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# COURSES

## ACCT - Accounting

### **ACCT 2301 - Principles of Financial Accounting [TCCN: ACCT 2301]**

An introduction to financial statements and their use in decision-making. Topics include the accounting cycle; concepts and principles used in recording equity, revenues and expenses, and internal controls.

### **ACCT 2302 - Principles of Managerial Accounting [TCCN: ACCT 2302]**

An introduction to accounting concepts and methods used in managerial planning, control, and decision-making. Topics include budgetary planning, control and analysis, responsibility accounting; costing techniques; standard costs; and cost-volume-profit relationships. Prerequisite: ACCT 2301.

### **ACCT 3300 - Accounting and Finance for Small Business and Entrepreneurs**

Basic topics in financial and managerial accounting. Topics include financial statements and analysis; accounting for assets, liabilities and owners' equity, and elements of managerial accounting. This course is designed for non-business majors. Students with more than six hours in accounting will not receive credit for this course. This course is crosslisted with FINA 3300.

### **ACCT 3311 - Intermediate Accounting I**

In-depth study of accounting theory and concepts, with emphasis on corporate financial accounting and reporting under U.S. GAAP, and exposure to IFRS. Prerequisite: ACCT 2301.

### **ACCT 3312 - Intermediate Accounting II**

A continuation of the in-depth study of accounting theory and concepts, with emphasis on corporate financial accounting and reporting under U.S. GAAP, and exposure to IFRS. Prerequisite: ACCT 3311.

### **ACCT 3315 - Cost Accounting**

Accounting for manufacturing operations; emphasis on standard costing, process costing and relevant analysis for decision-making. Prerequisite: ACCT 2302.

### **ACCT 3325 - Income Tax I**

An introduction to federal income taxation of individuals and sole proprietorships. Discussion covers different components of taxable income, including property transactions. Prerequisite: ACCT 2301.

### **ACCT 3326 - Income Tax II**

An introduction to federal income taxation of corporations and partnerships and introduction to coverage of tax research. Prerequisite: ACCT 3325.

### **ACCT 4199-4699 - Independent Study**

Independent study in special areas of accounting not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may apply toward an undergraduate degree. Independent study courses are available only to degree seeking students. The student must request a faculty member to supervise the independent study, write a proposal and have it approved by the sponsoring faculty member and the department chair. The proposal and the final report become part of the student's permanent record. Prerequisite: Consent of Department Chair.

### **ACCT 4320 - Advanced Accounting**

Consolidated financial statements and partnership accounts; institutional, social and fiduciary accounting. Prerequisite: ACCT 3312.

### **ACCT 4330 - Governmental and Not-for-Profit Accounting**

Accounting for governments and not-for-profit organizations. Coverage includes budgets, revenues, expenditures, tax levies, appropriations, general funds, special funds, and financial reports. Prerequisite: ACCT 3311.

### **ACCT 4370 - Special Topics in Accounting**

Organized studies of special accounting topics not normally offered as part of the regular course offerings. A maximum of six semester hours may be applied to a degree. May be repeated once for credit when content changes.

Prerequisite: Consent of Department Chair.

### **ACCT 4375 - International Accounting & Financial Reporting**

Introduces and examines accounting issues unique to multinational enterprises and international business activity. Course includes International Financial Reporting Standards (IFRS); financial reporting outside the USA; International financial disclosure issues such as segmental social and environmental; accounting harmonization; ethics; taxation; foreign exchange; and cultural issues. Prerequisite: ACCT 3312.

### **ACCT 4380 - Auditing**

Auditing procedures, auditing standards and auditing reports. Responsibilities and ethical standards of independent public accounting firms.

Prerequisite: ACCT 3312.

### **ACCT 4385 - Accounting Theory**

Evolution of financial accounting theory and practice; survey of contemporary accounting, with emphasis on latest developments and issues.

Prerequisite: ACCT 3312.

### **ACCT 4391 - Accounting Information Systems**

Structure of financial data flow systems within an organization. Development of logic, flow and control concepts and reporting techniques of these systems.

Prerequisite: TECH 2323 and ACCT 3312 or concurrent enrollment in ACCT 3312.

### **ACCT 4395 - Undergraduate Internship**

An 8 to 16 week program providing for a learning experience in an off-campus environment. CR/NC Option.

Prerequisite: Consent of Department Chair and 3.0 minimum GPA.

### **ACCT 4398 - Accounting Analysis and Regulations**

This capstone course assembles information from the accounting curriculum to prepare students for entry into the profession. The course integrates recognition, reporting, analysis, theory, and guidance codification as it pertains to comprehensive financial accounting information. Other topics pertaining to financial statement preparation and presentation are addressed.

Prerequisite: ACCT 3312, ACCT 3315, and ACCT 3325.

### **ACCT 5199-5699 - Independent Study**

Independent study in specific areas of accounting not covered by organized graduate courses. A maximum of six credit hours of

independent study courses may be applied to a graduate degree. Independent study courses are available only to degree seeking students. The student must request a faculty member to supervise the independent study, write a proposal and have it approved by the sponsoring faculty member and the College of Business and Technology coordinator of graduate programs. The proposal and the final report become part of the student's permanent record.

Prerequisite: Consent of MAcc program director.

#### **ACCT 5300 - Accounting Concepts and Processes**

Survey of accounting procedures, accumulation of information regarding the accounting entity, and interpretation for control purposes and managerial decisions. Students who have credit for six hours of principles of accounting may not receive credit for this course.

#### **ACCT 5310 - Research Problems in Federal Income Taxation**

Research problems of the tax consequences of the transactions of taxable and tax-exempt entities. Approved by Texas State Board of Public Accountancy for 2-hour research requirement.

Prerequisite: ACCT 3325 and admission to the Master of Accountancy program or consent of MAcc program director.

#### **ACCT 5315 - Accounting and Reporting Problems**

A study of current accounting and reporting problems. This course uses cases, business situations and simulations to investigate accounting and reporting issues.

Prerequisite: ACCT 3312, admission to the Master of Accountancy program or consent of MAcc program director.

#### **ACCT 5320 - Accounting for Management Control**

Use of accounting data in the decision-making process and in the analysis and control of business operations.

#### **ACCT 5325 - Corporate Income Taxation**

A study of the income tax laws involving corporations and their shareholders, including formation, reorganization, liquidation, as well as an overview study of "S" corporations.

Prerequisite: ACCT 3325 and admission to the Master of Accountancy program or consent of MAcc program director.

#### **ACCT 5335 - Advanced Government and Not-for-Profit Accounting**

Accounting for governments and not-for-profit entities. Coverage includes budgets, revenues, expenditures, and required financial reports.

Prerequisite: ACCT 3312 and admission to the Master of Accountancy program or consent of MAcc program director.

#### **ACCT 5345 - Advanced Financial Analysis**

A study of various types of financial accounting information, analysis and the role the information plays in business decisions. Comprehensive financial statement analysis and valuation framework that integrates strategy, financial reporting, financial analysis and valuation concepts to develop valuation tools and applications.

Prerequisite: ACCT 3312 and admission to the Master of Accountancy program or consent of MAcc program director.

#### **ACCT 5355 - Strategic Cost Management**

A study of accounting focusing on cost accumulation, cost allocation and systems design for management decision making purposes.

Prerequisite: ACCT 3315 and admission to the Master of Accountancy program or consent of MAcc program director.

#### **ACCT 5360 - Advanced Problems in Accounting**

Accounting theory and practice relating to complex consolidation issues and business combinations. Consolidated financial statements, partnerships, fiduciary accounting and other complex accounting topics are examined.

Prerequisite: ACCT 3312 and admission to the Master of Accountancy program or consent of MAcc program director.

#### **ACCT 5370 - Special Topics in Accounting**

An exploration of current accounting topics that are not covered in other courses. Timely accounting issues are covered. May be repeated for credit when content changes.

Prerequisite: Consent of MAcc program director.

#### **ACCT 5375 - Advanced International Financial Reporting**

Introduces and interprets accounting issues unique to multinational enterprises and international business activity. Course include International Financial Reporting Standards (IFRS); financial reporting outside the USA; formulation of international financial data; comparison of IFRS and US GAAP; evaluate international financial disclosure issues such as environmental; accounting harmonization; ethics; taxation; foreign exchange; and cultural issues.

Prerequisite: ACCT 3312 and admission to the Master of Accountancy program or consent of the MAcc program director.

#### **ACCT 5380 - Advanced Auditing**

Advanced study and application of auditing theory including internal, forensic and information technology (IT) auditing.

Prerequisite: ACCT 4380 and admission to the Master of Accountancy program or consent of the MAcc program director.

#### **ACCT 5385 - Research in Accounting Theory**

Investigation of elements of accounting theories and their implementation. Accounting policy, research and standard-setting are examined.

Prerequisite: ACCT 3312 and admission to the Master of Accountancy program or consent of the MAcc program director.

#### **ACCT 5390 - Graduate Internship**

An 8 to 16 week program providing for a learning experience in an off-campus environment. CR/NC option.

Prerequisite: Consent of MAcc program director.

## **ART - Art**

#### **ART 1301 - Introduction to Art [TCCN: ARTS 1301]**

This course provides the student with an understanding and appreciation of the theories, history, and practices of art.

#### **ART 1306 - Art and Film**

An online course that is a broad based exploration into the world of art through film and readings. Students will become familiar with a selection of contemporary and historical artists, artworks, and topics including a cultural and thematic approach.

#### **ART 1311 - Two-Dimensional Design [TCCN: ARTS 1311]**

A beginning study of the visual structure and organization of two-dimensional space using a variety of media including digital processes. Emphasis on digital and time-based media as applied to design concepts.

#### **ART 1312 - Three-Dimensional Design [TCCN: ARTS 1312]**

A study of the visual structure and organization of three-dimensional forms using a variety of media including digital processes. Emphasis on digital and time-based media as applied to design concepts.

#### **ART 1316 - Drawing I [TCCN: ARTS 1316]**

An introductory studio course focusing on basic drawing principles, strategies, motivations, and techniques.

#### **ART 1399 - Directed Studies: Drawing**

An introductory studio course focusing individualized instruction on basic drawing principles of studio art. May be repeated for credit when content varies with consent of advisor.

#### **ART 2303 - Art History Survey I [TCCN: ARTS 1303]**

A study of the major developments in art from Prehistory to the Medieval period.

**ART 2304 - Art History Survey II [TCCN: ARTS 1304]**

A study of the major developments in art from the Renaissance to the late Twentieth Century.

**ART 2316 - Beginning Painting [TCCN: ARTS 2316]**

An introduction to painting in various media, content and form.  
Prerequisite: ART 1311, ART 1316 OR CI.

**ART 2326 - Beginning Sculpture [TCCN: ARTS 2326]**

An introduction to various materials, tools, and approaches used in making sculpture.  
Prerequisite: ART 1312.

**ART 2333 - Beginning Printmaking [TCCN: ARTS 2333]**

An introduction to various forms of printmaking.  
Prerequisite: ART 1311, ART 1316 or CI.

**ART 2341 - Beginning Jewelry and Metalsmithing [TCCN: ARTS 2341]**

An introduction to materials and techniques used in the creation of jewelry and small sculpture.

**ART 2356 - Beginning Digital Photography and Video [TCCN: ARTS 2356]**

An introduction to digital photographic and video processes used in the creation of art works. In addition to technical considerations course also covers aesthetic aspects of digital imaging in the creation of works of art.

**ART 2379 - Beginning Ceramics [TCCN: ARTS 2346]**

An introduction to various materials, tools, and approaches used in ceramics.

**ART 2380 - Beginning Ceramic Sculpture**

Beginning methods and practices used in contemporary ceramic sculpture. Special emphasis on clay additive, subtractive and carving methods.  
Prerequisite: Art 1312.

**ART 3300 - Composition and Design**

Continuing studies in the visual structure and organization of two-dimensional and three-dimensional space using a variety of media including digital processes. Emphasis on digital and time-based media as applied to design concepts.  
Prerequisite: ART 1311, ART 1312 or Consent of Instructor.

**ART 3315 - Essential Elements of Art**

A course emphasizing art activities and skills of children from the scribbling through the preadolescent stages of development. ART 3115 may count only towards the teacher certification option.

**ART 3320 - Intermediate Life Drawing I**

An advanced course in drawing with emphasis on figure representation for students working toward maturity and individuality in graphic expression. May be repeated once for credit.  
Prerequisite: ART 1311, ART 1316 or CI.

**ART 3321 - Intermediate Life Drawing II**

A continuation of ART 3320 with attention given to various mixed media. May be repeated once for credit.  
Prerequisite: ART 1311, ART 1316 or CI.

**ART 3340 - Aesthetics in Visual Learning**

Stresses necessary skills in assessing the visual arts including a knowledge of the elements and processes of art, the ability to analyze a work of art, and an exposure to critical thinking about the nature of art.  
Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 3341 - Art and Society: Ancient to Medieval**

A study of painting, sculpture and architecture from antiquity through the medieval era with particular emphasis on societal circumstances which helped to form artistic evolution.  
Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 3342 - Art and Society: Renaissance to Modern**

A study of painting, sculpture and architecture from the Renaissance to the 20th century with particular emphasis on societal circumstances which helped to form artistic evolution.  
Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 3343 - Jewelry and Metalsmithing**

The study of various materials, tools and approaches used in the creation of jewelry and small metal sculpture.

**ART 3356 - Three Dimensional Design**

An advanced design course offering expanded sculptural design experience. Experimental problems include exploration form, volume, space and time.  
Prerequisite: ART 2326 or Consent of Instructor.

**ART 3359 - Intermediate Digital Photography**

Continued studies in digital photographic and video processes used in the creation of art works. In addition to technical considerations course also cover aesthetic aspects of digital imaging in the creation of works of art.  
Prerequisite: ART 2356 or Consent of Instructor.

**ART 3366 - Intermediate Painting**

A study of various painting materials, mediums, applications, scales, and presentation.  
Prerequisite: ART 2316 or Consent of Instructor.

**ART 3369 - Collage Theory and Practice**

Study in collage theory and practice through the use of mixed media. An investigation of various supports, adhesives, and presentation methods used in Collage. Discovery through created, found, and simulated materials. The course may be repeated when content varies with consent of instructor.  
Prerequisite: ART 1311, ART 1316 or Consent of Instructor.

**ART 3376 - Intaglio/Relief**

Studio practice in methods of intaglio, relief, collographic printmaking. Technical development will be emphasized.  
Prerequisite: ART 2333 or Consent of Instructor.

**ART 3377 - Lithography**

Studio practice of lithographic printmaking methods. Technical development will be emphasized.  
Prerequisite: ART 2333 or Consent of Instructor.

**ART 3379 - Ceramics**

A survey of issues and concepts in contemporary ceramic art. Introduction to techniques of throwing, hand building, and extruding of clay shapes used by contemporary ceramicists.  
Prerequisite: ART 2379 or Consent of Instructor.

**ART 3380 - Intermediate Ceramic Sculpture**

Intermediate methods and practices used in contemporary ceramic sculpture. Special emphasis on clay additive, subtractive and carving methods.  
Prerequisite: ART 2379 or ART 2380 or Consent of Instructor.

**ART 3384 - Intermediate Sculpture**

A studio study in the techniques of sculpture emphasizing the use of the various tools available to the sculptor. Modeling, welding, casting, and fabrication techniques.  
Prerequisite: ART 2326 or Consent of Instructor.

**ART 3392 - Professional Art Practices**

A course in theoretical and practical applications used by the professional artist. Web based portfolio presentation, digital photography and video documentation, writing skills, exhibitions. Methodology used in connecting content, technique and formal issues of art. Course should be taken during junior year.  
Prerequisite: Consent of Instructor.

**ART 4192 - Senior Exhibition**

A pre-professional development course designed for the graduating art major. Emphasizes career preparation and strategies for the professional artist, practice and procedures in organizing exhibitions, and writing skills. Students are required to present an exhibition of their work.

Prerequisite: Consent of Instructor.

**ART 4199-4699 - Independent Study**

Independent study in specific areas of art not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of chair.

**ART 4311 - Advanced Painting**

Advanced work in permanent media using various styles and techniques of artistic expression. The course may be repeated when content varies with consent of instructor.

Prerequisite: ART 2316 or Consent of Instructor.

**ART 4320 - Advanced Drawing**

Advanced work in representation through drawings using a variety of styles and techniques as well as subjects. The course may be repeated when content varies with consent of instructor.

Prerequisite: ART 1311, ART 1316 or Consent of Instructor.

**ART 4331 - Aquamedia**

Emphasis is placed on landscape and imaginative painting which experiments in the opaque and transparent techniques of watercolor and acrylics. The development of an individual style for the artist through creative thinking is encouraged. The course may be repeated when content varies with consent of instructor.

Prerequisite: ART 2316 or Consent of Instructor.

**ART 4333 - Landscape Painting**

An advanced genre-based painting course on the objective study of the landscape. Each class period will meet onsite at locations around the East Texas area. Students should be knowledgeable of painting techniques, color mixing, and canvas preparation prior to taking this course. The course may be repeated when content varies with consent of instructor.

Prerequisite: ART 2316 or Consent of Instructor.

**ART 4337 - Advanced Painting Techniques**

Advanced study in various painting media and modes of expression with emphasis upon artistic individuality. May be repeated once for credit.

Prerequisite: ART 2316 or CI.

**ART 4341 - Advanced Jewelry and Metalsmithing**

Advanced studies in materials and techniques used in the creation of jewelry and small sculpture. The course may be repeated when content varies with consent of instructor.

Prerequisite: ART 2341 or ART 3343 or Consent of Instructor.

**ART 4342 - Non-Western Art**

A study of arts and crafts outside the Western tradition including Oriental, African, Native American and/or Oceanic cultures. May be repeated once for credit with consent of chair when content changes.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4343 - Greek and Roman Art**

A study of architecture, sculpture, and painting from Aegean art to the fall of the Roman Empire.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4344 - Medieval Art**

A study of architecture, sculpture, and painting in Europe from the reign of Charlemagne to the Romanesque and Gothic periods.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4345 - Renaissance Art**

The art of Renaissance Europe: architecture, painting, and sculpture in Northern and Southern Europe from 1300 to 1600.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4346 - Baroque and Rococo Art**

Art in Europe from 1600 to 1790: painting, sculpture and architecture with attention given to the effects of the Counter-Reformation, the rise of divine right, and the circumstances leading to the French Revolution.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4347 - Nineteenth-Century Art**

A study of painting, sculpture and architecture in Europe from 1790 to 1890. The course will consider movements in the visual arts from Neo-Classicism to Post-Impressionism.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4348 - Art in America**

A survey of American art: architecture, sculpture, painting, and the minor arts within the continental United States from prehistoric times to the present. May be repeated once for credit with consent of chair when content changes.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4349 - Twentieth-Century Art**

Painting, sculpture and architecture in the twentieth century with special attention given to avant-garde movements such as Cubism, Dada, Surrealism, Abstract Expressionism, Pop and Op.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4350 - Early Christian and Byzantine Art**

A study of Early Christian and Byzantine art from the 4th to the 12th centuries.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4352 - Women in Art**

This course will give students a general knowledge of women artists as well as acquaint them with key concepts and critical theories in feminist art history through reading assignments, class discussion, and a writing project.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4353 - Egyptian Art**

A comprehensive study of Egyptian art and culture from the Pre-dynastic period (before 3200 B.C.) to the Roman occupation of Egypt (1st century B.C.)

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4354 - Greek Art**

A comprehensive study of Greek art and culture, focusing on its individual time periods--Geometric, Orientalizing, Archaic, Classical & Hellenistic--and geographical diversity.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4355 - Etruscan & Roman Art**

A comprehensive study of ancient Italic cultures that spans 1400 years--Villanovan, Etruscan, Republican, Imperial and Late Antique.

Prerequisite: ART 1301, ART 2303, ART 2304 or Consent of Instructor.

**ART 4356 - Advanced Digital Photography**

Advanced studies in digital photographic and video processes used in the creation of art works. In addition to technical considerations course also covers aesthetic aspects of digital imaging in the creation of works of art.

Prerequisite: ART 2356 or ART 3359 or Consent of Instructor.

**ART 4368-4668 - Field Study**

On-site examination of art and architecture, field investigation, archival research or study practice involving travel away from campus. Classroom lectures, seminars or faculty supervision will complement the travel and field experiences. No more than six semester hours of travel study courses may be applied to the major.

