physical testing to predict performance potential is emphasized. The use of instrumentations in the evaluation of surface and color change is presented. Prerequisite: TEXT-307

TEXT-316 - Textile Quality Management 3-0-3
Recently, quality has emerged as a formal management function - no longer restricted to manufacturing and operational areas, it now includes the design, purchasing and marketing processes. Through lecture, discussion and experientials, this course examines quality theory and practice - how a more sophisticated understanding of quality can lead to a strategic approach to quality management that is necessary to compete in today's global marketplace. Factors required for creating and maintaining a corporation's strategies and competitive edge are analyzed. Prerequisite: WEAV-301 or KNIT-205 and MGMT-301 or (WEAV-301 or KNIT-205) and MGMT-104, DECPROC-101 and DECFRM-200
TEXT-317 - Textile Production Control 3-0-3
Production ' its measurement and control ' is studied through plant and equipment layouts, as well as equipment selection. Methods of managing people and the equipment to optimize production are discussed. Prerequisite: WEAV-201 KNIT-201

TEXT-321 - Nonwovens 2-2-3
The methods of web formation, bonding, end-use and market potential for nonwovens are investigated. In the laboratory, dry-laid and wet-laid nonwovens are manufactured and later evaluated in the testing laboratory for their unique characteristics. Prerequisite: TEXT-101

TEXT-325 - Fibrous Composite Materials 2-2-3
Exploration of properties of various fibers and fibrous constructions as applied to composites; fabrication of fiberreinforced composites; and analysis of properties of new materials and technology. Prerequisite: ENGR-215 MATH-112

TEXT-331 - Apparel Fabric Performance 3-0-3
The course focuses upon the dependent relationship of the raw materials, manufacturing processes and finishing techniques that influence the actual performance of apparel products. This will enable students to evaluate a garment's suitability for a specific end use when any fabric variable is altered or when a product's construction and composition is examined. Federally mandated and voluntary labeling requirements will be emphasized. This course cannot be taken for credit by students who have taken TEXT-307. Prerequisite: TEXT-101

TEXT-371 - Special Topics in Textiles 3-0-3
A topic of special interest to students majoring in Textile Design, or Textile Engineering Technology. The special topic will vary.

TEXT-381 - Independent Study in Textiles I 0-0-3
For details, see description of Independent Study in "University Academic Policies and Procedures: Common Academic Policies for All Students.". Permission required. See appropriate form online at the University Registrar's webpage http://www.philau.edu/registrar/ for more information.

TEXT-382 - Independent Study in Textiles II 0-0-3
For details, see description of Independent Study in "University Academic Policies and Procedures: Common Academic Policies for All Students.". Permission required. See appropriate form online at the University Registrar's webpage http://www.philau.edu/registrar/ for more information.

TEXT-391 - Textile Design Research 1-5-3
This course will focus on uses of various design resources such as museums, market information, color forecasts, trade shows, nature and current events to generate design ideas suitable for the student's concentration area. Active research will result in a written and illustrated sketchbook of ideas to be used in advanced studio course projects, as well as portfolio-suitable drawings and paintings. Prerequisite: DRAW-303

**TEXT-398 - Textile Designated Elective**

This is a transfer equivalency for a designated elective in the Textile Design/Textile Material Technology programs

**TEXT-3X1 - Textile Designated Elective**

This is a placeholder for a designated elective in the Textile Design/Textile Material Technology programs

**TEXT-3XX - Textile Designated Elective**

This is a placeholder for a designated elective in the Textile Design/Textile Material Technology programs

**TEXT-411 - Textile Industry Issues Industry Issues** 1-0-1

Seminars will expose students to diverse views, as well as enable them to discuss broad issues that cut across several disciplines. New technology and processes, business ethics, industry forecasting and marketing innovations, as well as career information, are effectively presented in this format. One credit of Textile/Apparel Industry Issues is required for TD, TET, FD and FIM majors.