Prerequisite: Consent of Instructor.

**ART 4369 - Advanced Collage Theory and Practice**

Advanced study in collage theory and practice through the use of mixed media. An investigation of various supports, adhesives, and presentation methods used in Collage. Discovery through created, found, and simulated materials. The course may be repeated when content varies with consent of instructor.

Prerequisite: ART 1311, ART 1316 or Consent of Instructor.

**ART 4370 - Undergraduate Internship Program**

An 8 to 16 week program providing for a learning experience in an off-campus environment.

Prerequisite: Consent of chair.

**ART 4370 & 4371 - Undergraduate Internship Program**

An 8 to 16 week program providing for a learning experience in an off-campus environment.

Prerequisite: Consent of chair.

**ART 4371 - Undergraduate Internship Program**

An 8 to 16 week program providing for a learning experience in an off-campus environment.

Prerequisite: Consent of chair.

**ART 4373 - Advanced Drawing Problems**

A studio course that emphasizes the experimental use of media, the development of concepts, and an individual approach to imagery, form and expression.

Prerequisite: ART 1311, ART 1316 or Consent of Instructor.

**ART 4376 - Advanced Intaglio/Relief**

Advanced study of intaglio, relief, and collographic printmaking. Artistic development will be emphasized. The course may be repeated when content varies with consent of instructor.

Prerequisite: ART 2333 or Consent of Instructor.

**ART 4377 - Advanced Lithography**

Advanced study of lithographic printmaking methods. Artistic development will be emphasized. The course may be repeated when content varies with consent of instructor.

Prerequisite: ART 2333 or Consent of Instructor.

**ART 4379 - Advanced Sculpture**

Advanced studies in various media of sculpture with emphasis upon artistic individuality. May be repeated twice for credit.

Prerequisite: ART 2326 or CI.

**ART 4380 - Advanced Ceramics**

Advanced studies in ceramic art with emphasis on kiln firing, throwing, clay and glaze formulation. Development and refinement of design with further examination of contemporary ceramic art issues. The course may be repeated when content varies with consent of instructor.

Prerequisite: ART 2379 or Consent of Instructor.

**ART 4381 - Advanced Ceramic Sculpture**

Kiln firing, clay and glaze formulation for sculpture applications. Development of design, spatial relationship, form and content are encouraged. The course may be repeated when content varies with consent of instructor.

Prerequisite: ART 2379 or Consent of Instructor.

**ART 4390 - Topics in Studio Art**

Advanced studies in studio art to include topics in all art media. The course may be repeated when content varies with consent of instructor.

Prerequisite: Consent of Instructor.

**ART 4391 - Topics in Art History**

Advanced studies in art history to include topics from ancient to contemporary art. The course may be repeated when content varies with consent of instructor.

Prerequisite: Consent of Instructor.

**ART 4393 - Degenerate Art**

This course examines the fate of Modern art and Europe's treasures from the rise to the fall of the Third Reich (approximately 1915-1945). Topics include art as propaganda, art confiscation, art theft, art destruction, and the use of art to support racial theories and population control.

Prerequisite: ART 2303 and ART 2304, or consent of instructor.

**ART 5199-5699 - Independent Study**

Independent study in specific areas of art not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of department chair.

**ART 5310 - Graduate Studio Problems in Drawing and Painting**

The study of the technical, formal and conceptual aspects of drawing and painting. May be repeated for credit when content varies subject to advisor's approval.

**ART 5311 - Graduate Studio Problems in Ceramics**

A study of a variety of pottery and sculptural techniques, and the development of individual expression through the use of volume, form, space and mass. May be repeated for credit when content varies subject to advisor's approval.

**ART 5312 - Graduate Studio Problems in Printmaking**

The study of studio printing techniques in intaglio, lithography, relief, monoprints, collograph, and multiple plate printing. May be repeated once for credit as content varies and with advisor's approval.

**ART 5314 - Graduate Studio Problems in Sculpture**

A study of a variety of sculptural techniques, including casting, fabrication, multi-media. Development of individual expression. May be repeated once for credit when content varies and with advisor's approval.

**ART 5315 - Graduate Studio Problems in Small Metals**

A study of a variety of small metal techniques, including casting, fabrication. Development of individual expression. May be repeated for credit when content varies and with advisor's approval.

**ART 5316 - Graduate Studio Problems in Intermedia**

Study of mixed media and non-traditional combinations of materials in the production of art. Students are encouraged to expand the definition of materials that may be used in the art process. May be repeated for credit when content varies and with advisor's approval.

**ART 5317 - Graduate Studio Problems in Collage**

Study in collage theory and practice through the use of mixed media. An investigation of various supports, adhesives, and presentations methods used in collage. Discovery through created, found, and simulated materials.

**ART 5320 - Graduate Figure Drawing & Modeling**

This course is designed to promote individual development in the use of the human figure in forming compositions. Sketching from the model and forming clay from the model are employed to emphasize functional and aesthetic requirement of form and detail. May be repeated for credit up to 9 semester hours.

**ART 5326 - Arts Management and Marketing**

This course is designed to cover practical issues related to the promotion and development, financing, marketing, and management of individual artists, private collections and museums.

**ART 5330 - Advanced Studies in Art History and Criticism**

Analysis of selected areas of art history and criticism from established periods and styles of art. May be repeated for credit when content varies subject to advisor's approval.

**ART 5336 - Aesthetics and Criticism**

This course is designed to cover the reading and discussing of a list of books, both classic and current, on aesthetics, creativity, philosophy, and the psychology of art. May be repeated for credit up to 9 semester hours.

**ART 5337 - Theory and Research Methods in Art History**

An inquiry into the theory and practice of art history. Methodological issues and recent theoretical approaches to the discipline of art will be discussed.

**ART 5340 - Art in Childhood Education**

Study of materials and approaches in creative art for teachers to aid them in developing character and personality of children through artistic activity.

**ART 5342 - Medieval Art**

An advanced study of architecture, sculpture, and painting in Europe from the reign of Charlemagne to the Romanesque and Gothic periods.

**ART 5343 - Graduate Studies in Greek and Roman Art**

An advanced study of architecture, sculpture, and painting from Aegean art to the fall of the Roman Empire.

**ART 5344 - Graduate Studies in Medieval Art**

Advanced study of architecture, sculpture, and painting in Europe from the reign of Charlemagne to the Romanesque and Gothic periods.

**ART 5345 - Graduate Studies in Renaissance Art History**

Advanced study of the art of Renaissance Europe, including architecture, sculpture, and painting produced in Northern and Southern Europe from 1300 to 1600.

**ART 5346 - Graduate Studies in Baroque and Rococo Art**

Advanced study of painting, sculpture and architecture in Europe from 1600 to 1790. Special attention will be given to the effects on art of the Counter-Reformation, the rise of divine right, and the circumstances leading to the French Revolution.

**ART 5347 - Graduate Studies in Nineteenth Century Art**

Advanced study of painting, sculpture, and architecture in Europe from 1790 to 1890. This course will offer an in-depth examination of movements in the visual arts from Neoclassicism to Post-impressionism.

**ART 5348 - Graduate Studies in Art in America**

Advanced study of American art, including architecture, sculpture, painting, and material culture from colonial times to 1945.

**ART 5349 - Graduate Studies in Twentieth-Century Art**

Advanced study of painting, sculpture, and architecture in the twentieth century. Avant-garde movements, including Cubism, Dadaism, Surrealism, Abstract Expressionism, Pop art, and Op art, will be examined in depth.

**ART 5353 - Egyptian Art**

An advanced study of Egyptian art and culture from the Predynastic period (before 3200 B.C.) to the Roman occupation of Egypt (1st century B.C.).

**ART 5354 - Greek Art**

An advanced study of Greek art and culture, focusing on its individual time periods--Geometric, Orientalizing, Archaic, Classical and Hellenistic--and geographical diversity.

**ART 5355 - Etruscan and Roman Art**

A comprehensive study of ancient Italic cultures that spans 1400 years - Villanovan, Etruscan, Republican, Imperial and Late Antique.

**ART 5370 - Graduate Studio Practice**

Studio practice of technical, formal and conceptual aspects of making art. Course of study is for graduate students pursuing the MA or MFA in studio art in conjunction with the art graduate committee. Approval of

graduate advisor or department chair required. The course may be repeated when content varies with consent of instructor.

**ART 5387-5687 - Field Experience in Art**

On-site examination of monuments of art and architecture, field investigation, archival research or studio practice involving travel away from campus. Classroom lectures, seminars, or faculty supervision will complement the travel and field experiences. No more than six hours of travel study courses may be applied to the M.A. or M.F.A.

**ART 5390 - Selected Topics in Art**

Graduate studies in studio art or art history to include areas such as photography, papermaking, installation, and seminar based topics. The course may be repeated when content varies with consent of instructor.

**ART 5393 - Degenerate Art**

This course examines the fate of Modern art and Europe's treasure from the rise to the fall of the Third Reich (approximately 1915-1945). Topics include art as propaganda, art confiscation, art theft, art destruction, and the use of art to support racial theories and population control.

**ART 5394 - Contemporary Issues**

This course is a seminar covering contemporary ideas, trends, theories and processes in the visual arts. Group discussions will compliment readings and written assignments. May be repeated for credit up to 6 semester hours.

**ART 5395 - Thesis**

Completion and approval of suite of art works accompanied by progress report.

Prerequisite: Consent of advisor. May be repeated for credit up to 6 semester hours.

**ART 5396 - Thesis**

Completion and approval of suite of art works accompanied by progress report.

Prerequisite: ART 5395 or consent of advisor. May be repeated for credit up to 6 semester hours.

**ART 5397 - Graduate Exhibition**

Completion of studio work with culminating solo exhibition, under faculty supervision and oral defense at the exhibition.

Prerequisite: Consent of Advisor.

## ALHS - Allied Health Science

**ALHS 1300 - Personal and Community Wellness**

Study of individual, societal and cultural considerations in health and wellness. Emphasis is on health-related factors that the individual can affect and on individual decision-making.

**ALHS 1315 - Introduction to Nutrition**

An introductory nutrition course designed to enhance understanding and implementation of nutrition principles to promote health and well-being of the individual. This is an entry level course.

**ALHS 2301 - Medical Terminology**

It is the purpose of this course to introduce students to the discipline of medical terminology by developing competencies in the basic recognition of word roots, prefixes, suffixes and combining forms commonly used in the language of medicine.

**ALHS 3301 - Environmental Health**

Study of the impact of the environment on health.

**ALHS 3302 - Human Diseases**

Study of the etiology, control, and prevention of chronic and infectious diseases.

Prerequisite: BIOL 2301/2101.

**ALHS 3315 - Nutrition in Health and Performance**

Study of basic nutrition and the role of nutrition in health across the life cycle.

**ALHS 3350 - Health Biometry**

Study of the analysis of biological, demographic, social and other forms of data related to human health and disease.

**ALHS 3352 - Consumer Health**

Study of health services and products from a consumer perspective. Methods of critical analysis are used to evaluate the credibility of claims made in the marketplace as well as by government. Consumer protection and rights, marketing, science, public agenda setting, and special interest groups are studied with the objective of developing critical health consumers.

**ALHS 3360 - Principles of Community and Public Health**

Study of basic components of community health services and education.

**ALHS 3362 - Behavioral Health**

This course explores health-related behavior at the individual, family, organizational, and community levels. An ecological approach that incorporates the principles of health behavior change will guide the learning activities. A variety of health-related behavior change theories used in health education settings will be introduced and applied.

**ALHS 4301 - Allied Health Sciences Seminar**

Study of current trends and problems in the allied health sciences. May be repeated once for credit when content changes.

**ALHS 4304 - Program Design and Evaluation**

This course is designed to introduce students to the principles of program development in a variety of settings. Students will develop specific skills in needs assessment, planning, implementation, and evaluation of programs designed to promote health and prevent disease in human populations.

**ALHS 4306 - The Health Care Delivery System**

Study of the social, political, and economic systems that influence America's unique and diverse approach to systems of health enhancement and care delivery.

**ALHS 4307 - Legislation and Legal Issues**

Study of the legislative and legal issues affecting health care.

**ALHS 4317 - Theoretical and Clinical Aspects of Weight Management**

An overview of factors associated with weight gain and obesity. Designed for the student with personal or professional interest in the nutritional, psychological, sociocultural, physical and physiological factors in weight control. A translation of theory into application.

**ALHS 4320 - Principles of Epidemiology**

Study of the distribution and determinants of disease, disability, disorders, morbidity and mortality in human populations.

**ALHS 4324 - Drugs and Health**

Study of legal and illegal use, misuse, and abuse of chemical substances that alter structure or function in living organisms.

**ALHS 4326 - Health and Human Sexuality**

Study of the biological, psychological, sociocultural, and ethical aspects of human sexual behavior as they relate to health.

**ALHS 4330 - Emergency Health Care**

Instruction in knowledge and skills for assisting victims of accidents or other medical emergencies. Designed for firefighters, police officers, safety officers and others who may be the first to arrive at the scene.

**ALHS 4333 - Stress Management**

Study of the situations and underlying processes that result in emotional and physiological arousal, including life assessments and behavioral interventions for altering arousal levels.

**ALHS 4335 - Global Health**

Social, economic, and political forces powerfully influence who gets sick, what diseases afflict human populations and the availability of resources for prevention and treatment. Students will be introduced to health related research and other learning materials that will help them to recognize and understand these forces.

**ALHS 4350 - International Field Experience**

International travel study class designed specifically for students in the Health and Kinesiology Department.

**ALHS 5104 - Drug-Exercise Interactions**

Study of the major classes of drugs used with patients in selected categories of diseases or disorders. Emphasis is on drugs used with cardiovascular, pulmonary and metabolic diseases and disorders, drug actions, and drug effects on responses to exercise.

**ALHS 5303 - Advanced Topics in Allied Health Science**

Study of selected topics of interest to allied health professionals. May be repeated once for credit when content changes.

**ALHS 5305 - Analysis of Needs, Processes, and Outcomes in Health**

Study of the quantitative and qualitative methods applied to determining needs, processes, and outcomes for a broad range of health entities with a focus on the interactions among financial exigencies, processes of product or service delivery and quality as core elements in decision-making.

**ALHS 5314 - Aging and Health**

Study of changes in functional capacities and responses to acute and chronic exercise with aging, and effects of chronic exercise on factors associated with aging.

**ALHS 5320 - The U.S. Health System's Origins and Functions**

Study of the development and functioning of the unique United States health system, including structural, political and economic factors that dictate access, quality and costs of health services.

**ALHS 5322 - Nutrition, Health, and Disease**

Reinforcement and application of nutritional facts and concepts through study of research, analysis of diets, and critiquing of nutritional information from a variety of sources.

**ALHS 5324 - Drugs and Health**

Study of legal and illegal use, misuse, and abuse of chemical substances that alter structure or function in living organisms. Current trends of drug use in modern society and ways to decrease demand for illegal substances are examined.

**ALHS 5326 - Health and Human Sexuality**

Study of the biological, psychological, sociocultural, and ethical aspects of human sexual behavior as they relate to health. Emphasis on developing conceptual and practical skills for identifying, analyzing and addressing health issues as they relate to sexual behavior.

**ALHS 5333 - Stress Management**

Study of the situations and underlying processes that result in emotional and physiological arousal, including life assessments and behavioral interventions for altering arousal levels.

**ALHS 5335 - Global Health**

Students will examine global health programs, policies and challenges from the era of colonialism to the present. They will analyze the diverse determinants of health and illness in selected populations including the influence of geographical environmental, economic, and social factors.



**ALHS 5343 - Community Health Assessment**

Study of the health of communities and patterns of disease occurrence through community assessment and epidemiologic methods.

**ALHS 5347 - Epidemiology**

Study of the application of epidemiologic findings to the planning of health services, with emphasis on constructing a rational basis for setting priorities and allocating health resources.

**ALHS 5350 - Public Health Administration**

Study of the science and art of preventing disease, prolonging life, and promoting health through organized community efforts. Emphasis is on the relationship between the political or governmental function and the service or regulatory function of health delivery.

**ALHS 5354 - Program Management**

Study of the day-to-day supervision and administration of exercise and health promotion programs.

**ALHS 5362 - Community Education**

Study of educational interventions for promoting health of communities.

**ALHS 5365 - Theories and Models in Health Behavior**

Study of theories and models as they may be applied to health-related community and individual behavior-change programs.

**ALHS 5366 - Health Communications**

Study of the process of developing health-related messages.

**ALHS 5367 - Educational Interventions for Life-Style Changes**

Study of educational interventions related to promotion of health of individuals: theoretical aspects of program development, materials, and presentation.

## ANTH - Anthropology

**ANTH 2346 - Introduction to Anthropology [TCCN: ANTH 2346]**

Explores human diversity by offering a balanced introduction to three of the major academic sub-disciplines of anthropology: physical, cultural, and archeological. Topics include the cross-cultural examinations of human institutions such as marriage and family, and political and economic organization.

**ANTH 3330 - Cultural Anthropology**

Using both humanistic and scientific approaches, cultural anthropology offers a holistic, comparative perspective on human condition. The nature, principles and comparative topics of culture - such as subsistence, family, language, religion and art - will be studied. Visual examples will be drawn from many cultures, offering students an opportunity to appreciate both the complex cultural diversity and the common traits of the world. Applications of anthropological knowledge to contemporary problems will be discussed as well.

**ANTH 3360 - Archaeology**

Examines the beginnings of human cultures and the methods used to reconstruct and interpret the prehistoric human past. Includes consideration of the ethics of archaeological research as well as the question of who should be the guardian of human remains. Considers contemporary applications of archaeology as well as its relation to other disciplines. Latter part of the course will focus on archaeology of North America and Texas.

**ANTH 3380 - Physical Anthropology**

On the basis of fossil and other physical evidence, physical anthropology studies the origin of human species, the beginnings of culture, the role of heredity and environment in the development of humans, and current physical variation among human populations of the globe. In this course

we will also discuss issues like our biological and ethical relations to other primates, the Neanderthal controversy, and the concept of "race."

**ANTH 4199-4699 - Independent Study**

Independent study in specific areas of Anthropology not covered by organized undergraduate courses. Guided readings and a research paper on an approved topic. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair required.

**ANTH 4360 - Topics In Anthropology**

Selected topics in an identified area of anthropology or study of a specific cultural group. May be repeated for credit when the content changes.

**ANTH 4361 - Field Methods in Archaeology**

Students will participate in a field project and will learn survey and excavation methods and techniques. No more than 6 hours of field methods will apply to Anthropology minor programs.

**ANTH 5199-5699 - Independent Study**

Intensive directed readings course on an agreed upon topic. Term paper is the major requirement. A maximum of six credit hours for independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of department chair and program advisor required.

## BGST - General Studies

**BGST 4200 - Senior Project**

Capstone project for Bachelor General Studies students. An integrative project is prepared under the guidance of an advisor.

Prerequisite: CI.

## BIOL - Biology

**BIOL 1106 - General Biology I Laboratory [TCCN: BIOL 1106]**

Experimental and observational techniques used to study life at the molecular and cellular levels including techniques in the study of inheritance and development.

Corequisite: BIOL 1306.

**BIOL 1107 - General Biology II Laboratory [TCCN: BIOL 1107]**

Experimental and observational techniques used to study life at the organismal, population, and community levels including morphology, physiology, reproduction, and ecology.

Corequisite: BIOL 1307.

**BIOL 1301 - Intro to Life Sciences I**

Biology 1301 is the first of two courses designed to provide a thorough introduction to biological science. The goal of the course is that students learn important facts about the natural world and understand the significance of these facts within the context of major biological concepts. This course satisfies 3 hours of either the STEM or LPS component of the core curriculum. Not recommended for Biology majors.

**BIOL 1302 - Intro to Life Sciences II**

Biology 1302 is the second of two courses designed to help understand the scientific study of life at the organismal, population, and community levels including form, function, reproduction, taxonomy, systematics, ecology and evolutionary history of biodiversity. This course satisfies 3 hours of either the STEM or LPS component of the core curriculum. Not recommended for Biology majors.

**BIOL 1306 - General Biology I [TCCN: BIOL 1306]**

The scientific study of life at the molecular and cellular levels including mechanisms of inheritance, development and evolution. This course

satisfies 3 hours of either the STEM or LPS component of the core curriculum. Recommended for Biology majors.  
Corequisite: BIOL 1106.