**TEXT-487N - Capstone in Textile Mat. Tech** 6-0-6

Design, development, manufacturing, research and other thought-provoking problems are presented. Students will work in teams to analyze information/data on numerous textile- or apparel-related problems. The final project will reflect the work previously conducted in the TMT Option and will constitute the final submission to each student's digital portfolio. Prerequisite: WRTG-2XX, KNIT-205, WEAV-301, TEXTCHM-202 or 2429 Credits from DECPROC, DECFRM, DECSYS, DECMTHD12 Credits in TMT Option or By Permission

**TEXT-489 - Textile Design Senior Seminar** 0-12-6

The capstone course for students within the Textile Design major during which the students will develop a professional portfolio in actual and digital formats and refine work for their final exhibition. Students' individual interests will guide market research and the resultant development of targeted lists of potential employers. Resumes, cover letters and promotional packets will be developed during the course of the semester.

**TEXT-499 - Textile Design Capstone** 0-8-6

Textile Design Capstone Students develop projects independently and are required to demonstrate ability and understanding of textile design theory, processes and principles. The final project requires topic research, design exploration, development and final professional presentation. Additionally, a resume, culminating portfolio and support materials will be developed. Prerequisite: take PRINT-315 WEAV-307 or KNIT-326;
TEXTCHM-202 - Color, Dyeing and Finishing 3-0-3
This lecture course presents an overview of color science and wet processing of fibers, yarns and fabrics. Included are the preparation, dyeing and finishing of textiles. Some emphasis is placed on the chemistry and technology involved in these operations. Dyes are studied by their method of application and the primary substrates to which they are applied. Chemical, thermal and mechanical processes are discussed for both preparation and finishing of fabrics. This course may not be taken for credit by anyone who previously received credit for TEXTCHM242, TXF516 or C501. (First offered Fall 2014) Prerequisite: CHEM-101 or CHEM-103 Prerequisite: CHEM-101 or CHEM-103

TEXTCHM-202L - Color, Dyeing & Finishing Lab 0-3-1
This hands-on laboratory-based course highlights concepts covered in Color, Dyeing and Finishing Lecture. Emphasis is placed on developing laboratory skills and to reinforce the concepts covered in the weekly lecture throughout the term. Experiments include color measurement, color mixing, dyeing of various classes and finishing using both chemical & mechanical techniques. This course may not be taken for credit by anyone who previously received credit for TEXTCHM242, TXF516 or C501. (First offered Fall 2014) Prerequisite: CHEM-101 or CHEM-103 Prerequisite: CHEM-101 or CHEM-103

TEXTCHM-338 - Organic/Textile Chemistry 4-2-4
Aliphatic, aromatic and heterocyclic compounds on those syntheses and reactions that play a role in textile chemistry. Also includes the chemistry of carbohydrates and proteins, regenerated polymers, polymerization, synthetic polymers, the synthesis and chemistry of finishing agents and dyes. The laboratory portion illustrates basic techniques and reactions and the applications of textile chemistry. Prerequisite: CHEM-103 or CHEM-101

TXIS-100 - Textual Analysis for Intl Students 3-0-3
This course is designed for international students who need additional English language comprehension skills to succeed in college. Students are introduced to the academic practices and expectations of U.S. universities and the skills required to understand course materials and to complete common course assignments. Student learn strategies for reading and thinking critically, expanding vocabulary, and retaining content, and complete assignments in academic reading, note taking, review techniques, and critical thinking skills. Students required to take TXIS-100 must not register for DBTU-114 in the same semester.

VSDES-101 - Design Essentials 1-5-3
This Foundations level design course confronts the process and principles of design. Students learn studio practices and gain facility to use a variety of materials in order to foster a hands-on creative experience. Design students in this course will develop sensitivity to value and color relationships with strategies for their use. Projects will be short in duration with a succession of increasingly complex concepts. The primary aspect of the course is two-dimensional design with a short period of three-dimensional study. *This course should not be taken by students who have received credit for Design I or Design II in the School of Design & Engineering or the School of Architecture*