**BIOL 1307 - General Biology II [TCCN: BIOL 1307]**

The scientific study of life at the organismal, population, and community levels including form, function, reproduction, taxonomy, systematics, ecology and evolutionary history of biodiversity. This course satisfies 3 hours of either the STEM or LPS component of the core curriculum. Recommended for Biology majors.  
Corequisite: BIOL 1107.

**BIOL 1320 - Zombie Apocalypse: Biology of Disease**

This course is designed for non-science majors. Using the model of zombie outbreaks, it will introduce students to fundamental biology concepts and human disease. Students will learn fundamentals of cell and systems biology, pathogens, antibiotics, and vaccines. This course satisfies 3 hours of the STEM requirement.

**BIOL 1330 - Biology in Pop Culture**

Students will examine science from a biological perspective as it is portrayed in popular culture. Students will critically assess the validity of science as presented in popular culture through various media. This course satisfies 3 hours of either the STEM requirement.

**BIOL 1340 - Genetics and Society**

This course fulfills the STEM core requirement. It focuses on how genetics impacts our everyday lives, in ways big and small. No prior knowledge of genetics or biology is assumed. Topics will include cloning, stem cells, genetically modified organisms, DNA forensics, and others. No prerequisites. This course satisfies STEM requirement of the Core Curriculum.

**BIOL 1350 - Science and Pseudoscience**

This course will be delivered as a survey of popular "pseudoscientific" claims with emphasis on the philosophy of science as demarcation, evidential warrant, scientific progress, science and public policy, and fallacies of reasoning. This course satisfies the STEM requirement of the Core Curriculum.

**BIOL 1360 - Nature, the Environment, and Ecology**

This course fulfills the STEM core requirement by offering students a broad overview of the field of environmental studies. This course emphasizes local, regional and global concerns and welcomes students from all areas. This course satisfies the STEM requirement of the Core Curriculum.

**BIOL 2101 - Anatomy and Physiology I Laboratory [TCCN: BIOL 2101]**

The study of the anatomy and physiology of the nervous, skeletal, muscular and endocrine systems at the cellular, organ and system level. Corequisite: BIOL 2301. Students who enroll in this course are expected to have a recent and strong background equivalent to current Texas high school science and mathematics standards. May not be used for major in biology.

**BIOL 2102 - Anatomy and Physiology II Laboratory [TCCN: BIOL 2102]**

The study of the anatomy and physiology of the cardiovascular, immune, respiratory, digestive, urinary and reproductive systems at the cellular, organ, and system level.  
Corequisite: BIOL 2302. May not be used for major in biology.

**BIOL 2120 - Introduction to Microbiology Laboratory [TCCN: BIOL 2120]**

Laboratory techniques for microbiology. Methods for handling and identifying microbes will be stressed.  
Prerequisite: CHEM 1311/1111 or CHEM 1307/1107. May not be used for major in Biology. Corequisite: BIOL 2320.

**BIOL 2301 - Anatomy and Physiology I [TCCN: BIOL 2301]**

An introductory course examining the organization of the human body and mechanisms of homeostasis. Topics include cellular mechanisms and nervous, skeletal, muscular and endocrine systems. Designed for nursing students and related health areas. May not be used for major in biology.

Prerequisite: CHEM 1305/CHEM 1105 or CHEM 1311/CHEM 1111 and BIOL 2320/BIOL 2120. Corequisite: BIOL 2101. Students who enroll in this course are expected to have a recent and strong background equivalent to current Texas high school science and mathematics standards.

**BIOL 2302 - Anatomy and Physiology II [TCCN: BIOL 2302]**

Continuation of BIOL 2301 Topics include cardiovascular, immune, respiratory, digestive, urinary and reproductive systems. May not be used for major in biology.

Corequisite: BIOL 2102. Prerequisite BIOL 2301/2101.

**BIOL 2320 - Introduction to Microbiology [TCCN: BIOL 2320]**

Microbial structure, metabolism, and genetics. Microorganisms of medical importance are stressed.

Prerequisite: CHEM 1311/1111 or CHEM 1307/1107. May not be used for major in biology. Corequisite: BIOL 2120.

**BIOL 3133 - Genetics Laboratory**

An introduction to experimental and quantitative laboratory techniques fundamental to genetic analysis.

Prerequisite: BIOL 1306/1106, BIOL 1307/1107, CHEM 1311/1111, CHEM 1312/1112. Laboratory fee \$5. Corequisite: BIOL 3332.

**BIOL 3134 - Cell Biology Laboratory**

Modern principles of study of cell structure, components of membranes and membrane-bound organelles, with emphasis on metabolism.

Prerequisite: BIOL 1306/1106, BIOL 1307/1107, CHEM 1311/1111, and CHEM 1312/1112. Corequisite: BIOL 3334.

**BIOL 3135 - Comparative Vertebrate Biology Laboratory**

Provides students an opportunity to study the anatomy, development, and histology of vertebrate's evolutionary relationship between structure and function.

Corequisite: BIOL 3335.

**BIOL 3137 - Ecology Laboratory**

Application of ecological theory with emphasis on field and experimental studies.

Prerequisite: BIOL 1306/1106, BIOL 1307/1107. Corequisite: BIOL 3336.

**BIOL 3144 - Physiology Laboratory**

Investigations of chemical reactions of the body and factors influencing these reactions.

Prerequisite: CHEM 3342/3143, BIOL 1306/1106 and BIOL 1307/1107. Corequisite: BIOL 3343.

**BIOL 3146 - Plant Morphology Laboratory**

Observations of representative types of algae, fungi, mosses, and ferns.  
Prerequisite: BIOL 1306/1106, BIOL 1307/1107. Corequisite: BIOL 3345.

**BIOL 3147 - Plant Taxonomy Laboratory**

Systematics and identification of flowering plants of East Texas.

Prerequisite: BIOL 1306/1106, BIOL 1307/1107. Corequisite: BIOL 3348.

**BIOL 3329 - Genomics**

Covers emerging fields of genomics and proteomics. Discusses key technologies and their applications to the study of human and model organism genomes.

Prerequisite: BIOL 1306, BIOL 1106, BIOL 1307, BIOL 1107.

**BIOL 3332 - Genetics**

Principles and concepts of inheritance.

Prerequisite: BIOL 1306/1106, BIOL 1307/1107, CHEM 1311/1111, CHEM 1312/1112. Corequisite: BIOL 3133.

**BIOL 3334 - Cell Biology**

Essential processes of cells. Emphasis on cell structure, metabolism, components of membranes and organelles, and intracellular trafficking.

Prerequisite: BIOL 1306/1106, BIOL 1307/1107, CHEM 1311/1111, and CHEM 1312/1112. Corequisite: BIOL 3134.

**BIOL 3335 - Comparative Vertebrate Biology**

Exploration of vertebrate morphology and development with the goals of understanding major evolutionary events and appreciating the integration of morphology with ecology, behavior, embryology, and histology.

Prerequisite: CHEM 3342/3143; BIOL 1306/1106 and BIOL 1307/1107. Corequisite: BIOL 3135.

**BIOL 3336 - Ecology**

Study of the interrelationships of plants and animals with the environment.

Prerequisite: BIOL 1306/1106, BIOL 1307/1107. Corequisite: BIOL 3137.

**BIOL 3338 - Biological Evolution**

Mechanisms and processes of change at the population, organismal, cellular, and molecular levels. History of earth and its biota including geologic time, fossils, and man.

Prerequisite: BIOL 3332.

**BIOL 3343 - Physiology**

Principles of general physiology, with emphasis on cell metabolism, nerve-muscle relations, endocrine, nervous, excretory, respiratory, circulatory, and digestive systems.

Prerequisite: CHEM 3342/3143, BIOL 1306/1107 and BIOL 1307/1107. Corequisite: BIOL 3144.

**BIOL 3345 - Plant Morphology**

Form and reproduction of plants emphasizing algae, fungi, mosses, and ferns.

Prerequisite: BIOL 1306/1106, BIOL 1307/1107. Corequisite: BIOL 3146.

**BIOL 3348 - Plant Taxonomy**

Principles of classification and nomenclature and their application to flowering plants of East Texas.

Prerequisite: BIOL 1306/1106, BIOL 1307/1107. Corequisite: BIOL 3147.

**BIOL 3350 - Conservation Biology**

Conservation biology is the study of the phenomena that affect the maintenance, loss, and restoration of biological diversity. The impacts of global warming, species invasions, and habitat destruction on biodiversity will be covered in this course.

Prerequisite: BIOL 1306/1106 and BIOL 1307/1107.

**BIOL 3360 - Research Methods**

An overview of using tools to solve scientific problems. This course offers students a broad understanding of the scientific method as a means of obtaining knowledge and provides an introduction to the research enterprise. This course is intended for students seeking teacher certification.

**BIOL 4101 - Microbiology Laboratory**

Principles of isolation and characterization of bacteria with emphasis on taxonomy; independent work will be stressed.

Prerequisite: CHEM 3344/3145, BIOL 1306/1106, BIOL 1307/1107. Corequisite: BIOL 4300.

**BIOL 4102 - Cell and Molecular Biology Laboratory**

Advanced techniques for the study of the cellular and molecular basis of biology. Emphasis on genomic and proteomic analysis of cells.

Prerequisite: BIOL 3332/3133 and BIOL 3334/3134. Corequisite: BIOL 4302.

**BIOL 4105 - Aquatic Biology Lab**

Diversity, ecology, and management of the major groups of freshwater organisms, with an emphasis on North American flora and fauna. Major focus on basic field techniques, experimental design, and identification of field-captured organisms.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; and 3334/3134.

**BIOL 4106 - Bioinformatics Lab**

Analysis of large biological datasets with emphasis on genomes and transcriptomes. This is a practical course in Bioinformatics which will emphasize how to use the computer as a tool for genomic data analysis.

Prerequisite: BIOL 1306, BIOL 1106, BIOL 1307, BIOL 1107. Corequisite: BIOL 4306.

**BIOL 4114 - Scientific Communication I**

Current topics in biology. Reports on research published in professional journals. Oral presentation required. This course is primarily designed for students enrolled in seminar for the first time though students presenting their second seminar may enroll. May be repeated once for credit.

**BIOL 4115 - Scientific Communication II**

Current topics in biology. Reports on research published in professional journals. Oral presentation required. This course is primarily designed for students enrolled in seminar for the second time though first time seminar presenters may enroll. May be repeated once for credit.

**BIOL 4128 - Plant Physiology Laboratory**

This course focuses on essential topics in plant physiology that are generally not included in introductory biology or botany courses. Students are introduced to plant cells and the processes involved in plant development and function.

**BIOL 4131 - Herpetology Laboratory**

Laboratory examination of the diversity of amphibians and reptiles. Study of the anatomy and physiology of amphibians and reptiles and ecological and behavioral experiments.

Prerequisite: BIOL 1306/1106, 1307/1107; 3332/3133; 3336/3137; and 3334/3134. Corequisite: BIOL 4330.

**BIOL 4132 - Entomology Laboratory**

Systematics and taxonomy of insects and related forms with emphasis on collection and identification.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; and 3334/3134. Corequisite: BIOL 4331.

**BIOL 4136 - Vertebrate Natural History Laboratory**

Field study, collection, and identification of vertebrates emphasizing techniques of modern museum work.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; and 3334/3134. Corequisite: BIOL 4335.

**BIOL 4141 - Ornithology Laboratory**

Laboratory course will focus on identification (by sight and sound), taxonomy, natural history, and behavior of local species.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; and 3334/3134;. Corequisite: BIOL 4340.

**BIOL 4195-4395 - Special Topics in Biology**

Directed biological study on a topic of mutual interest to student and a faculty member. An oral presentation and a written report may be required at the conclusion of course. Course may include lectures, discussions, seminars, or field trips.

Prerequisite: Consent of department chair.

**BIOL 4199-4399 - Independent Study**

Independent study in specific areas of biology not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**BIOL 4300 - Microbiology**

Introduction to prokaryotes and selected protists with an emphasis on bacteriology. Bacterial classification, physiology, and genetics will be stressed.

Prerequisite: CHEM 3344/3145, BIOL 1306/1106, BIOL 1307/1107.

Corequisite: BIOL 4101.

**BIOL 4302 - Cell and Molecular Biology**

Regulatory processes of cellular activities. Emphasis on genetic regulation, membranes and transport, replication and cell cycle, and cell signaling.

Prerequisite: BIOL 3332/3133 and BIOL 3334/3134. Corequisite: BIOL 4102.

**BIOL 4304 - Biogeography**

Study of flora and fauna of the world and factors affecting their distribution.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; and 3334/3134.

**BIOL 4305 - Aquatic Biology**

Ecology and general biology of freshwater ecosystems. Emphasis on the interrelationships of biological, chemical, and physical factors.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; and 3334/3134.

**BIOL 4306 - Bioinformatics**

Covers principles and methods of analyzing large biological datasets with emphasis on genomes and transcriptomes. This is a practical course in Bioinformatics which will emphasize how to use the computer as a tool for genomic data analysis.

Prerequisite: BIOL 1306, BIOL 1106, BIOL 1307, BIOL 1107. Corequisite: BIOL 4106.

**BIOL 4328 - Plant Physiology**

This course is an introduction to plant cells and the processes involved in plant development and function, with an emphasis on photosynthesis, transport, and respiration. A snapshot on plant defense responses, and plant beneficial associations are also discussed.

**BIOL 4330 - Herpetology**

The study of the diversity of amphibians and reptiles including their evolution and distributions. Also covered will be their physiology, ecology, and conservation. Field trips will be required.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; and 3334/3134. Corequisite: BIOL 4131.

**BIOL 4331 - Entomology**

Physiology, morphology, life history, and control of insects.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; and 3334/3134. Corequisite: BIOL 4132.

**BIOL 4335 - Vertebrate Natural History**

Taxonomy, evolution, and natural history of the vertebrates of the world with emphasis on North American and East Texas species.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; and 3334/3134;. Corequisite: BIOL 4136.

**BIOL 4340 - Ornithology**

Course will cover diverse aspects of avian biology, including anatomy, physiology, evolution, classification, ecology, reproduction, and behavior.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; and 3334/3134;. Corequisite: BIOL 4141.

**BIOL 4350 - Immunology**

Study of the biology and chemistry of humoral and cell-mediated immunities.

Prerequisite: BIOL 1306, BIOL 1307, BIOL 3332.

**BIOL 4370 - Internship in Biology**

An 8- to16-week course offering learning experiences in an off-campus environment. A minimum of 150 clock hours of learning experiences in an approved internship activity is required for 3 hours of credit. Application for the internship is required. CR/NC only.

Prerequisite: BIOL 1306/1106; 1307/1107; 3332/3133; 3336/3137; 3334/3134; and 4300/4101 and consent of department chair.

**BIOL 4661 - Field Biology**

A field course emphasizing the identification, ecology, life histories, and behavior of organisms under natural conditions (summers only).

Prerequisite: BIOL 1306/1106, BIOL 1307/1107.

**BIOL 5101 - Univariate Statistical Methods in Biology**

A critical evaluation of statistical analysis as applied in the biological sciences. Approaches to experimental design will be discussed, and univariate statistical methods will be reviewed with an emphasis on current applications in ecology and systematics.

**BIOL 5102 - Multivariate Statistical Methods in Biology**

A continuation of BIOL 5101. A critical evaluation of multivariate statistical analyses as applied in the biological sciences. Basic properties of multivariate normal distributions and analyses will be reviewed with an emphasis on current applications in ecology and systematics.

**BIOL 5103 - Cell and Molecular Biology Lab**

Advanced techniques for the study of the cellular and molecular basis of biology. Emphasis on genomic and proteomic analysis of cells.

Prerequisite: BIOL 3332/3133; BIOL 3334/3134; CHEM 4334/4135 or equivalent. Corequisite: BIOL 5302;.

**BIOL 5105 - Aquatic Biology Lab**

Diversity, ecology, and management of the major groups of freshwater organisms, with an emphasis on North American flora and fauna. Major focus on basic field techniques, experimental design, and identification of field-captured organisms.

**BIOL 5128 - Plant Physiology Laboratory**

This course consists of exercises that are designed to support concepts learned in BIOL 5328. It focuses on topics in plant physiology from a molecular perspective. Students will learn to set up experiments involving plants, and will learn to isolate DNA and RNA from plants.

**BIOL 5131 - Herpetology Laboratory**

Laboratory examination of the diversity of amphibians and reptiles. Study of the anatomy and physiology of amphibians and reptiles and ecological and behavioral experiments.

**BIOL 5132 - Entomology Laboratory**

Systematics and taxonomy of insects and related forms with emphasis on collection and identification.

**BIOL 5133 - Landscape Ecology Laboratory**

An introduction to the analysis of landscape structure. Computer modeling will be used to examine spatial pattern including defining elements of pattern, connectedness, fractal geometry, and percolating networks.

**BIOL 5141 - Ornithology Laboratory**

Anatomy, field identification, and methods of study of birds.

Prerequisite: BIOL 4335-4136 or consent of instructor.

**BIOL 5181 - Topics in Advanced Biology Laboratory**

Laboratory work selected to correlate with the subjects covered in BIOL 5380. May be repeated once for credit when content changes. Laboratory fee \$5.

**BIOL 5185 - Evolutionary Genetics Laboratory**

Classic and fundamental genetic experiments to demonstrate such genetic concepts as inheritance of single recessive traits, phenotypic and genotypic frequencies, spontaneous mutation, selection, recombination, and in-breeding. Laboratory fee \$5.

**BIOL 5191 - Ethoecology Laboratory**

Experiments designed to illustrate principles of dominance, territorial defense, and genetic patterns of behavior. Laboratory fee \$5.

**BIOL 5192 - Experimental Methods in Biology**

Theory and criticism of commonly used research designs in the biochemical sciences, including analysis and interpretation of biological observations. Various strengths and weaknesses of certain experimental designs are examined.

**BIOL 5193 - Graduate Seminar in Biology**

Discussion and presentations by faculty and students on various up-to-date topics in biology. May be repeated once for credit.

**BIOL 5199-5399 - Independent Study**

Independent study in specific areas of biology not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree. Prerequisite: Consent of department chair.

**BIOL 5302 - Cell and Molecular Biology**

Regulatory processes of cellular activities. Emphasis on genetic regulation; membranes and transport, replication and cell cycle, and cell signaling.

Prerequisite: BIOL 3332/3133; BIOL 3334/3134; CHEM 4334/4135 or equivalent. Corequisite: BIOL 5103;

**BIOL 5303 - Cellular Physiology**

In-depth study of cell functions in molecular level with emphasis on current technology and disease relevance.

**BIOL 5304 - Biogeography**

Study of flora and fauna of the world and factors affecting their distribution.

**BIOL 5305 - Aquatic Biology**

Ecology and general biology of freshwater ecosystems. Emphasis on the interrelationships of biological, chemical, and physical factors.

**BIOL 5328 - Plant Physiology**

This course focuses on essential topics in plant physiology from a molecular perspective. Writing and verbal communication skills are important for dissemination of scientific knowledge; therefore, this course will focus on developing these skills.

**BIOL 5330 - Herpetology**

The study of the diversity of amphibians and ecology and conservation. Field trips will be required.

**BIOL 5331 - Entomology**

Physiology, morphology, life history, and control of insects.

**BIOL 5333 - Landscape Ecology**

An introduction to the study of large-scale ecological patterns and processes. Course will emphasize how spatial complexity emerges and is maintained in ecological systems, the analysis of spatial pattern, scaling issues, the ecological consequences of spatial pattern and applications for conservation and ecosystem management.

**BIOL 5338 - Animal Physiology**

This course focuses on topics in physiology from an ecological perspective and will examine homeostasis as it relates to problems animals encounter in nature. This course will develop writing and verbal communication skills.

**BIOL 5340 - Ornithology**

The origin, taxonomy, distribution and a natural history of birds.

Prerequisite: BIOL 4335-4136 or consent of instructor.

**BIOL 5350 - Ecotoxicology**

Examination of contaminants in ecosystems and their effects on constituents of the ecosystems. Topics will focus on fundamental themes of ecotoxicology, building progressively from the biomolecular level toward a review of ecotoxicological effects to population, community, and ecosystem integrity.

**BIOL 5366 - Phylogenetic Systematics**

An introduction to the methods and underlying theory of phylogenetic analysis. Course will review the historical development of phylogenetic systematics and then focus on use of maximum parsimony and maximum likelihood methods in determining evolutionary relationships. Applications of phylogenetic information will be discussed.