VSDRW-101 - Visual Studies:Drawing 1-5-3
This drawing course emphasizes the understanding of space and alternative approaches for recording and expressing it. Much information in regard to drawing practice will be accumulated during this semester such as mark making skills, developing sensitivity to light and shade, experimentation with media and the use of color as an introduction to figure drawing. *This course should not be taken by students who have received credit for DRAW 101 or DRAW 201 in the School of Design & Engineering or the School of Architecture*

WEAV-201 - Weave Technology I 4-2-4
The structures and analysis of woven fabrics will be studied utilizing CAD, pick outs and laboratory assignments on industrial equipment. Weave structures will include plain, twills and satins (with their derivatives), color effects, textural effects (cords, piques, etc.) and pile weaves. Fabric will be mathematically analyzed for weight, yarn size, fabric count and yarn crimp to specify fabric structure. Necessary loom controls (draw, chains and reed plans) will be used to relate lectures and laboratory work on dobby looms. Prerequisite: TEXT-101 TEXT-104

WEAV-207 - Weave Design Studio I 1-5-3
This course focuses on the effects and interactions that yarn, color, texture and structure play in woven design. Working with multi-harness floor looms and dobby looms, students create warps and chains, and weave prototype cloth for various end uses. Prerequisite: WEAV-201

WEAV-226 - Jacquard 3-2-4
The principles and equipment involved in the design and production of Jacquard fabrics are studied. Students analyze, design and produce complex Jacquard fabrics on commercial equipment including computerized design and production systems. Prerequisite: WEAV-201

WEAV-301 - Weave Technology II 4-2-4
The variations, function, auxiliary devices and design characteristics of cam, dobbi and Jacquard weaving machines, and the equipment used to support the weaving process are studied; along with relevant calculations regarding time, materials and production of fabrics. The technique required to accurately analyze fabrics for all critical components and methods to design fabrics for specific weight and compact cover, with consideration given to yarn size, texture, fiber type, weave and other fabric parameters, will be learned. Advanced multi-layer weaves will be studied, analyzed and woven. Prerequisite: WEAV-201

WEAV-307 - Weave Design Studio II 1-5-3
The study of elements of woven design is brought to the problems of multi-layered cloth, compound weaves, block designs and other advanced structures. Students use several CAD programs in conjunction with AVL compu-dobbies to increase their design capabilities. Multi-harness floor looms and dobby looms are also used to develop cloth from concept to actuality. Prerequisite: WEAV-207 GRADE OF C or better

WEAV-327 - Weave Design Studio III 1-5-3
Through an advanced study in woven-textile design, students develop a comprehensive working knowledge of the process of styling fabric for specific textile markets. Depending on the projects' parameters, students may use AVL compu-dobbies, multi-harness floor looms and/or dobby looms. Prerequisite: WEAV-307
WEAV-401 - Introduction to Woven Design
(for non-textile design majors) This course focuses on the effects and interactions that yarn, color, texture and structure play in woven design, as they relate to a range of end use applications. Students will develop fabrics appropriate for their particular area of interest or major field of study. Using multi-harness looms, students will create and weave a variety of samples and prototype cloth.

WRIT-101 - Writing Sem I: Written Comm.
In Writing Seminar I: Written Communication, students develop skills and practices vital to the writing process: reading, synthesizing, outlining, drafting, and revising. Written Communication asks students to anticipate the needs of an audience and create academic arguments to address those needs. To achieve these goals, students will write in a variety of academic genres. Through the theme of “Finding Philadelphia,” students analyze both published and student texts. This course is the first in two writing-specific courses at the University, and it helps students develop their Contextual Understanding competency. [Writing Intensive]

WRIT-101G - Writing Communication-Global
WRTG-101G is specifically designed for students whose first language is not English. This Global version of Writing Seminar I parallels the content of WRTG-101: students develop skills and practices vital to the writing process: reading, synthesizing, outlining, drafting, and revising. Written Communication asks students to anticipate the needs of an audience and create academic arguments to address those needs. To achieve these goals, students will write in a variety of academic genres. Through the theme of “Finding Philadelphia,” students analyze both published and student texts. This course is the first in two writing-specific courses at the University, and it helps students develop their Contextual Understanding competency. May not be taken CR/NC. [Writing Intensive]