**BIOL 5380 - Topics in Advanced Biology**

Topics to be selected include microbial physiology, microbial anatomy, general virology, terrestrial ecology, evolution, invertebrate zoology, vertebrate zoology, botany, and immunology. Topics differ according to interest and needs of the student. May be repeated once for credit when content changes.

**BIOL 5383 - Host-Pathogen Interactions**

Students will explore the cellular and molecular basis of the interplay between microbes and their hosts. Students will discuss the mechanisms developed by the host (human, animals, and plants) to overcome infections as well as the ecology and evolution of disease.

Prerequisite: BIOL 3338, BIOL 4300, BIOL 4350.

**BIOL 5384 - Evolutionary Genetics**

A synthesis and development of the fundamental concepts related to biochemical and population genetics including such topics as mechanism of gene action, genetic control of cellular activities, gene-enzyme relations, inborn errors in metabolism, genetic equilibrium in populations, mutations, allelic variation, selection, and evolution.

Prerequisite: One course in genetics.

**BIOL 5390 - Ethoecology**

The biological basis of animal behavior. Topics to be studied include fixed action patterns, dominance, conflict behavior, and phylogeny and ontogeny of behavior, genetics and ecology of behavior.

**BIOL 5394 - Biological Research**

Emphasis on proposal writing and research in biology. May be repeated once for credit if topic varies. Requisite: approval by chair of thesis committee.

**BIOL 5395 - Thesis**

Selection of a research topic and development of a thesis plan.

**BIOL 5396 - Thesis**

Completion and approval of thesis.

Prerequisite: BIOL 5395 or concurrent enrollment.

**BIOL 5661 - Field Biology**

A field course emphasizing the identification, ecology, life histories, and behavior of organisms under natural conditions (summers only).

## BLAW - Business Law

### **BLAW 3301 - Business Law and Social Responsibility**

Introduction to the legal environment of business, legal reasoning, and historical perspective. The influence on economic activity by regulatory agencies in their pursuit of public policy goals is stressed. An introduction to business and professional ethics is included.

### **BLAW 3306 - Business Law**

A study of contracts, Uniform Commercial Code, secured transactions, bankruptcy, property law, wills and trusts. There is an emphasis on the uniform CPA exam.

### **BLAW 4340 - Business and Professional Ethics**

A study of business and professional ethical concepts, processes, and problems related to organizational decision making. Topics and issues include ethical reasoning, integrity, objectivity, independence, social responsibility, and organizational relationships.

### **BLAW 5310 - Business Legal Environment**

An introduction to the legal environment of business, legal reasoning, and historical perspective. An emphasis is placed on contracts, Uniform Commercial Code, secured transactions, bankruptcy, wills and trusts.

### **BLAW 5340 - Business and Professional Ethics**

A study of ethical problems in business and the foundations for decisions involving ethical issues. Topics include ethical concepts, personal integrity, individual conscience and company loyalty and responsibility conflict, as they impact on the decision process in the functional areas of business.

## CENG - Civil Engineering

### **CENG 2301 - Statics [TCCN: ENGR 2301]**

Analysis of forces, moments, and couples acting on stationary engineering structures; equilibrium in two and three dimensions to include vectors; free-body diagrams; friction; centroids; centers of gravity; moments of inertia.

Prerequisite: PHYS 2325, MATH 2414.

### **CENG 2302 - Dynamics [TCCN: ENGR 2302]**

Analysis of kinematics and kinetics and particles, systems of particles, and rigid bodies.

Prerequisite: ENGR 2301 (CENG 2301).

### **CENG 2336 - Geomatics**

Introduction to surveying including distance measurement, corrections, leveling, measurement of angles and directions, traverse adjustment, volumes, cross section and area computations, horizontal and vertical curves, and error theory. Methods and technologies such as Excel, MathCAD, global positioning system and geographic information systems used to manage data in surveying. Emphasis on the use of total stations.

Prerequisite: ENGR 1204 and ENGL 1316.

### **CENG 3306 - Mechanics of Materials**

Stress and strain, uniaxially loaded members; normal and shear stresses; torsion; flexural behavior; beam deflections; buckling of columns; pressure vessels; combined loading; failure criteria; shear/moment diagrams.

Prerequisite: ENGR 2301 (CENG 2301).

### **CENG 3310 - Fluid Mechanics and Hydraulics**

Basic concepts of a fluid and the fundamentals/applications of ideal/real flow. Topics: fluid statics, conservation principles, Bernoulli, pipe flow, pump/turbines, momentum, drag, similitude, open channel flow.

Prerequisite: ENGR 2302 and MATH 3305. Corequisite: MATH 3404.

### **CENG 3325 - Structural Analysis**

Introduction to structural requirements, structural systems and specification of loads; analysis of statically determinate and indeterminate structures using equations of equilibrium, moment distribution, and energy methods; determination of design forces in the structural components including shearing force and bending moment; and brief introduction to the direct stiffness method. Three hours of lecture per week.

Prerequisite: CENG 3306 or MENG 3306.

### **CENG 3336 - Soil Mechanics and Foundation Design**

Mechanical and physical properties of soils and their relation to soil action in problems of engineering, such as classification, permeability, shearing strength, and consolidation. Introduction to foundation design. Two hours of lecture and three hours of laboratory per week.

Prerequisite: CENG 3306 or MENG 3306.

### **CENG 3351 - Transportation Engineering Systems**

Introduction to analysis and design of fundamental transportation system components, such as highways and traffic systems, individual vehicle motion, basic elements of geometric design, pavement design, vehicle flow and elementary traffic flow relations, capacity analysis, and traffic forecasting. Three hours of lecture per week.

Prerequisite: MATH 3351 or ENGR 3301.

### **CENG 3361 - Applied Engineering Hydrology and Hydraulic Design**

Concepts covered are precipitation, hydrograph analysis, evapotranspiration, runoff, flood routing, open channel flow and design of stable channels, and hydraulic design. A design project involving hydrologic system analysis and design is assigned. Two hours of lecture and three hours of lab per week.

Prerequisite: CENG 3310 or MENG 3310.

### **CENG 3371 - Introduction to Environmental Engineering**

Concepts covered are essentials of environmental engineering and the process materials and energy balance as a tool for understanding environmental processes and solving environmental engineering problems. Environmental engineering concepts for water, air and solid waste and strategies for managing their quality. Course also includes the concept of sustainability and the process of waste minimization, and risk management and environmental ethical issues in a global community.

Prerequisite: CHEM 1311/CHEM 1111.

### **CENG 3434 - Civil Engineering Materials, Codes, and Specifications**

Physical properties of typical construction materials will be investigated including steel, Portland cement concrete, wood, and bituminous asphalt; classification of aggregates, concrete mix design, and field control and adjustment. Application of model building codes to commercial and industrial structures; nonstructural and structural plan review; fire codes, inspection techniques.

Prerequisite: CENG 3306 or MENG 3306. Corequisite: ENGR 1201.

### **CENG 4115 - Senior Design I**

Problem definition, project planning and scheduling, follow-up and control techniques. Results in presentation and plan for senior capstone design project. Multidisciplinary teams will work on design problems defined in cooperation with representatives from engineering firms, industry, or government organizations when possible. Three hours of Design Studio Lab per week.

Prerequisite: SPCM 1315 and Department Chair approval.

### **CENG 4199-4399 - Civil Engineering Independent Study**

Civil Engineers are required to be creative, life-long learners who understand contemporary issues and how they influence civil engineering projects. An independent study course will require the CE students to tackle a real problem, teach themselves skills beyond what

has been covered in the curriculum while studying and considering the current contemporary issues influencing possible solutions.

Prerequisite: Department Chair approval.

#### **CENG 4311 - Reinforced Concrete Design**

Design of reinforced concrete structural members; design of beams, one-way slabs, columns, and footings, with reference to the most recent ACI 318 design code and other supporting design documents. Development length provisions, design for serviceability, use of high-strength materials, composite construction. Introduction to precast/prestressed concrete. Three hours of lecture per week.

Prerequisite: CENG 3325 and CENG 3434.

#### **CENG 4314 - Advanced Structural Analysis**

This course builds upon the material covered in CENG 3325 to develop a better understanding of structural behavior. Matrix analysis methods, including an introduction to finite elements, are developed as the basis for modern, computer-based structural analysis. These and other advanced analytical techniques are used to analyze and design trusses, beams, and frames. Course-work involves extensive use of the computer as an analytical tool.

Prerequisite: CENG 3325. Co-listed with CENG 5314.

#### **CENG 4315 - Senior Design II**

The senior design project, which was proposed and approved in CENG 4115, continues to completion. This capstone design project builds on previous course work, includes all stages of the design process, and takes into account a variety of realistic constraints such as manufacturability and sustainability; economic factors; and environmental, safety and reliability issues. Preparation and presentation of final oral and written reports are required. Nine hours of Design Studio per week.

Prerequisite: CENG 4115.

#### **CENG 4317 - Structural Steel Design**

Design of structural elements in steel buildings, in particular the design of steel tension members, beams, columns, beam columns, and connections. Composite members and plate girders. Emphasis on the AISC-LRFD Specifications for steel design, with comparisons made where appropriate to ASD Specifications. Three hours of lecture per week.

Prerequisite: CENG 3325.

#### **CENG 4318 - Design of Timber Structures**

Introduction to the design of structural elements for timber buildings including tension and compression members, timber trusses, plywood decking, beam-columns, bolted and nailed connections, diaphragms, shear walls, and columns; design of timber elements by allowable stress and strength design methods; introduction to construction techniques, materials and terminology used in timber design.

Prerequisite: CENG 3325. Co-listed with CENG 5318.

#### **CENG 4322 - Structural Masonry Design**

Introduction to the design of structural elements for masonry buildings including lintels, walls, shear walls, columns, pilasters, and retaining walls; design of reinforced elements of concrete or clay masonry by allowable stress and strength design methods; introduction to construction techniques, materials and terminology used in masonry.

Prerequisite: CENG 3325. Co-listed with CENG 5322.

#### **CENG 4328 - Structural Fire Behavior**

Course provides an overview of fire effects on building structures. Topics covered include: fire chemistry, behavior and development, heat transfer terminology and processes, fire modeling, heat transfer modeling, material properties at elevated temperatures, effects of insulation, and effects of fire on structures. The Eurocode approach to structural design for fire will be introduced.

Prerequisite: CENG 3325, CHEM 1311/CHEM 1111 and CENG 4317 or CENG 4311. Co-listed with CENG 5328.

#### **CENG 4330 - Water Resources Planning and Management**

The course provides students with the principles of analysis, decision-making, and problem solving required in managing water resources under relentless pressure from development, pollution, and climate change. It focuses on local and global problems, integrated water resources management, the water industry, water law, water security, natural systems protection, water use efficiency, and management tools.

Prerequisite: CENG 3361. Co-listed with CENG 5330.

#### **CENG 4339 - Civil Engineering Construction Management**

Introduction to construction planning and management to include planning, programming, design, bid, and construction, how commercial construction projects are planned and executed, project scope definition, construction estimating, scheduling, and management controls during construction, and engineering economics. Three hours of lecture.

Prerequisite: ECON 2301 or ECON 2302.

#### **CENG 4341 - Civil Engineers and Leadership, Public Policy, Business Practices, and Asset Management**

Civil Engineers are required to be leaders of their communities as well as their firms. Leadership, public policy, business practices, and asset management are critical areas that a civil engineer must have skills in, albeit the skills that allow entry at the engineer in training level. This course will tie these required skills to tasks Civil Engineers are required to perform. Three lectures per week.

Prerequisite: Department Chair approval, Senior standing.

#### **CENG 4342 - Applied Geodesy**

Applications of precise surveying technology in boundary location and surveying. Topics include: photogrammetry, GPS, GIS, remote sensing, coordinate systems, and map projections.

#### **CENG 4343 - Legal Principles in Surveying and Mapping**

Boundary law including topics on conflict and litigation, courtroom presentation, determination of boundaries, evidence and procedures and special boundaries such as gradient and riparian.

#### **CENG 4350 - Topics in Civil Engineering**

Advanced studies in topics not covered fully in regular undergraduate courses. May be repeated as content changes. Department Chair approval.

#### **CENG 4351 - Traffic Engineering: Operations and Control**

Introduction to traffic systems, flow characteristics, data collection, control of urban streets and freeways, operations of arterial streets, freeway, and networks, optimal signal timing design, capacity analysis using computer simulation. Additionally, the course will cover a brief evaluation of stresses in flexible pavements and materials characterization. Two hours lecture and 3 hour lab. Co-listed with CENG 5351.

Prerequisite: CENG 3306, CENG 3351, CENG 2336.

#### **CENG 4353 - Introduction to Pavement Engineering**

Evaluation of stress in flexible and rigid pavements, materials characterization, design of flexible and rigid pavements for highways and airports.

Prerequisite: CENG 3336.

#### **CENG 4354 - Urban Transportation Planning**

Overview of the four-step urban transportation planning process, estimation of the travel demand models of trip generation, trip distribution, mode choice, and traffic assignment, and the forecasting of travel patterns using the travel demand models, state-of-the-art approaches and transportation network analysis for evaluation of system alternatives. Co-listed with CENG 5354.

Prerequisite: CENG 3336 and CENG 3351. .

**CENG 4355 - Transportation Systems Management and Operations**

Foundations of the transportation system management and operations, including arterial street systems and freeway systems. Principles of simulation of urban streets operations and traffic signal control and optimization, and freeway operations analysis and simulation using commercially available packages.

Prerequisite: CENG 4351. Co-listed with CENG 5355.

**CENG 4370 - Undergraduate Internship**

Program provides for a learning experience in an engineering environment appropriate to the undergraduate level of work with a minimum of 150 hours of work. A written report of the experience and presentation is required. Department Chair approval.

**CENG 4371 - Environmental Engineering Design**

Introduction to environmental engineering design to include techniques to address, and limit the impact of traditional pollutants in the aquatic environments water treatment, waste water management, and storm water control. Design of basic water and waste water treatment systems, and special topics. Co-listed with CENG 5391.

Prerequisite: CENG 3371.

**CENG 4381 - Foundation Design**

Relationship of local geology to soil formations, groundwater, planning of site investigation, sampling procedures, and determination of soil parameters. Analysis and design of shallow foundations, deep foundations, and earth retaining structures. Three hours of lecture per week. Co-listed with CENG 5381.

Prerequisite: CENG 3336.

**CENG 4395 - Undergraduate Research**

Directed engineering research involving a problem of mutual interest to the student and the faculty member. An oral presentation and a written report of the research results are required. Department Chair approval.

**CENG 4412 - Reinforced Concrete and Steel Design**

Design of reinforced concrete members: beams, one-way slabs, and columns using the ACI 318 design code. Design of steel members: tension members, beams, columns, and connections using the AISC LRFD code.

Prerequisite: CENG 3325. Corequisite: CENG 3434.

**CENG 5109 - Civil Engineering Seminar**

Current and historic topics in various areas of civil engineering. Speakers may include off-campus experts, faculty and graduate students. Presentation of at least one seminar lecture is required.

**CENG 5150 - Advanced Topics in Civil Engineering**

Structured study of civil engineering topics not found in other courses. May be repeated for a maximum of six credits if different topics are covered. Department Chair Approval.

**CENG 5199 - Independent Study**

Independent study in a specific area of civil engineering not covered by organized graduate courses. A maximum of six credit hours may be applied toward a graduate degree if the content of the independent study is different during each registration. Department Chair Approval.

**CENG 5250 - Advanced Topics in Civil Engineering**

Structured study of civil engineering topics not found in other courses. May be repeated for a maximum of six credits if different topics are covered. Department Chair Approval.

**CENG 5299 - Independent Study**

Independent study in a specific area of civil engineering not covered by organized graduate courses. A maximum of six credit hours may be applied toward a graduate degree if the content of the independent study is different during each registration. Department Chair Approval.

**CENG 5312 - Advanced Concrete Design**

A second course in the design of reinforced concrete structures; advanced concepts in analysis and design of beams, columns and slabs; and an introduction to pre-stressed concrete.

Prerequisite: CENG 4412 or CENG 4311.

**CENG 5313 - Prestressed Concrete Design**

Introduction to prestressed concrete; advanced concepts in analysis and design of prestressed beams, columns and slabs.

Prerequisite: CENG 4311 or CI.

**CENG 5314 - Advanced Structural Analysis**

This course builds upon the material covered in CENG 3325 to develop a better understanding of structural behavior. Matrix analysis methods, including an introduction to finite elements are developed as the basis for modern, computer-based structural analysis. These and other advanced analytical techniques are used to analyze and design trusses, beams, and frames. Course-work involves extensive use of the computer as an analytical tool. Co-listed with CENG 4314. The graduate student will complete an additional project.

Prerequisite: CENG 3325.

**CENG 5316 - Advanced Steel Design**

Advanced design of structural steel buildings emphasizing the relationship between design and response of the structural system; theoretical basis of building codes provisions; limit state and plastics design; beam-columns; built up sections, and composite sections; and connections.

Prerequisite: CENG 4317 (or equivalent) or CENG 4412 (or equivalent).

**CENG 5318 - Design Timber Structures**

Introduction to the design of structural elements for timber buildings including tension and compression members, timber trusses, plywood decking, beam-columns, bolted and nailed connections, diaphragms, shear walls, and columns; design of timber elements by allowable stress and strength design methods; introduction to construction techniques, materials and terminology used in timber design. Co-listed with CENG 4318. The graduate student will complete an additional project.

Prerequisite: MENG 3306 and CENG 3325.

**CENG 5322 - Structural Masonry Design**

Design of structural elements for masonry buildings including lintels, walls, shear walls, columns, pilasters, and retaining walls; design of reinforced elements of concrete or clay masonry by allowable stress and strength design methods; introduction to construction techniques, materials and terminology used in masonry. Co-listed with CENG 4322. The graduate student will complete an additional project.

Prerequisite: CENG 3325 or equivalent or department chair approval.

**CENG 5324 - Advanced Mechanics of Materials**

Advanced topics in mechanics of materials, emphasizing analysis and design of load carrying members. Topics covered include: theories of failure, torsion of open and closed sections, unsymmetrical bending, curved beams, beams on elastic foundations, plane elasticity, and energy methods of analysis. The course will highlight approximations necessary to generate 'strength of materials' type solutions and address the impact of these approximations on the reliability and robustness of member design.

Prerequisite: CENG 3306 or equivalent or department chair approval.

**CENG 5326 - Structural Dynamics and Seismic Design**

Analysis of linear structural systems subjected to time dependent loads, including free and forced vibration. Classical and numerical methods of solution, including lumped mass techniques, energy methods and introduction of matrix-formulation for dynamic problems. Introduction to earthquake analysis and design.

Prerequisite: CENG 3325, CENG 2302, MATH 3305 or equivalent or department chair approval.



**CENG 5328 - Structural Fire Behavior**

Course provides an overview of fire effects on building structures. Topics covered include: fire chemistry, behavior and development, heat transfer terminology and processes, fire modeling, heat transfer modeling, material properties at elevated temperatures, effects of insulation, and effects of fire on structures. The Eurocode approach to structural design for fire will be introduced. Co-listed with CENG 4328. The graduate student will complete an additional project.

Prerequisite: and CENG 3325, CHEM 1311/CHEM 1111, CENG 4412 or equivalent or department chair approval.

**CENG 5330 - Water Resources Planning and Management**

Course covers principles of analysis, decision-making, and problem solving required in managing water resources under pressure from development, pollution, and climate change. It focuses on local and global problems, integrated water resources management, the water industry, water law, water security, natural systems protection, water use efficiency, and management tools. Co-listed with CENG 4330. The graduate student will complete an additional project.

Prerequisite: CENG 3361 or equivalent or department chair approval.

**CENG 5333 - Water Resources and Environmental Engineering Modeling**

The course will familiarize students with several computer-based models for analyzing and designing a variety of water resources and environmental engineering applications. In addition to using existing software programs common throughout industry, students will also create their own simulation and optimization models using Visual Basic for Applications (VBA).

Prerequisite: CENG 3361 or equivalent or department chair approval.

**CENG 5334 - Storm Water Pollution Control**

This course provides students with the requirements of facilities that are covered under the General of Multi-sector General (GMG) permit for storm water discharges, as well as municipal facilities covered under a Municipal Separate Stormwater Sewer System (MS4) permit and construction erosion control. The course addresses prevention of storm water pollution by teaching the Best Management Practices (BMPs) of controlling and working with storm water.

Prerequisite: Department Chair approval.

**CENG 5336 - Construction Project Delivery Systems**

A comprehensive coverage of the standard contracts between various agencies involved in construction. Analysis of traditional and current project delivery methodologies.

Prerequisite: CENG 4339 or Department Chair approval.

**CENG 5337 - GPS and GIS Applications in Water Resources and Environmental Engineering**

This course provides students with an introduction to the general concepts and applications of Global Positioning Systems and Geographic Information Systems through several project-based water resources and environmental engineering applications. Through work on various real-world problems, students develop insight with regard to spatial-based applications and the diversity of each technology's potential applications. The course will emphasize the use of both technologies as part of an integrated planning and decision making process.

Prerequisite: CENG 3310 and CENG 2336 or equivalent or department chair approval.

**CENG 5338 - Advanced Construction Project Management**

This course will build on the information that is normally provided to students in the undergraduate construction management courses on planning and control of construction projects. The focus of this course will be quantitative tools that can be used in planning and controlling construction projects. Topics to be covered will include cash flow forecasting, site planning, site administration, risk analysis, contract documents, and contracts administration. Advanced planning tools such

as line of balance, velocity diagrams, time-cost trade off, resource planning with applications to construction projects will also be discussed. Prerequisite: CENG 4339 or Department Chair approval.

**CENG 5342 - Analysis of Urban Water Systems**

The course examines the behavior and interaction between all phases of urban water management: water supply, storm water management, water distribution, and wastewater collection. Students learn how conservation practices and water sensitive urban design can reduce the amount of water required by an urban area.

Prerequisite: CENG 3310.

**CENG 5344 - Water Engineering for International Development**

This course addresses the design of small-scale, low cost systems for drinking water supply and wastewater disposal. Topics include surface water intakes, wells, storage tanks, water distribution systems, water quality testing, septic tanks, leach fields, and oxidation ponds. The course emphasizes on-site data collection methods, practical issues of design, and project sustainability.

Prerequisite: CENG 3310 or equivalent or department chair approval.

**CENG 5347 - Irrigation Water Control and Management**

The objective of this course is to familiarize students with the fundamentals of water control and its application in flow regulation and measurement in open-channel irrigation systems. Students will learn how water is controlled in irrigation systems in order to satisfy crop water requirements.

Prerequisite: CENG 3310 or course in open channel flow.

**CENG 5350 - Advanced Topics in Civil Engineering**

Structured study of civil engineering topics not found in other courses. May be repeated for a maximum of six credits if different topics are covered.

Prerequisite: Department Chair approval.

**CENG 5351 - Traffic Engineering: Operations and Control**

Introduction to traffic systems, flow characteristics, data collection, control of urban streets and freeways, operations of arterial streets, freeway, and networks, optimal signal timing design, capacity analysis using computer simulation. Additionally, the course will cover a brief evaluation of stresses in flexible pavements and materials characterization.

Prerequisite: CENG 3306, CENG 3351, CENG 2336.

**CENG 5352 - Transportation Planning**

Theoretical foundations of transportation planning, analysis, and evaluation methods. Theory and application of aggregate and disaggregate models of land use, trip generation, and destination, mode, and route choice. Travel demand modeling and transportation network analysis for evaluation of system alternatives.

Prerequisite: CENG 3351, ENGR 3301, ENGR 4306 or Department Chair approval.

**CENG 5353 - Operations Research and Advanced Mathematics**

Introduction to operations research techniques and advanced mathematics for the analysis of engineering systems. Principles of problem identification and model formulation, linear and nonlinear programming, integer programming, multi-objective programming, dynamic programming and network programming. Foundations of the risk analysis, statistical modeling, and computer simulation. Topics also include advanced linear algebra, partial differential equations, and Fourier analysis.

Prerequisite: MATH 3351 or equivalent or department chair approval.

**CENG 5354 - Urban Transportation Planning**

Overview of the four-step urban transportation planning process, estimation of the travel demand models of trip generation, trip distribution, mode choice, and traffic assignment, and forecasting of

travel patterns using travel demand models, state-of-the-art approaches and transportation network analysis for evaluation of system alternatives. Co-listed with CENG 4354. The graduate student will complete an additional project.

Prerequisite: CENG 3351 or equivalent or department chair approval.

### **CENG 5355 - Transportation Systems Management and Operations**

Foundations of transportation system management and operations, including arterial street systems and freeway systems. Principles of simulation of urban streets operations and traffic signal control and optimization, and freeway operations analysis and simulation using commercially available packages such as HCS+, Corsim, Synchro, Transyt-7F and Passer-V. Co-listed with CENG 4355. The graduate student will complete an additional project.

Prerequisite: CENG 4351 or equivalent or department chair approval.

### **CENG 5357 - Public Transportation Engineering**

Introduction to public transportation systems, including planning, design, management, and operations of mass transit systems in urban and rural areas. Principles of transit demand forecasting, optimal transit route network design, and driver and vehicle scheduling.

Prerequisite: CENG 3351 and CENG 5353 or equivalent or department chair approval.

### **CENG 5361 - Traffic Flow Theory**

In-depth traffic flow theory at micro-, meso-, and macroscopic levels. Fundamentals of traffic flow, traffic flow characteristics, statistical distributions of traffic flow parameter, traffic stream models, car following models, continuum flow models, shock wave analysis, queuing analysis, traffic flow models for intersections, network flow models and control, traffic simulation.

Prerequisite: CENG 4351 or equivalent or department chair approval.

### **CENG 5363 - Transportation Network Analysis**

Introduction to planning and optimization techniques for the analysis of transportation networks. Principles of precise algorithms for finding transport network equilibrium flows and applications that relate to these flows. Topics include routing algorithms, user equilibrium traffic assignments, system optimal, stochastic user equilibrium, traffic paradox, origin-destination matrix estimation, and transportation network design.

Prerequisite: CENG 4351, CENG 5354 or equivalent or department chair approval.

### **CENG 5365 - Dynamic Transportation Network Modeling**

Introduction to the optimization and modeling methodologies required for the analysis of dynamic and stochastic transportation networks. Principles of dynamic network equilibrium via simulation and mathematical programming approaches. Topics include time-dependent routing algorithms, analytical-, cell transmission- and simulation-based dynamic traffic assignment, network paradoxes, network reliability, dynamic network design, and some stochastic extensions.

Prerequisite: CENG 5363 and Department Chair approval.

### **CENG 5370 - Environmental Pollution Sources and Control**

This course is designed to give students the skills to recognize pollution sources and methods of control for reducing adverse effects on the ambient environment.

Prerequisite: CENG 3371 or equivalent or department chair approval.

### **CENG 5371 - Graduate Internship**

Program provides a learning experience in an engineering environment appropriate to the graduate level of work with a minimum of 150 hours of work. A written report of the experience and presentation is required. Department Chair approval.

### **CENG 5372 - Municipal and Hazardous Waste**

This course covers municipal and hazardous waste. Regulatory requirements and sizing of landfills are discussed as well as waste

reduction techniques. Hazardous waste generator and storage requirements and treatment technologies are discussed. Co-listed with CENG 4372.

Prerequisite: CENG 3371.

### **CENG 5373 - Environmental Management**

Federal and State environmental regulations; techniques for environmental control; risk assessment and management strategies; characterization of hazardous materials, spill control strategies and clean-up techniques.

Prerequisite: CENG 3371 or equivalent or department chair approval.

### **CENG 5376 - Indoor Environmental Quality**

Graduate level course in indoor air quality is designed to address the issues associated with maintaining a safe and healthy environment in occupied structures; handling a range of issues like health, comfort effects, physiological thresholds, and ventilation measurement. Students also learn the fundamentals of HVAC and its role in IEQ and occupant comfort.

Prerequisite: department chair approval.

### **CENG 5381 - Foundation Design**

Relationship of local geology to soil formations, groundwater, planning of site investigation, sampling procedures, and determination of soil parameters. Analysis and design of shallow foundations, deep foundations, and earth retaining structures. Co-listed with CENG 4381.

Prerequisite: CENG 3336.

### **CENG 5382 - Geotechnical Earthquake Engineering**

Introduction to geotechnical earthquake engineering. Topics include earthquake magnitude and intensity, liquefaction and ground failure, design ground motions, elementary dynamics of structures, response spectra, and building code provisions.

Prerequisite: CENG 3336 and ENGR 2302.

### **CENG 5383 - Soil Improvement and Stabilization**

Introduction to soil improvement and stabilization. Topics include over excavation/replacement, light-weight fill, compaction, admixture stabilization, preloading, vertical drains, dynamic compaction, granular columns, deep soil mixing, grouting, ground anchor.

Prerequisite: CENG 3336.

### **CENG 5387 - Air Pollution Control Design**

The course covers the fundamentals and impact of air pollution on environmental quality and introduces the process of air monitoring and the design of air monitoring surveys. The course will also introduce the student to contaminant removal devices for specific contaminants, atmospheric dispersion of contaminants, and the process of air quality planning and modeling.

Prerequisite: CENG 5370 and CENG 5373.

### **CENG 5391 - Environmental Engineering Design**

Environmental engineering design to include techniques to address, and limit the impact of traditional pollutants in the aquatic environments water treatment, wastewater management and storm water control. Design of basic water and waste water treatment systems, and special topics. Co-listed with CENG 4371.

### **CENG 5393 - Advanced Design Project**

Graduate capstone design project in an area of civil engineering under the direction of graduate civil engineering faculty. A professional quality design project report is required. CR/NC Only. Prerequisite: Consent of advisor.

### **CENG 5395 - Thesis**

Selection of a research topic and development of a thesis plan. CR/NC Only.

Prerequisite: Consent of advisor.

**CENG 5396 - Thesis**

Completion and approval of thesis. CR/NC Only.  
Prerequisite: or co-requisite CENG 5395 and consent of advisor.

**CENG 5399 - Independent Study**

Independent study in a specific area of civil engineering not covered by organized graduate courses. A maximum of six credit hours may be applied toward a graduate degree if the content of the independent study is different during each registration. Department Chair Approval.

## CEPH - Clinical Exercise Physiology Program

**CEPH 5121 - Neuromuscular Exercise Physiology Laboratory**

Study and practice of laboratory techniques used in evaluating neuromuscular responses to exercise.  
Corequisite: CEPH 5221.

**CEPH 5123 - Cardiorespiratory Exercise Physiology Laboratory**

Study and practice of laboratory techniques used in evaluating cardiorespiratory responses to exercise.  
Corequisite: CEPH 5223.

**CEPH 5213 - Diagnostic Tests and Exercise Prescription**

Study of (1) techniques used in diagnosis and evaluation of functional capacity, with particular reference to cardiopulmonary status (major emphasis is given to graded exercise testing and electrocardiography), and (2) principles and procedures of exercise prescription. Guidelines of American College of Sports Medicine are studied.  
Corequisite: CEPH 5214.

**CEPH 5214 - Diagnostic Tests and Exercise Prescription Laboratory**

Practice in conducting diagnostic tests and application of principles of exercise prescription related to wellness and rehabilitation programs.  
Corequisite: CEPH 5213.

**CEPH 5221 - Neuromuscular Exercise Physiology**

In-depth study of neuromuscular function with specific reference to acute and chronic exercise.  
Corequisite: CEPH 5121 or 5222.

**CEPH 5222 - Neuromuscular Exercise Physiology Laboratory**

Study and practice of laboratory techniques and clinical procedures used in evaluating neuromuscular responses to exercise.  
Corequisite: CEPH 5221.

**CEPH 5223 - Cardiorespiratory Exercise Physiology**

In-depth study of cardiorespiratory function with specific reference to acute and chronic exercise.  
Corequisite: CEPH 5123 or 5224.

**CEPH 5224 - Cardiorespiratory Exercise Physiology Laboratory**

Study and practice of laboratory techniques and clinical procedures used in evaluating cardiorespiratory responses to exercise.  
Corequisite: CEPH 5223.

## CHEM - Chemistry

**CHEM 1105 - Introductory Chemistry I Laboratory [TCCN: CHEM 1105]**

A study of general, organic, and biological chemical laboratory methods for non-science/engineering majors. Students may not receive credit for both CHEM 1111 and CHEM 1105. Satisfies 1 hour of the STEM component of the core curriculum.  
Corequisite: CHEM 1305.

**CHEM 1107 - Introductory Chemistry II Laboratory [TCCN: CHEM 1107]**

A continued study of basic chemical laboratory methods designed for students who are not majoring in science or engineering. Students may not receive credit for both CHEM 1112 and CHEM 1107.  
Prerequisite: CHEM 1105. Corequisite: CHEM 1307.

**CHEM 1111 - General Chemistry I Laboratory [TCCN: CHEM 1111]**

Basic chemical laboratory techniques are introduced. This course satisfies 1 hour of the STEM component of the core curriculum.  
Corequisite: CHEM 1311.

**CHEM 1112 - General Chemistry II Laboratory [TCCN: CHEM 1112]**

Continuation of CHEM 1111, including qualitative analysis; volumetric, gravimetric, and potentiometric analyses; and an introduction to chemical instrumentation. Satisfies 1 hour of the STEM component of the core curriculum.

Prerequisite: CHEM 1111. Corequisite: CHEM 1312.

**CHEM 1305 - Introductory Chemistry I [TCCN: CHEM 1305]**

A study of the fundamentals and applications of general, organic, and biological chemistry for the non-science/engineering majors. Students may not receive credit for both CHEM 1311 and CHEM 1305. Satisfies 3 hours of either the STEM or LPS component of the core curriculum.

**CHEM 1307 - Introductory Chemistry II [TCCN: CHEM 1307]**

A continued study of fundamentals and applications of chemistry including surveys of organic chemistry and biochemistry. Designed for students who are not majoring in science or engineering. Students may not receive credit for both CHEM 1312 and CHEM 1307.  
Prerequisite: CHEM 1305.

**CHEM 1311 - General Chemistry I [TCCN: CHEM 1311]**

General Chemistry I provides a general study of the fundamental principles of chemistry for majors in the sciences, health sciences, and engineering. Topics include measurements, fundamental properties of matter, states of matter, chemical reactions, chemical stoichiometry, periodicity of elemental properties, atomic structure, chemical bonding, molecular structure, solutions, and properties of gases. Satisfies 3 hours of the STEM or LPS component in the core curriculum.

**CHEM 1312 - General Chemistry II [TCCN: CHEM 1312]**

Continuation of CHEM 1311. Topics include chemical equilibrium, acid-base concepts, thermodynamics, kinetics, electrochemistry, nuclear chemistry, and an introduction to organic chemistry and descriptive inorganic chemistry. Satisfies 3 hours of the STEM or LPS component in the core curriculum.

Prerequisite: CHEM 1311.

**CHEM 1320 - Forensic Chemistry I**

A course for non-science majors with a focus on the forensic chemistry used during crime-scene and other investigations. The accompanying lab uses modern forensic techniques to solve mock crimes. Meets 2 hours for lecture and 3 hours for lab each week. Satisfies 3 hours of the STEM or LPS component in the core curriculum.

**CHEM 1321 - Forensic Chemistry II**

Continuation of CHEM 1320. Topics include gas laws, kinetics, thermodynamics, drug chemistry, nuclear chemistry, chemical equilibrium, and DNA analysis. Meets 2 hours for lecture hours and 3 hours for lab each week. Satisfies 3 hours of either the STEM or LPS component of the core curriculum.

Prerequisite: CHEM 1320.

**CHEM 1330 - Culinary Chemistry**

This course for non-science majors describes the chemistry and chemical reactions surrounding food and cooking. It blends fundamental chemistry with the more applied aspects of food chemistry. Satisfies 3 hours of the STEM or LPS component in the core curriculum.

**CHEM 1340 - The Chemistry of Luxury**

An exploration for non-science majors of chemical and physical processes integral to the creation and properties of luxury goods (e.g. paintings, sculptures, stained glass, etc.). Satisfies 3 hours of the STEM or LPS component in the core curriculum.

**CHEM 1350 - Chemistry in Action**

A course for non-science majors that uses live chemical demonstrations to teach the exciting chemistry everywhere around us. Example topics: chemistry of fire, explosives, medicine, special-effects, rocketry, and spaceflight. Satisfies 3 hours of the STEM or LPS component of the core curriculum.

**CHEM 3111 - Analytical Chemistry Laboratory**

General experiments in inorganic quantitative analysis.  
Prerequisite: CHEM 1312/1112. Corequisite: CHEM 3310.

**CHEM 3121 - Inorganic Chemistry Laboratory**

Syntheses, characterizations, and transformations of inorganic and organometallic compounds.  
Prerequisite: CHEM 1312/1112. Corequisite: CHEM 3320.

**CHEM 3143 - Organic Chemistry I Laboratory**

Basic experiments in organic chemistry.  
Prerequisite: CHEM 1312/1112. Corequisite: CHEM 3343.

**CHEM 3145 - Organic Chemistry II Laboratory**

Continuation of CHEM 3143 including an introduction to the characterization of organic compounds using classical and spectroscopic methods.  
Prerequisite: CHEM 3143. Corequisite: CHEM 3344.

**CHEM 3153 - Physical Chemistry I Laboratory**

General experiments in physical chemistry.  
Corequisite: CHEM 3352.

**CHEM 3155 - Physical Chemistry II Laboratory**

Continuation of CHEM 3153.  
Prerequisite: CHEM 3352/3153. Corequisite: CHEM 3354.

**CHEM 3310 - Analytical Chemistry**

Chemical equilibrium, pH, and indicators; acid-base, oxidation-reduction, and complex-formation reactions; calculations of analytical chemistry; reliability of measurements; and gravimetric and volumetric analysis.  
Prerequisite: CHEM 1312/1112.

**CHEM 3320 - Inorganic Chemistry**

The study of basic inorganic chemistry including topics in descriptive inorganic chemistry, molecular orbital theory, bonding, inorganic reactions and mechanisms, stereochemistry, and symmetry.  
Prerequisite: CHEM 1312/1112.

**CHEM 3342 - Organic Chemistry I**

Emphasis on structure-reactivity relationships, nomenclature, stereochemistry, reaction pathways, and synthesis.  
Prerequisite: CHEM 1312/1112.

**CHEM 3344 - Organic Chemistry II**

Continuation of CHEM 3342, including an introduction to molecular biochemistry.  
Prerequisite: CHEM 3342.

**CHEM 3352 - Physical Chemistry I**

Properties of substances in the gaseous, liquid, and solid states; chemical thermodynamics; chemical equilibria; phase equilibria; and electrochemistry.  
Prerequisite: CHEM 3310/3111, CHEM 3344/3145, MATH 3404, PHYS 2325/2125 and PHYS 2326/2126.

**CHEM 3354 - Physical Chemistry II**

Continuation of CHEM 3352. Atomic structure, chemical bonding, chemical kinetics, statistical mechanics, and spectroscopy.  
Prerequisite: CHEM 3352 and MATH 3203.

**CHEM 3360 - Research Methods**

An overview of using tools to solve scientific problems. This course offers students a broad understanding of the scientific method as a means of obtaining knowledge and provides an introduction to the research enterprise. This course is intended for students seeking teacher certification through the UTeach program.

**CHEM 3370 - Perspectives on Science and Mathematics**

An overview of the history and philosophy of mathematics and science designed for students in the UTeach program. This course is equivalent to HIST 3360 and PHIL 3360.

**CHEM 4113 - Instrumental Analysis Laboratory**

Experiments utilizing absorption and emission spectroscopy, mass spectrometry, electroanalytical chemistry, and chromatography.  
Corequisite: CHEM 4312.

**CHEM 4135 - Biochemistry I Laboratory**

Exercises designed to develop skills in using biochemical techniques and to illustrate the chemical and physical properties of biomolecules.  
Corequisite: CHEM 4334.

**CHEM 4141 - Advanced Chemical Laboratory Methods**

Advanced syntheses and analyses of organic and inorganic compounds. Synthetic techniques may include vacuum, pressure, inert atmosphere, and photochemical systems. Analytical methods include wet chemical, chromatographic, and spectroscopic methods.  
Prerequisite: CHEM 4312/4113 and CHEM 4240.

**CHEM 4191 - Seminar**

Reports on current literature and research in chemistry.  
Prerequisite: Senior standing.