WRIT-201 - Writing Seminar II:Multi Comm
In Writing Seminar II: Multimedia Communication, students produce collaborative and individual projects to develop critical reading, writing, thinking and researching skills. Through analyses of professional communication, students consider the rhetorical framework and strategies for effective, ethical communication. Student projects include written, oral and visual presentations, with particular emphasis on project management and process as well as the final products of their work. In the Hallmarks Program, this course helps students develop their Collaboration competency, and it also serves as a Touchstone course in which each student's Hallmarks Folio is reviewed and assessed at its sophomore-level stage of development. First offered Spring 2015 Replaces WRTG-2xx (students who have taken WRTG-2xx should not take this course) [Writing Intensive] Prerequisite:WRIT-101

WRIT-202 - Writing Seminar II: Multi Communicatn
4-0-4
This version of Writing Seminar II introduces new transfer students to the Hallmarks Folio process and guides them in posting artifacts and/or reflections for Hallmark competencies that they developed at other institutions. The course also addresses the other goals of Writing Seminar II to help students advance their Collaboration competency: students produce collaborative and individual projects to develop critical reading, writing, thinking and researching skills. Through analyses of professional communication, students consider the rhetorical framework and strategies for effective, ethical communication. Student projects include written, oral and visual presentations, with particular emphasis on project management and process as well as the final products of their work. First offered Spring 2015 Replaces WRTG-2xx (students who have taken WRTG-2xx should not take this course) [Writing Intensive] Prerequisite:WRIT-101

WRTG-100 - Intro to Academic Writing 3-0-3
Writing 100 teaches writing in the context of reading and thinking about the diversity of American society. The course helps students to learn to write and write to learn. In learning to write, students learn to manipulate and negotiate the genres and conventions of academic discourse. In writing to learn, students develop process-based approaches to writing including invention, revision, and reflection. Students who pass this course with a C or better continue to Writing Seminar I. [Writing Intensive]

WRTG-100G - Intro to Acad Writing-Global 3-0-3
Writing 100G teaches writing in the context of reading and thinking about the diversity of American society. This course parallels Writing 100 but is designed for students who did not learn English as their first language. As with WRTG 100, its main focus is on using writing as a tool for clarifying thinking, establishing a process-based approach to writing, developing critical reading skills and constructing arguments. Additionally, students will focus on the cultural conventions of academic writing and develop an increasingly complex range of language. Students write both formally and informally and, as with Writing 100, "write to learn." Students must complete the course with a C or better before moving on to Writing 101. [Writing Intensive]

WRTG-211 - Writing Seminar II: Business 3-0-3
This course has been designed primarily for students of business. Students focus on critical reading, writing, thinking and researching in print, electronic, observation and interview formats. Students also consider economic, social and political perspectives as applied to workplace communication and their professions. Students produce individual and group projects, including oral and visual presentations, as they focus both on the process as well as the final products of their work. May not be taken CR/ NC. Prerequisite:WRTG-101HIST-1XX

WRTG-215 - Writing Seminar II: Design 3-0-3
This course has been designed primarily for students of design. Students focus on critical reading, writing, thinking, and researching in print, electronic, observation and interview formats. Students also consider economic, social and political perspectives as applied to workplace communication and their professions. Formal aesthetic concerns are also addressed. Students produce individual and group projects, including oral and visual presentations, as they focus both on the process as well as the final products of their work. May not be taken CR/ NC. Prerequisite:WRTG-101HIST-1XX

WRTG-217 - Writing Seminar II: Science, Engineering, Technology, 3-0-3 & Health Professions
This course has been designed primarily for students of science, engineering, technology, and the health professions. Students focus on critical reading, writing, thinking and researching in print, electronic, observation and interview formats. Students also consider economic, social and political perspectives as applied to workplace communication and their professions. Students produce individual and group projects, including oral and visual presentations, as they focus both on the process as well as the final products of their work. May not be taken CR/NC. Prerequisite: WRTG-101 HIST-1XX