**CHEM 4199-4399 - Independent Study**

Independent study in specific areas of chemistry not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.  
Prerequisite: Consent of department chair.

**CHEM 4240 - Spectroscopy**

Study of modern analytical methods including atomic absorption, vibrational, nuclear magnetic resonance, and mass spectroscopies. Spectral interpretation and structural correlation are emphasized.  
Prerequisite: CHEM 3344/CHEM 3145.

**CHEM 4312 - Instrumental Analysis**

Introduction to instrumental methods of analysis and separation including electrochemical, spectroscopic, and chromatographic techniques. Fundamental theories and instrumentation of these techniques will be emphasized.  
Prerequisite: CHEM 3354/3155.

**CHEM 4330 - Advanced Inorganic Chemistry**

Theories of inorganic chemistry including atomic, molecular, and crystal structure; thermochemical and electrochemical properties; acidity; solvent systems; and coordination compounds.  
Prerequisite: CHEM 3320 and CHEM 3354.

**CHEM 4334 - Biochemistry I**

Chemistry and functions of biomolecules: proteins, carbohydrates, lipids, and nucleic acids; bioenergetics of the cell; and protein synthesis. Prerequisite: CHEM 3344.

**CHEM 4336 - Biochemistry II**

Structure, function, chemistry, and metabolism of lipids and nucleic acids; bioenergetics and control mechanisms in cellular metabolism; interrelationships of metabolic pathways; ion channels and pumps; biosynthesis of membrane lipids and steroids; nucleic acid replication, recombination and repair, and the control of gene expression. Prerequisite: CHEM 4334.

**CHEM 4346 - Advanced Organic Chemistry**

The study of advanced topics in organic and bioorganic chemistry. This course focuses on topics which illustrate the importance of organic chemistry in biochemical processes, total synthesis, drug discovery and design, molecular recognition, medicine, stereochemistry, and macromolecular chemistry.

Prerequisite: CHEM 3344 or consent of instructor.

**CHEM 4370 - Undergraduate Internship Program**

An 8- to 16-week program offering a learning experience in an off-campus environment.

Prerequisite: Consent of departmental chair.

**CHEM 4371 - Undergraduate Internship Program**

An 8- to 16-week program offering a learning experience in an off-campus environment.

Prerequisite: Consent of departmental chair.

**CHEM 4395 - Undergraduate Research**

Directed chemical or biochemical research involving a problem of mutual interest to the student and a member of the chemistry faculty. An oral presentation and a written report of research results by the student are required at the conclusion of the project. May be repeated once for credit.

Prerequisite: Senior standing and approval of departmental chair.

**CHEM 4398 - Special Topics in Chemistry**

The study of a selected topic in chemistry, such as organic synthesis, polymer chemistry, industrial chemistry, catalysis, organometallic compounds, reaction mechanisms, and process analytical chemistry.

Prerequisite: Senior standing and approval of departmental chair. May be repeated once for credit when topic changes.

**CHEM 5121 - Advanced Biochemistry Laboratory**

Laboratory experiments in enzyme extraction, purification, and characterization.

**CHEM 5199-5399 - Independent Study**

Independent study in specific areas of chemistry not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of department chair.

**CHEM 5320 - Advanced Biochemistry**

Study of the synthesis of intermediary metabolites, the chemistry of enzyme systems, and the metabolic functions of vitamins.

Prerequisite: One semester of biochemistry.

**CHIN - Chinese****CHIN 1411 - Beginning Chinese I**

Beginning Chinese I is designed for the student having little or no exposure to the Chinese language. This course concentrates on developing the skills of: listening comprehension; speaking, reading; and writing. Class conversation is a key element in the instruction. Course also includes basic vocabulary, grammatical structure, and culture.

**CHIN 1412 - Beginning Chinese II**

Continued study of modern Standard Chinese for students who have had the equivalent of one semester of college Chinese. Basic skills are emphasized, including elementary Mandarin pronunciation, grammar, and orthography (in both Pinyin and characters).

Prerequisite: Grade of C or better in CHIN 1411 or consent of instructor.

**CHIN 1611 - Accelerated Chinese I**

Designed for students having no exposure to Chinese, this course offers 6 credit hours a semester to accelerate student learning. It emphasizes speaking, listening, and reading skills along with a focus on basic grammar, characters, and development of vocabulary.

**CHIN 2311 - Intermediate Chinese I**

This course further develops the four basic language skills, with an emphasis on listening and speaking the acquisition of 300 simplified Chinese characters for short writing assignments on topics used in the textbook. Students will be able to recognize 650 characters by the end of this course.

Prerequisite: CHIN 1412 or permission of the instructor.

**CHIN 2312 - Intermediate Chinese II**

This course further develops the four basic language skills, with an emphasis on listening and speaking and the acquisition of 300 simplified Chinese characters for short writing assignments on topics used in the textbook. Students will be able to recognize 900 characters by the end of this course.

Prerequisite: CHIN 2311.

**CHIN 2611 - Accelerated Chinese II**

Designed for students who have completed at least 6 hours of Chinese or the equivalent, this course offers 6 credit hours to accelerate student learning. It emphasizes speaking, listening, and reading skills along with a focus on advanced grammar, characters, and vocabulary.

**CHIN 4199-4699 - Independent Study**

Independent study in specific areas of Chinese language or literature not covered by organized courses. A maximum of six credit hours may be applied toward an undergraduate degree.

Prerequisite: Consent of the department chair.

**CMGT - Construction Management****CMGT 2302 - Introduction to Construction Management**

Characteristics of the construction industry; types of construction companies; contracts; people involved in a project, their responsibilities and interrelationships; ethical conduct, evolution of a project; interpreting working drawings; construction bonds; contract documents.

**CMGT 2303 - Construction Materials and Methods**

Materials, methods and sequences of the construction process; emphasis on design, specification, purchase and use of concrete, steel, masonry and wood. An understanding of the uses of construction materials.

**CMGT 3310 - Intro to Construction Structural Systems**

The description of forces, moments, and couples acting on stationary structures, equilibrium in 2/3-D; free-body diagrams; centroids and moments of inertia; stress and strain; uniaxially loaded members; Torsion.

Prerequisite: MATH 1316 and PHYS 1301/PHYS 1101.

**CMGT 3311 - Construction Estimating**

Systems approach to determining required quantities of construction materials; quantification of various types of foundation systems, structural systems and building envelope systems; excerpts of contract documents from a variety of different building projects.

**CMGT 3312 - Advanced Estimating**

Quantification and pricing of direct field costs and general condition costs from construction documents; the preparation of complete lump sum bid package ready for project execution; utilization of complete set of contract documents required.

Prerequisite: CMGT 3311.

**CMGT 3315 - Construction Design Theory**

The principles flexure and shear, deflections, buckling are used to consider design/build construction including building systems, building codes, criteria and selection, economic feasibility, value engineering, customer control, and value-added construction services as well as an introduction to Building Information Modeling BIM.

Prerequisite: CMGT 3310.

**CMGT 3320 - Soils and Foundations in Construction**

Introduction to soil types found on construction projects; properties and classification of soil, embankment control, dewatering, excavation supports, foundations, piers, and pilings.

Prerequisite: CMGT 3310.

**CMGT 3348 - Construction Safety**

Examines the application of OSHA 29CFR 1926 for the construction industry along with applicable state and federal construction safety laws pertaining to construction, altercations, or repair work at construction site.

**CMGT 3365 - Mechanical and Electrical Systems**

Mechanical and electrical systems with a major emphasis on the estimate and installation, design and control of the electrical, heating, ventilation and cooling system, site planning and acoustical treatments.

Prerequisite: PHYS 1301/PHYS 1101.

**CMGT 4195 - Construction Management Capstone I**

This course is the first in the Construction Management capstone series and provides project definition, project planning, scheduling, and results in a presentation and plan for implementing during Capstone II.

Prerequisite: Senior standing and Department Chair approval.

**CMGT 4199-4399 - Construction Management Independent Study**

Construction management professionals are required to be life-long learners who understand contemporary issues and how they influence construction practices. An independent study course will require CMGT students to tackle a real construction problem.

**CMGT 4313 - Applied Construction Structural Systems**

Structural principles applied to the design and construction of architectural reinforced concrete structures, reinforced masonry structures, and other selected topics.

Prerequisite: CMGT 3315.

**CMGT 4315 - Construction Systems**

Application of statics and strength of materials for construction of steel buildings with computer analysis and design of specific topics.

Prerequisite: CMGT 3315.

**CMGT 4321 - Historic Preservation**

This course provides a broad overview of the field of historic preservation in the U.S. for students interested in learning about the work of preserving historic resources. It examines the theory, philosophy, and methods of maintaining the culture of the past.

Prerequisite: CMGT 2302.

**CMGT 4323 - Transportation and Utility Construction**

Apply knowledge of construction methods and materials in the design and construction of transportation facilities and utility infrastructure. Construction practices and test methodologies for asphalt pavement, concrete pavement, sidewalk, electrical and utility construction.

Prerequisite: CMGT 2303, CMGT 3320.

**CMGT 4325 - Sustainable Construction**

Exploration of cutting edge technology used in sustainable construction of residential and commercial structures. Introduction to the requirements for LEED, Energy Star and the NAHB Green Program rating systems used for evaluating sustainability.

Prerequisite: CMGT 3365.

**CMGT 4330 - Construction Equipment and Methods**

Principles of managing construction equipment including: selection, operation and safety; development of skills necessary to choose an equipment mix that yields maximum productivity and best value.

Prerequisite: CMGT 3311.

**CMGT 4331 - Construction Scheduling**

An introduction to construction project management scheduling covering concepts of project selection and scheduling, utilizing the estimate to predict the schedule, scheduling subcontracting, cost controls, project documentation, construction bonds, insurance, payments and the elements of close out; development of professional communication skills through student prepared multi-media presentations.

Prerequisite: CMGT 3311.

**CMGT 4335 - Construction Law and Ethics**

Introduction to basic contract and tort issues and their application in the construction industry; delineation of the various types of contracts and remedies available to parties involved in a construction project; additional related topics including bidding, delays, mechanics liens, site conditions, warranties and the Uniform Commercial Code as it relates to the construction industry.

Prerequisite: GENB 3301.

**CMGT 4370 - Construction Management Internship**

Program provides for a learning experience in a construction management environment appropriate to the undergraduate level of work with a minimum of 150 hours of work. A written report of the experience and a presentation are required.

Prerequisite: Junior or Senior standing.

**CMGT 4375 - Construction Administration and Economics**

Project planning, cost controls, and construction related financial documents including: schedule of values, labor and operations cost reports, income statements, balance sheets and construction budgets; emphasis on the development of techniques required to ethically and effectively monitor the financial aspects of a construction project.

Prerequisite: FINA 3311.

**CMGT 4385 - Commercial Construction**

A senior course for students preparing to enter the commercial construction sector; project management of commercial construction projects, including: aspects of design, bidding/estimating. Presentation, value engineering, contracts/negotiation, subcontractor relations, cost controls, management during construction, close out, and post-construction requirements.

Prerequisite: CMGT 3311.

**CMGT 4395 - Construction Management Capstone**

Utilize information from all previous courses to give an understanding of the construction management profession culminating in a semester project and presentation. A response to an RFP announcement or bid will be prepared for each team project.

Prerequisite: CMGT 4195 and Department Chair approval.

**COMM - Communication****COMM 5301 - Literature of Journalism**

A survey of the literature. Students will read general and specialized literature as a basis for group discussion.

**COMM 5302 - Seminar in Rhetorical Criticism**

Rhetorical principles, procedures, and methods of systematically analyzing persuasive discourse in various media.

**COMM 5303 - Public Opinion and Propaganda**

Study of propaganda theory and methods, emphasis on opinion-making processes in governments, political parties, pressure groups, and mass media. Critical examination and synthesis of past and on-going research on propaganda.

**COMM 5308 - Seminar in Communication Theories**

Survey of major theories that inform communication studies and their philosophical assumptions and implications.

**COMM 5310 - Communication Research Methods**

Introduction to the uses, assumptions, processes, techniques, principles, and critical evaluation of qualitative and quantitative research methods applied in the systematic study of communication.

**COMM 5311 - Seminar in Communication**

This course provides students with exposure to scholarly norms and practices. Students will engage in a comprehensive research project geared toward the development of scholarly research and theoretical knowledge.

**COMM 5315 - Mass Media and Popular Culture**

An examination of popular culture with emphasis on the role of television, cable, film, magazines, internet, and emerging technologies in transmitting symbols and images.

**COMM 5328 - Leadership and the Group Process**

Involves the student in a definition of leadership and its role within the processes of small groups. It is a theoretical study of communication networks, human motivation, conflict reduction, and the introduction of social change.

**COMM 5329 - Topics in Communication Theory**

An analysis of major communication theories in mass communication and speech communication with an emphasis on current ideas and literature. May be repeated once for credit when content changes.

**COMM 5330 - Gender and Communication**

A study of gendered communication behaviors and their impact on various communication contexts including intimacy, the family, group, and the business world.

**COMM 5335 - Seminar in Organizational Communication**

A critical look at the role of communication in formal organizations, both public and private. Emphasis on a review of literature and field research in selected communication problems.

**COMM 5340 - Seminar in Intercultural Communication**

Designed to provide the student with the opportunity to acquire theoretical guidelines and experiential applications in the study of human communication across cultures, including intercommunity, international, and global communication.

**COMM 5344 - Seminar in Media Ecology**

Examines the interplay of communication media, technology, technique, processes, environment and culture with human feeling, thought, value, and behavior. Special consideration of how changes in media shape changes in human consciousness.

**COMM 5345 - New Media Theories and Applications**

This course involves an exploration of the cognitive, linguistic, and interpretive approaches to the study of new media. Consideration will be given to both the practical and theoretical values of new media.

**COMM 5350 - Nonverbal Communication**

A study of the effects of space and territory, physical appearance, bodily movement, touching, the face and eyes, and paralanguage on the total communication process.

**COMM 5351 - Freedom and Responsibility of Communication**

An examination of issues and cases in freedom of speech with particular application to ethics in communication. The nature and function of public communication, the challenges to freedom of speech, and the ethics of communication are explored.

**COMM 5395 - Thesis**

Selection of research topic and development of thesis plan.

**COMM 5396 - Thesis**

Completion and defense of thesis.

Prerequisite: COMM 5395 or concurrent enrollment and consent of advisor.

**COMM 5399 - Independent Study**

Independent study in specific areas of journalism or speech communication not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: consent of advisor or department chair.

## COSC - Computer Science

**COSC 1301 - Computers in Society [TCCN: COSC 1301]**

A general introduction to computers and their applications with emphasis on breadth of coverage. Topics include computer system components, terminology, and use of productivity tools such as word processing, spreadsheets, database, and Internet usage. Case study analysis of the social impacts of computerization and networking. Topics include computer ethics, crime, privacy, security, reliability, and vulnerability.

**COSC 1307 - Introduction to Information Systems Software [TCCN: BCIS 1305]**

Students in this course will develop a proficiency in the use of the common applications of a productivity suite like Microsoft Office. Applications covered will include Windows, word-processing, spreadsheets, database, presentations, e-mail and the HTML editors. No prior computer experience is required.

**COSC 1308 - Introduction to Visual BASIC**

This course introduces the fundamental concepts of programming including data types, control structures, subprograms, arrays, and simple graphical user interfaces using the Visual BASIC language. Note: Cannot be applied toward a CS or CIS degree.

**COSC 1310 - Advanced Information Systems Software**

This course enables students to improve their skills as knowledge workers. The emphasis is on personal productivity concepts through use of advanced features in computer software such as spreadsheets, databases, and presentation graphics. Prior knowledge of productivity software (i.e. databases, spreadsheets, and word processors) is strongly recommended.

**COSC 1436 - Programming Fundamentals**

Fundamental concepts of procedural programming including data types, control structures, functions, arrays, files, and the mechanics of running, testing, and debugging as well as an introduction to the historical and social context of computing and an overview of computer science as a discipline. Includes laboratory sessions dealing with the fundamental concepts of procedural programming.

**COSC 1437 - The Object-Oriented Paradigm**

Introduces the concepts of object-oriented programming to students with a background in the procedural paradigm. Topics covered include a review of control structures and data types, the object-oriented programming paradigm, object-oriented design, an overview of programming language principles, simple analysis of algorithms, basic searching and sorting techniques, and an introduction to software

engineering. Includes laboratory sessions dealing with the fundamental concepts of object-oriented programming.

Prerequisite: COSC 1436.

### **COSC 2315 - Computer Organization**

Introduces the concept of computers and information systems by presenting the process of computation as a hierarchy of virtual machines, beginning with the hardware and moving upward through various levels of increasingly sophisticated software.

Prerequisite: COSC 1436 and (MATH 1314 or MATH 1324 or MATH 2330).

### **COSC 2325 - Foundations of Computer Information Systems**

This course provides a thorough introduction to graphical user interface programming using visual programming tools. After this course students will be proficient in developing Windows programs.

Prerequisite: COSC 1437 (Prerequisite or Corequisite).

### **COSC 2336 - Data Structures and Algorithms [ TCCN: COSC 2336]**

Topics include recursion, the underlying philosophy of object-oriented programming, fundamental data structures (including stacks, queues, linked lists, hash tables, trees, and graphs), secure programming techniques, the basics of algorithmic analysis, and an introduction to the principles of language translation.

Prerequisite: MATH 2330, COSC 1437.

### **COSC 3191 - Computer Science Co-Op I**

Once a student has been approved for the co-op program, students can register for the appropriate co-op course (3191 for the first semester, 3192 for the second semester, 3193 for the third semester) with the approval of the chair of computer science. A student will hold a full-time computing or information technology position for the entire semester of the co-op. During the semester of a co-op course a student will submit biweekly status reports and, in collaboration with the employer, submit at the end of the semester a performance appraisal/evaluation by the employer. Graded on a credit/no credit basis.

Prerequisite: COSC 1436, COSC 1437, and permission of the chair of the Department of Computer Science.

### **COSC 3192 - Computer Science Co-Op II**

Once a student has been approved for the co-op program, students can register for the appropriate co-op course (3191 for the first semester, 3192 for the second semester, 3193 for the third semester) with the approval of the chair of computer science. A student will hold a full-time computing or information technology position for the entire semester of the co-op. During the semester of a co-op course a student will submit biweekly status reports and, in collaboration with the employer, submit at the end of the semester a performance appraisal/evaluation by the employer. Graded on a credit/no credit basis.

Prerequisite: COSC 1436, COSC 1437, and permission of the chair of the Department of Computer Science.

### **COSC 3193 - Computer Science Co-Op III**

Once a student has been approved for the co-op program, students can register for the appropriate co-op course (3191 for the first semester, 3192 for the second semester, 3193 for the third semester) with the approval of the chair of computer science. A student will hold a full-time computing or information technology position for the entire semester of the co-op. During the semester of a co-op course a student will submit biweekly status reports and, in collaboration with the employer, submit at the end of the semester a performance appraisal/evaluation by the employer. Graded on a credit/no credit basis.

Prerequisite: COSC 1436, COSC 1437, and permission of the chair of the Department of Computer Science.

### **COSC 3215 - Social and Professional Issues in Computing**

Introduction to the social and professional issues that arise in the context of computing.

Prerequisite: COSC 1437.

### **COSC 3310 - Internet and Web Applications**

This course includes a detailed coverage of Internet protocols, Web site management, Web page design and e-commerce. The course examines the linkage of organizational strategy and electronic methods of delivering products and services in inter-organizational, national, and global environments.

Prerequisite: COSC 2325.

### **COSC 3325 - Algorithm Analysis and Foundations**

Introduction to foundations and formal techniques used to support the design and analysis of algorithms, focusing on both the underlying mathematical theory and practical considerations of efficiency. Topics include asymptotic complexity bounds, techniques of analysis, algorithmic strategies, basic computability, and complexity classes.

Prerequisite: COSC 2336.

### **COSC 3331 - E-Commerce Programming**

The course deals with the technical aspects of e-commerce. Students will learn to design, build, and maintain a complete e-commerce website. Topics include: e-commerce modeling, designing, and implementing a website that meets user requirements, maintaining and setting up web servers, multi-tiered web architecture, database servers, accessing remote databases, shopping cart fundamentals, commerce server, advertising on the web, e-cash and electronic payments, and Internet security and encryption. Students will build their own projects.

Prerequisite: COSC 3310.

### **COSC 3333 - Management Information Systems**

This course is a survey of the tools and techniques for the gathering of business information and structuring and manipulation of data to support managerial decision making. Main topic areas include decision support system technology, artificial intelligence tools, expert systems and business applications such as SAP.

Prerequisite: COSC 1307.

### **COSC 3355 - Operating Systems**

Fundamentals of operating systems design and implementation. Topics include an overview of the components of an operating system, mutual exclusion and synchronization, implementation of processes, scheduling algorithms, memory management, operating system security, and file systems.

Prerequisite: COSC 3445.

### **COSC 3365 - Programming with Data, File and Object Structures**

This course covers computer concepts, algorithm development, programming and program validation. It includes a special emphasis on the design and application of data and file structures.

Prerequisite: COSC 2325 and COSC 1437.

### **COSC 3375 - Analysis and Logical Design**

This course introduces the systems development process. Topics covered include structured and object-oriented analysis and design, use of modeling tools, the methodological life cycle and project management. It includes the study of interpersonal skill development with clients, users, team members, and others associated with the development, operation and maintenance of systems.

Prerequisite: COSC 2325 and COSC 1437.

### **COSC 3385 - Database Design**

This course covers information systems design and implementation within a database management system environment. Students will design and construct a system using database software to implement the logical design.

Prerequisite: COSC 3365 and COSC 3375.



**COSC 3445 - Computer Architecture**

Introduces students to the organization and architecture of computer systems, beginning with the standard von Neumann model and moving forward to more recent architectural concepts. Includes laboratory experiments in logic circuits (such as adders, multiplexers, arithmetic logic units, counters, shift registers, and memory units) and computer subsystems (such as buses, central processing units, and input-output systems).

Prerequisite: COSC 2315 and COSC 2336.

**COSC 4199-4399 - Independent Study**

Independent study in specific areas of computer science not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**COSC 4309 - Design of Modern Information Systems**

Introduction to prototyping and computer-aided software engineering. This course will provide a detailed study of advanced topics in information systems software including system libraries, database design, and distributed software. A complete information system will be developed from various software components.

Prerequisite: COSC 3310, COSC 3385.

**COSC 4315 - Information and Knowledge Management**

The investigation of how information is a unifying theme within a range of issues in computer science, including database systems, artificial intelligence, human-computer interaction, multimedia systems, and data communication.

Prerequisite: COSC 2336.

**COSC 4325 - Data Communications and Computer Networks**

Study of problems and limitations associated with interconnecting computers by communication networks. OSI reference model, architecture of circuits, message and packet switching networks, network topology, routing, flow control, capacity assignments, protocols, coding and multiplexing.

Prerequisite: COSC 2315.

**COSC 4327 - UNIX Shell Programming**

Introduction to programming in the UNIX shells; directory structure and file manipulation, built-in functions, control structures, utilities, and sublanguages.

Prerequisite: COSC 2336.

**COSC 4335 - Artificial Intelligence**

Survey of current artificial intelligence technologies: game playing, theorem proving, pattern recognition, searching algorithms, knowledge representation, neural networks, fuzzy systems, and heuristic programming.

Prerequisite: COSC 2336.

**COSC 4336 - Software Development**

Provides an intensive, implementation-oriented introduction to the software development techniques used to create medium-scale interactive applications, focusing on the use of large object-oriented libraries to create well-designed graphical user interfaces. Topics include event-driven programming, computer graphics, human-computer interaction (HCI), and graphical user interfaces.

Prerequisite: COSC 2336.

**COSC 4340 - Comparative Study of Programming Languages**

Introduction, analysis, and evaluation of the important concepts found in a variety of programming language paradigms; formalisms useful in specifying language syntax and semantics; programming language paradigms including algorithmic, functional, logic, object-oriented, visual, etc.

Prerequisite: COSC 2336.

**COSC 4345 - Computer Graphics**

Graphics hardware, software, and applications. Data structures for graphics, graphic languages, computer-aided design, and three-dimensional graphics.

Prerequisite: COSC 2336.

**COSC 4352 - Data Mining**

The course deals with knowledge discovery from databases (KDD). Topics covered in the course include data warehousing, model fitting, classification, prediction, clustering, market basket analysis, extracting knowledge from data models, and data visualization techniques.

Prerequisite: COSC 2336.

**COSC 4353 - Parallel and Multi-core Programming**

Methods for creating and implementing parallel algorithms. Parallel and multi-core programming, parallel programming models, shared memory, and distributed architectures.

Prerequisite: COSC 2336.

**COSC 4356 - Computer Vision**

The course deals with extracting meaningful descriptions of physical objects from images. Topics covered include computer vision fundamentals, preprocessing techniques, feature extraction, supervised classifiers, unsupervised classifiers, and computer vision applications.

Prerequisite: COSC 2336.

**COSC 4360 - Net-Centric Computing**

Introduces the structure, implementation, and theoretical underpinnings of computer networking and the applications that have been enabled by that technology.

Prerequisite: COSC 3355.

**COSC 4361 - Computer Security Management**

This course will cover the techniques used to secure and manage computers, computer networks and enterprise computer systems. Topics covered will include security policies, computer network management, and disaster recovery. Special emphasis will be given to designing, deploying and managing complete security systems.

Prerequisite: COSC 2315 and either COSC 4325 or COSC 4360.

**COSC 4362 - Computer Security**

This course will give a complete coverage of cryptography, network protocols and their use in computer security. This will include an overview of symmetric and asymmetric cryptographic algorithms and their use for authentication, e-mail and e-commerce. Network security protocols covered will include Kerberos, SET and SMIME.

Prerequisite: COSC 4360 (Prerequisite or Corequisite).

**COSC 4368 - Bioinformatics**

This course covers advanced computational problems and the computational methods for managing and analyzing information about the sequence, structure, pattern and function of data in bioinformatics and data mining. Furthermore, students will learn many of the popular tools for performing bioinformatics analysis and will also be introduced to the thinking that drives the algorithms.

Prerequisite: COSC 2336.

**COSC 4370 - Undergraduate Internship Program**

An 8- to 16-week program providing a new learning experience in a computer or information technology environment. A written report describing the activities and accomplishments of the student during the internship is required at the conclusion of the internship period. May be repeated once for credit. A maximum of three credit hours may be applied toward the undergraduate degree. CR/NC only.

Prerequisite: COSC 1437.

**COSC 4373 - Advanced Database Management Concepts**

A study of database management concepts from non-relational databases including object-based databases, multimedia databases, XML, and data warehouses.

Prerequisite: COSC 2336.

### **COSC 4375 - Information Systems Design Project**

An integrated perspective of the problems in today's information systems environment, concentration on contemporary design, methodologies, and considerations unique to users of computers and information systems.

Prerequisite: BLAW 3301 or COSC 3215, and COSC 3375, COSC 1437, COSC 3385, COSC 4309, COSC 4325.

### **COSC 4377 - Compiler Techniques**

Characteristics of the compiling process, syntax directed compiling, symbol table construction and searching, top down and bottom up methods, formal grammars, and a formalization of syntax.

Prerequisite: COSC 2315 and COSC 2336.

### **COSC 4381 - Seminar in Computer Science**

This course is designed to study current trends in computer science or computer information systems.

Prerequisite: Junior or Senior classification in computer science or computer information systems.

### **COSC 4385 - Database Management Concepts**

Database system architecture; file structures for databases, including indexing, hashing, and B+ trees, the relational model and algebra; the SQL database language; alternative database systems (network, hierarchical, object-oriented, object-relational, logical implementation, temporal, etc.), conceptual data modeling including Entity-Relationship data modeling; advanced data modeling concepts; functional dependencies, basic normalization, and database security management.

Prerequisite: COSC 2336.

### **COSC 4387 - Computer Performance Evaluation**

Discrete and continuous simulation of dynamic systems. Topics include: simulation of probabilistic systems; mathematical models of real systems; system classifications; random number generators; simulation languages; single queue and queue networks. Workloads, benchmarks, performance measurement techniques, and case studies will be used in system capacity planning, hardware selection and upgrade, and performance tuning.

Prerequisite: COSC 2336, COSC 3445.

### **COSC 4390 - Topics in Computer Science**

A study of new trends in computer science. Course description will vary depending on the subjects to be offered.

Prerequisite: COSC 2336.

### **COSC 4395 - Capstone Project**

This course offers students the opportunity to integrate their knowledge of the undergraduate computer science curriculum by implementing a significant software system as part of a programming team.

Prerequisite: COSC 3215, COSC 3325, COSC 4315, COSC 4336, COSC 4360, COSC 4385.

### **COSC 5199-5399 - Independent Study**

Independent study in specific areas of computer science not covered by organized graduate courses. A maximum of 6 credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of department chair.

### **COSC 5325 - Workshop in Computer Science**

Designed to provide instruction for groups who wish to study current specific areas in computer science. This course may be repeated once for credit when content changes. **MAY NOT BE USED FOR THE MS IN COSC DEGREE.**

### **COSC 5326 - UNIX Programming Environment**

This course will cover shell programming, filters, I/O programming, program development, and document preparation. Special attention will be given to UNIX systems programming.

### **COSC 5330 - Operating Systems**

Analysis of operating systems software for computing systems, and resource management procedures and techniques used in all types of computing environments. Topics include processes, synchronization, scheduling algorithms, memory management, security, device management, deadlocks, and file systems.

### **COSC 5336 - Local Area Networks**

LAN architectures and media. In addition, course will cover inter-networking, performance, and design issues. Special attention will be paid to IEEE 802 and all current systems.

### **COSC 5340 - Programming Languages**

Theoretical aspects of programming languages, design and implementation criteria, analysis and classification of programming languages. Topics include: language design principles; translation and the formalization of syntax; generalization of primitive and abstract data types; sequence, data, and subprogram control; and language paradigms such as imperative, object-oriented, functional, logic, concurrent, and visual.

### **COSC 5341 - Computer Security**

This course will cover cryptography, network protocols and their application, including an overview of symmetric and asymmetric cryptographic algorithms and their use for authentication, e-mail, and e-commerce. Network security protocols covered with include Kerberos, SET, and SMIME.

### **COSC 5342 - Computer Security Management**

This course will cover the techniques used to secure and manage computers, computer networks, and enterprise computer systems. Topics covered will include security policies, computer network management, and disaster recovery. The course will cover all of the topics listed in CNSI-4012.

### **COSC 5345 - Computer Graphics**

An introduction to computer graphics stressing interactive graphics. Basic theory and applications will be covered. GKS graphics and an introduction to 3-D graphics will be given.

### **COSC 5346 - Expert Systems**

Basic concepts for building expert systems, architecture of expert systems, the knowledge acquisition process, languages and tools for building expert systems, evaluation of expert systems, issues and case studies, and practices in the design and evaluation of expert systems.

### **COSC 5350 - Data Communication and Networks**

An in-depth study of data communications and networking. Covers the architecture, design and implementation of computer networks. Topics include data transmission, switching, protocols and security.

### **COSC 5351 - Computer-Human Communications**

Study of computer interfaces with a special emphasis on highly interactive interfaces. A complete study of the X Windows Architecture including hardware, communication protocols, and programming.

### **COSC 5352 - Client/Server Architectures**

Design and implementation of client/server systems. Topics include: network protocols, OLE DGE, CORBA, server design and implementation and tightly integrated message systems.

### **COSC 5354 - Parallel and Supercomputing**

Methods for creating and implementing parallel algorithms. Parallel programming, programming models, and architectures of vectorized supercomputers, shared memory, and distributed architectures.

### **COSC 5356 - Computer Vision**

The course deals with extracting meaningful descriptions and recognition of physical objects from digital images. Topics covered include computer vision fundamentals, edge detection, noise removal,

enhancement techniques, feature extraction, supervised classifiers, unsupervised classifiers, and computer vision.

#### **COSC 5360 - Database Design**

An introduction to database systems and design. Covers relational, hierarchical, and logical database models. Topics include database modeling, design, security, management, implementation and integration.

#### **COSC 5365 - Artificial Intelligence**

Introduction to the basic concepts of artificial intelligence. Topics covered will include knowledge representation, A.I. programming, learning, and neural nets.

#### **COSC 5370 - Software Engineering**

Program development techniques with structured methodologies. Top-down development, modeling tools, structured programming, programming style, program testing and debugging.

#### **COSC 5371 - Data Mining**

Study of the concepts and techniques of data mining, or knowledge discovery in databases. The automated or convenient extraction of patterns representing knowledge implicitly stored in large databases, data warehouses, and other massive information repositories.

#### **COSC 5374 - Software Architecture**

Concepts and methodologies for the systematic analysis, development, evolution, and reuse of software architectures. Understanding the elements of software architectures including components, connectors, styles, patterns, and constraints. Developing software architectures from functional requirements. Evaluation and selection of alternative software architectures based on non-functional requirements. State of the practice and art.

#### **COSC 5375 - Advanced Database Design**

Database design issues including: query processing, interpretation, optimization, and methods for implementing and optimizing logic queries. Knowledge databases, distributed databases, and object-oriented databases.

#### **COSC 5376 - Fundamentals of Data Warehouses**

This course provides an overview of the fundamentals of data warehousing including planning, designing, building, populating, and maintaining a successful data warehouse. Specific topics covered include the logical design of a data warehouse, data warehousing architecture, extract-transform-load processing, a comparison of OLAP and OLTP and query processing utilizing multidimensional views of data.

#### **COSC 5377 - Fundamentals of Modeling and Distributed Simulation of Complex Systems**

This course aims to teach the fundamentals of modeling, simulation, distributed simulation, and large-scale asynchronous distributed simulation of real systems on parallel processors. Examples from the real world include CAD of digital systems, IVHS transportation, military command and control, medical networks, banking networks, and asynchronous transfer mode (ATM) networks.

#### **COSC 5378 - Applied Computer Graphics**

This graduate level course will begin with the basic theory of computational graphics, describe important applications, especially in the fields of medicine and GIS, and require students to complete a substantial applied project utilizing graphical tools and packages that are widely used in industry and the computer graphics community. The basic theory will build on mathematical foundation and focus on geometric primitives, color models, coordinate systems, transformation of object views in 2D and 3D, projection, illumination, reflection, shading, and ray tracing.

#### **COSC 5379 - Advances in Remote Sensing and GIS Analysis**

This course will bring together recent developments in remote sensing and GIS analysis with a particular emphasis on software development techniques. Topics will include GIS data models, software algorithms for data storage, and analysis.

#### **COSC 5380 - Research Project**

Faculty directed independent study of a computer science problem, subject, or research topic relevant to the student's current or anticipated career field. A professional quality computer science report and an oral presentation of the research project are required. A student may not begin work on the project before completing the graduate core. After starting the project, students must register for at least three credit hours of COSC 5380 each semester until the project is completed and approved. CR/NC Only.

#### **COSC 5381 - Advanced UNIX O/S Design**

This advanced graduate course aims to expose students to practical challenges in operating systems design today, especially securing it from threats from viruses and worms, and intelligent attacks. The course will combine lectures with a significant project and feature extensive analysis of case studies.

#### **COSC 5382 - Comprehensive Internet Security**

This course will introduce the student to the topics of computer security, network security, and Web security, in a coherent manner. It will give detailed coverage of the theory, deployment and management of high security Web applications. Considerable attention will be paid to methods of Web site authentication, authorization, privacy and confidentiality. As a part of the course, students will build a highly secure Web site project.

#### **COSC 5390 - Topics in Computer Science**

This course can be taken up to two times for credit when content changes.

#### **COSC 5391 - Topics in Distributed Systems**

Selected topics in distributed systems, computer networks, and distributed databases. Design of local area networks and multiple network systems, database programming languages, and operating systems for distributed systems.

#### **COSC 5392-5692 - Graduate Internship Program**

A regular academic or extended summer semester program providing for a learning experience in a computing environment, at the graduate level of study. A written report and a presentation describing the activities and accomplishments of the student during the internship is required at the conclusion of the internship period. A maximum of three credit hours may be applied toward the graduate degree.

Prerequisite: Consent of the department chair.

#### **COSC 5393 - Graduate Seminar**

This course describes methods of conducting research in computer science. Current research in several different areas of computer science will be presented. Students will review and critique articles in the areas as well, focusing on their underlying principles.

#### **COSC 5395 - Thesis**

Selection of a research topic and development of a thesis plan. CR/NC Only.

#### **COSC 5396 - Thesis**

Completion and approval of thesis.

## **COUN - Counseling**

#### **COUN 5312 - Counseling Theories and Applications**

Overview of theoretical approaches to counseling and psychotherapy, including fundamental concepts, assessment, client and counselor roles,

cultural relevance, and intervention strategies/techniques. Includes role-played practice of fundamental counseling response skills.

#### **COUN 5313 - Family Therapy**

Instruction in theoretical approaches and interventions in family therapy, grounded in human systems theory. Includes the process of conducting family therapy and special aspects of family therapy.

Prerequisite: COUN 5312 or PSYC 5312.

#### **COUN 5315 - Couples Therapy**

Instruction in the research, theory, and processes involved in couples therapy. Includes selected modalities of couples therapy, special ethical and professional issues, and role-played practice of skills for working with couples.

Prerequisite: COUN 5312 or PSYC 5312.

#### **COUN 5318 - Sexuality and Sex Therapy**

Examines normal functioning and the major problems of sexual dysfunction and psychological treatments from system and behavioral perspectives.

Prerequisite: Consent of instructor.

#### **COUN 5321 - Dynamics and Treatment of Family Violence**

A survey of the symptoms and issues associated with family violence and provision of treatment techniques for the perpetrators and victims of such violence.

Prerequisite: PSYC 5312 and 5345.

#### **COUN 5324 - Cultural Diversity and Advocacy**

Examines client diversity with respect to ethnographic, demographic, and status variables, and challenges culturally biased assumptions which influence the provision of mental health services.

#### **COUN 5326 - Addictions Counseling**

This course will examine substance abuse and addiction disorders (e.g. gambling, sex, gaming, eating, tobacco) in multiple client populations, and their treatment. Students will learn how to conduct assessment for and diagnosis of substance abuse and addiction disorders, including co-occurring disorders; the effects of substances and addictions on the client and others; etiology; and best practices in counseling and treatment.

Prerequisite: PSYC 5308.

#### **COUN 5328 - Foundations and Ethics of Clinical Mental Health Counseling**

This course is a survey of the history, foundations, ethics and practices of the clinical mental health counseling profession. Consideration of rules of counseling licensure boards, ethical case studies, and professional practices is included.

#### **COUN 5334 - Foundations and Ethics of School Counseling**

A foundation course for those planning to enter school counseling, this course covers organization, planning, management, and evaluation of comprehensive school guidance programs; appropriate roles and functions of school counselors at various school levels; coordination of professional services, as well as strategies for appropriate interventions for various student issues; consulting and collaboration with school and agency professionals; and professional concerns such as ethics and legal issues. Recommended for non-counselor educational professionals as well as counselors.

#### **COUN 5335 - Career Counseling and Assessment**

Interrelationships among lifestyle, workplace, and career planning are explored. Topics include the career counseling process, career theory, assessment instruments, information systems, and developmentally-appropriate techniques.

Prerequisite: COUN 5312 or PSYC 5312.

#### **COUN 5340 - Research and Program Evaluation**

Principles, models, and applications of research in counseling, including needs assessment, program evaluation, statistical analyses of data, and the critical appraisal of psychological and counseling research.

#### **COUN 5344 - Advanced Principles of School Counseling**

Designed to prepare school counselors for effective program development, delivery and evaluation based on the national SACA/CACREP models. Topics: guidance curriculum, career programs, consultation, student services/advocacy, crisis planning, ethics, program evaluation.

Prerequisite: COUN 5334.

#### **COUN 5380 - Seminar in Counseling**

Courses with a variety of topics areas; each course to address content areas of current issues and needs important to the dynamic concerns of counselors. May be repeated for additional credit.

Prerequisite: Consent of instructor.

#### **COUN 5386 - Supervised Internship in School Counseling**

A minimum of 200 hours of supervised experience in performing the role of a school counselor in an accredited public or private school, with 100 hours of direct services. Supervision on-site and in-class. The semester prior to enrollment, the student must complete the internship application process. CR/NC only.

Prerequisite: Grade of "B" or better in COUN 5312, COUN 5334, and departmental consent; concurrent enrollment in or successful completion of COUN 5344. May be repeated for up to 6 credits.

#### **COUN 5391 - Essential Counseling Skills**

Essential counseling skills development with role-playing lab practice with video. Focus on building therapeutic relationships, accurate empathy, and prioritizing client concerns. Develops proficiency in basic counseling response skills. Grade of B or better required to take more Clinical Skills courses.

#### **COUN 5392 - Helping Relationships and Clinical Interviewing**

This is a clinical skills course emphasizing the acquisition of therapeutic helping relationship skills and interviewing through role playing and modeling. Video and audio feedback as well as direct supervision is provided.

Prerequisite: Grade of "B" or better in COUN 5312, COUN 5328 and COUN 5391 and departmental consent.

#### **COUN 5393 - Practicum in Clinical Mental Health Counseling**

This practicum involves the supervised application of counseling/therapy processes with clients. Includes weekly small group and individual supervision using video recorded client sessions. Must complete a minimum of 100 clock hours, including at least 40 client contact hours. CR/NC only.

Prerequisite: Credit in COUN 5392 and departmental consent.

#### **COUN 5395 - Professional Practice in CMHC**

This capstone course addresses business, legal and ethical aspects of professional counseling practice, including advanced application of state ethics, detailed coverage of Texas counselor licensure statutes and rules, records management, national credentialing, and third party payer procedures and practices.

Prerequisite: Credit in COUN 5393 or PSYC 5393.

#### **COUN 5396 - Internship I**

A minimum of 300 clock hours of supervised experiences in which counseling services are provided, including 120 client contact hours. Required supervision on-site and in-class. The semester prior to enrollment, the student must complete the internship application process. CR/NC only.

Prerequisite: Credit in COUN 5393 and departmental consent.

**COUN 5397 - Internship II**

A minimum of 300 clock hours of supervised experiences in which counseling services are provided, including 120 client contact hours. Required supervision on-site and in-class. The semester prior to enrollment, the student must complete the internship application process. CR/NC only.

Prerequisite: Credit in COUN 5396 and departmental consent.

**CRIJ - Criminal Justice****CRIJ 1301 - Introduction to Criminal Justice**

This course analyzes the structure, functions, and relationships of the components of the criminal justice system (police, courts, corrections). Current issues in criminal justice are emphasized.

**CRIJ 2302 - Criminal Justice: Issues and Applications**

The study of contemporary issues among the major components of the criminal justice system: law, police, courts, and corrections; and how these issues affect American society. Open to criminal justice and non-criminal justice majors.

**CRIJ 2332 - Introduction to American Policing Practices**

An examination of the critical issues faced by American police through analyses of research relating to the historical, sociological, and legal bases for policing with an emphasis on contemporary trends in law enforcement.

Prerequisite: CRIJ 1301.

**CRIJ 3302 - Deviant Behavior and its Social Impact (Same as SOCI 3302)**

Study of various definitions, probable sources, and major effects of social deviance. Emphasis on evaluating strategies for reducing such deviance.

**CRIJ 3310 - Ethical Issues in Criminal Justice**

A study of ethical issues facing the criminal justice system. Problems confronting law enforcement, the courts and the juvenile and correctional systems are addressed.

Prerequisite: CRIJ 1301.

**CRIJ 3311 - Administration of Criminal Justice Agencies**

Principles and practices of administration and their application to criminal justice. Relationship of theoretical administrative concepts and practical criminal justice problems.

Prerequisite: CRIJ 1301.

**CRIJ 3320 - Criminology**

An examination of theoretical explanations of offenses and societal reactions. Also considers models of treatment, the nature and extent of crime, and control of crime.

Prerequisite: CRIJ 1301.

**CRIJ 3322 - Probation and Parole**

The structure, organization and operation of probation and parole services. Emphasis is placed on applicable state statutes and administrative guidelines.

Prerequisite: CRIJ 1301.

**CRIJ 3325 - Law and Society**

A study of the problems of defining criminal conduct and the appropriate social responses in a democratic society. Emphasis is placed on the adjudication of social issues, the role of discretion and ethical considerations for the criminal justice practitioner.

**CRIJ 3326 - Criminal Law**

An examination of the general doctrines of substantive criminal law and their application in the Texas Penal Code. Subjects considered include history and development of criminal law, definitions and elements of principal crimes, criminal liability, defenses to criminal prosecution, and criminal penalties.

Prerequisite: CRIJ 1301.

**CRIJ 3328 - White-Collar Crime (Same as SOCI 3328)**

Study of the causes, consequences, and control of white-collar crime.

**CRIJ 3330 - Organized Crime and Political Corruption**

Studies the origins and contemporary forms of organized crime, including traditional aspects, and proposes certain strategies for combating its influence. Special emphasis is placed on the direct connection between organized crime and political corruption.

**CRIJ 3340 - Victimology**

An analysis of the literature, research and current trends concerning the victim in the criminal justice system. Includes the history of the victims' movement, victim rights and compensation, and the impact of victimization on the individual, family, workplace, and community.

**CRIJ 3344 - Drugs, Behavior and Criminal Justice**

This course provides an overview of drug abuse including the use, manufacture and distribution of legal and illegal drugs. Included is a brief review of the pharmacological effects of drugs on behavior and its interaction with crime. A review of American anti-drug policy is included.

**CRIJ 3350 - Domestic Violence**

This course examines child abuse and neglect, sibling abuse, spousal abuse, elder abuse, gay and lesbian abuse, special populations, women and violence, ritualistic abuse and the consequences of domestic violence. Also included is a study of the CJ system's response to domestic violence.

**CRIJ 4199-4699 - Independent Study**

Independent study in specific areas of criminal justice not covered by organized undergraduate courses. A maximum of six credit hours of independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**CRIJ 4305 - Juvenile Delinquency (Same as SOCI 4305)**

Analysis of the extent, distribution, and varieties of juvenile delinquency. Emphasis on using sociological theories and research to examine delinquency causation and prevention.

**CRIJ 4306 - Drug Abuse Counseling**

Intended primarily for social work and law enforcement support, this course studies the theory and practice of drug abuse counseling and rehabilitation.

**CRIJ 4307 - The Juvenile Justice System**

The history, philosophy, and evaluation of the juvenile court, and juvenile practices and procedures; a study of juvenile law and the role of police, correctional, and treatment officers.

**CRIJ 4313 - Corrections Theory and Practice**

A study of the concepts of punishment and rehabilitation and of the corrections process from conviction to release: sentencing, incarceration, treatment, and loss and restoration of rights. Focus of course is on institutional corrections.

Prerequisite: CRIJ 1301.

**CRIJ 4314 - Community-based Corrections**

A survey of diversionary practices and treatment programs available to offenders in a local context. Selected nationally recognized models will be compared and contrasted.

Prerequisite: CRIJ 1301, CRIJ 3320.

**CRIJ 4315 - Correctional Counseling**

Counseling psychology with emphasis on principles and procedures; the theoretical foundations and techniques and processes of correctional psychology; psychology and counseling as applied to diversion programs, and adult and juvenile rehabilitation.

Prerequisite: CRIJ 3320.

#### **CRIJ 4322 - Criminal Justice Research Methods**

Studies the methods by which factual information is generated on crime and the criminal justice system. Topics include experiments, surveys, observation, unobtrusive techniques, measurement, statistics, data analysis, and ethics in research.

Prerequisite: CRIJ 1301.

#### **CRIJ 4332 - Criminal Investigation**

A study of methods of obtaining and reporting information from the crime scene, victims, complainants, witnesses, and suspects. Equal concern is given to the investigation of specific crimes.

Prerequisite: CRIJ 1301 and (CRIJ 2332 or CRIJ 4333), or CI.

#### **CRIJ 4333 - Community Policing**

This course will describe the historical development of community policing. Students will be introduced to the theoretical foundations of community policing and emphasis will be placed on describing how community policing attempts to ameliorate the problems associated with criminal behavior.

Prerequisite: CRIJ 1301.

#### **CRIJ 4340 - Crimes of Violence**

Analyzes the incidence, patterns, and causes of serial or chronic criminal violence, the characteristics of particular crimes (murder, robbery, rape, domestic abuse, and terrorism), and society's reaction to such violence.

#### **CRIJ 4341 - Criminal Procedure**

Federal and state laws and rules of criminal procedure prior to trial. Subjects considered include law of arrest, search and seizure, interrogation and confession, identification procedures, etc. with emphasis on constitutional restraints imposed on law enforcement.

Prerequisite: CRIJ 1301, CRIJ 3320, CRIJ 3326.

#### **CRIJ 4345 - Evidence**

An analysis of the law regarding the collection of evidence at a crime scene, preserving the chain of evidence, and its presentation at criminal court. Includes discussing the evolution of the law of evidence in the United States, defining the different types of evidence, solving the problems inherent in their differences, and comparing state and federal rules of evidence.

Prerequisite: CRIJ 3326.

#### **CRIJ 4350 - Comparative Criminal Justice**

A comparative study of modern criminal justice systems. The formal structure and informal operation of the various criminal justice models are examined, along with the cultural and historical environment in which they have developed and exist.

#### **CRIJ 4355 - Senior Seminar in Criminal Justice**

The policy cycle is studied in relation to critical issues framed by ideological positions labeled "due process" and "crime control." A model for analyzing public policy is introduced. Participants are expected to formulate and defend policy proposals.

Prerequisite: CRIJ 1301 and successful completion of upper-division core courses in criminal justice.

#### **CRIJ 4360 - Topics In Criminal Justice**

The study of a contemporary problem in criminal justice. May be repeated for credit when content changes.

#### **CRIJ 4370 - Internship Program**

An 8 to 16 week program offering a learning experience in an off-campus environment. CR/NC option.

Prerequisite: Consent of intern instructor. No more than three semester hours of internship program credit may apply to fulfillment of the major requirements in criminal justice.

#### **CRIJ 4371 - Internship Program**

An 8 to 16 week program offering a learning experience in an off-campus environment. CR/NC option.

Prerequisite: Consent of intern instructor. No more than three semester hours of internship program credit may apply to fulfillment of the major requirements in criminal justice.

#### **CRIJ 5199-5699 - Independent Study**

Independent study in specific areas of criminal justice not covered by organized graduate courses.

Prerequisite: Consent of department chair.

#### **CRIJ 5300 - Survey of Criminal Justice**

This course provides an introduction to components of the criminal justice system and the critical issues facing each. CRIJ 5300 is a leveling course and does not apply to the 36-hour degree program.

#### **CRIJ 5301 - Concepts of Law and Justice**

A critical analysis of the concepts of law and justice in democratic societies and their implications for policy formulation and system evaluations. Some comparative analysis of systems foreign to the United States.

#### **CRIJ 5302 - Judicial Policy and Social Process**

Explores the important role of the judiciary in making public policy and resolving competing societal and individual concerns. Examines the manner in which courts have adjudicated some of today's most controversial issues, including capital punishment, abortion, and pornography. Demonstrates how criminal law affects the rights and aspirations of minorities, the poor, and juveniles.

#### **CRIJ 5303 - Contemporary Criminological Theory**

Examines the role of theory in criminology and reviews major theories of crime causation. Emphasis will be on applying these theories to contemporary criminal justice practices.

#### **CRIJ 5304 - Evidence/Mock Trial**

The primary goal of this course is to familiarize students with the primary substantive and procedural rules of evidence in the American Criminal Justice System. Students will learn the fundamentals of the criminal trial process and the responsibilities of all key participants.

#### **CRIJ 5307 - Criminal Justice Policy**

Examines policy within the criminal justice system from the standpoint of process, decision-making, and goal-setting. Emphasis is on policy origin issues concerning rationalism, incrementalism, elitism, game theory, and power group competitions.

#### **CRIJ 5309 - Seminar in Criminal Justice Administration**

Using case study as its principal methodology and moving from theoretical propositions to practical considerations, this course examines a range of concepts developed in the managements and organization literature as applied in the administration of criminal justice agencies. A criminal justice system perspective is achieved by examining selected issues involving the administration of police departments, prosecutors' and public defenders' offices, jails and prisons, and probation and parole offices. Particular emphasis will be placed on leadership and workplace issues.

#### **CRIJ 5310 - Topics in Criminal Justice**

Study of current significant and controversial issues which affect the criminal justice system.

#### **CRIJ 5313 - Contemporary Issues in Corrections**

An analytical examination of current issues in corrections, including those applicable to American jails and prisons, probation, parole, and correctional programs both within correctional institutions and in the community.

**CRIJ 5332 - Law Enforcement: Environment and Practice**

An advanced examination of policing strategies and programs and their related applications in the larger criminal justice system. Emphasis will be placed on using empirical methods to examine the effectiveness of contemporary policing practices from a variety of theoretical perspectives.

**CRIJ 5336 - Administrative Ethics**

A study of ethical issues facing public and criminal justice administrators. Issues include the development of value systems, the nature of public duty, the formulation of value-based decision making strategies, the importance of professional ethical standards, and the dangers of public corruption.

**CRIJ 5340 - Violence and Society**

A review of the causes, treatment and impact of violent behavior, particularly serial/chronic violence in American society. Domestic violence is included in the review. Biological, psychological and sociological causes will be analyzed and compared. Responses by the Criminal Justice System, the public, the media, health care system, etc. will be analyzed. Impact on and treatment for victims, both adults and children, will be included.

**CRIJ 5370-5371 - Internship**

Supervised work experience with a criminal justice agency in which the student spends a minimum of 150 hours during the semester under joint supervision of the agency and the University.

Prerequisite: graduate standing in criminal justice and approval of the department chair.

**CRIJ 5394 - Thesis**

Selection of a research topic and development of a thesis proposal.

Prerequisite: consent of advisor.

**CRIJ 5395 - Thesis**

Completion and approval of thesis.

Prerequisite: CRIJ 5394, or concurrent enrollment, and consent of advisor.

**CRIJ 5396 - Research Methods**

This course focuses on research design and methodology as they are commonly implemented in administrative or agency settings. Included among the topic areas are experimental design, sampling, hypothesis testing, quantitative data analysis, introduction to statistics and computerized analysis.

**CRIJ 5397 - Advanced Social Science Analysis**

Examines common methods of data analysis and presentation with attention to computerized applications. Emphasis on the application of statistics in social science research.

Prerequisite: CRIJ 5396.

## ECOM - Communication - Executive Format

**ECOM 5312 - New Media Communication Law and Ethics**

A study of the latest developments in the major areas of communication law, including the First Amendment, libel, privacy, regulation of broadcast media and advertising, free press-fair trial issues, reporters' privilege, copyright, and other relevant areas. Special focus on emerging issues.

**ECOM 5313 - Trending Media Technologies**

This course will delve into the latest developments in communication technology uses in organizations and among audiences. This includes developments such as social media, mobile media and wearables. Students will develop a deeper understanding of content strategies and audience preferences.

**ECOM 5314 - Developing an Innovative Media Plan**

Students will discuss and develop entrepreneurial skills and techniques needed to research, develop and pitch a communication or media plan within organizations or for new start-up enterprises.

**ECOM 5315 - Crisis Communication and Media Relations**

This class focuses on developing and assessing crisis communication plans within an organization and then on delivering the message to audiences through existing and emerging media channels.

**ECOM 5316 - Survey in Healthcare Communication**

Students assess health care systems and the role of communication in shaping professional health care messages and public acceptance of these messages.

**ECOM 5317 - Healthcare Messages and Media Relations**

Healthcare messages present unique challenges for media professionals. Students will learn to identify and construct health-related and care-related messages and examine how the media handles such messages.

**ECOM 5318 - Survey in Public Sector Communication**

Students will review and appraise public sector organizations including governmental, non-profit and individual political actors and how their messages affect and influence public policy and public communication.

**ECOM 5319 - Image Design and Management**

Students will discover and implement methods for building, maintaining and communicating specific messages for individuals and organizations involved in the public sphere.

**ECOM 5320 - Survey in Corporate Communications**

Students will examine the role of communication in shaping professional corporate messages and public acceptance of these messages.

**ECOM 5321 - Organizational Communication Dynamics**

Students will assess and develop plans for improving interpersonal and group relations within an organization and between an organization and its external publics.

**ECOM 5322 - Current Communication Issues**

This course will engage students in the most immediate and relevant communication topics including, but not limited to, changes in audience behavior, message delivery methods, technological changes, and other issues related to communication innovation.

**ECOM 5623 - Capstone**

In this final class, students will research, develop, pitch and prepare for implementation an individualized and specific strategic communication or media project. The goal for each student is to leave this class and program with a strategic plan or project ready to be launched.

## ECON - Economics

**ECOM 5312 - New Media Communication Law and Ethics**

A non-technical introduction to the economic way of thinking. Economic concepts are developed and applied to decisions faced by consumers, workers, firms, and government. Will satisfy economics requirement for minors in the College of Business and Technology but not for business majors. May not be taken for program credit by economics majors.

**ECOM 2301 - Principles of Macroeconomics [TCCN: ECON 2301]**

This course covers the scope and methodology of macroeconomics. It examines the structure and functioning of the American economy in the context of globalization. It develops principles useful in understanding the origin and nature of recession, unemployment and inflation and it reviews monetary and fiscal policy tools for economic stabilization.

**ECON 2302 - Principles of Microeconomics [TCCN: ECON 2302]**

The course covers the scope and methodology of microeconomics. It explores economic principles to describe consumer and business firm behavior and the processes of price determination and resource allocation. It applies economic tools to select problems in competition, international trade and taxation.

**ECON 3305 - Comparative Economic Systems**

A survey of historical and contemporary methods of organizing a society's economic activity. The basic nature and ideology of capitalism and socialism are examined through case studies. Special attention is given to the current U.S., Russian, Chinese, and Japanese economies. Also recommended for majors in political science, social sciences, history and other non-business fields. Students may not receive credit for both ECON 2305 and 3305.

**ECON 3310 - Economic Issues In Public Policy**

The economic aspects of policy issues involving immigration, energy, budget deficits, free trade and defense are examined. The economic aspects of each are identified and policy options are evaluated.

**ECON 3311 - Money, Banking and the Federal Reserve System**

Introduction to the role of money in a market economy with special attention given to the commercial banking system and its relation to the Federal Reserve System.

Prerequisite: ECON 2301 and ECON 2302.

**ECON 3314 - Intermediate Microeconomic Analysis**

Examines the mechanics of price determination in different competitive environments as well as the impact of government policies involving subsidies, quotas, price ceilings and taxation. The implications of economic concentration and the application of anti-trust laws to preserve competition are also reviewed. ECON 2302.

Prerequisite: ECON 2301 and.

**ECON 3317 - Intermediate Macroeconomic Analysis**

A study of the basic elements of Keynesian economics and its implications for understanding and directing the national economy. Economic policy debates over the nature of inflation, growth, unemployment and international trade are explored with special attention being given to monetarism supply-side and rational expectations ideas.

Prerequisite: ECON 2301 and ECON 2302.

**ECON 3325 - Game Theory**

An introduction to game theory and its applications. The course will cover the basic analysis of simultaneous and sequential move games with perfect and imperfect information. In addition, the material includes a number of applications which illustrate how the use of game theory can help us to improve our understanding of many strategic situations frequently observed in economic, political, and social situations.

Prerequisite: ECON 2302 or instructor permission.

**ECON 4199-4699 - Independent Study**

Independent study in specific areas of economics not covered by organized undergraduate courses. A maximum of six credit hours for independent study may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**ECON 4310 - Central Banking and Monetary Policy**

Study of the Federal Reserve System from its inception to present. Topics include Federal Reserve history, organization and operation, monetary theory and policy, and the relationship between money and economic activity.

Prerequisite: ECON 2301 and ECON 2302.

**ECON 4320 - Managerial Economics**

Analytical approach to business decision-making. Primary attention is given to economic decision models and their application to business problems.

Prerequisite: ECON 2301 and ECON 2302. Recommended: six hours of math and three hours of statistics.

**ECON 4330 - International Trade**

A review of the rationale for trade between nations, the nature of trade balances, barriers, methods for resolving trade deficits, foreign exchange markets and international debt.

Prerequisite: ECON 2301 and ECON 2302.

**ECON 4340 - Economics of Growth and Development**

Strategies and policies for encouraging economic growth and development with special emphasis on the role of indigenous institutions. The status of less developed nations and the nature of the development process are reviewed.

**ECON 4345 - Health Economics**

An introduction to health economics, which uses economic analysis to study the structure and performance of the healthcare industry. The topics covered include individual behavior and the demand for healthcare, the production and costs of healthcare, information and health insurance markets, and the basic institutional features of the healthcare system in the United States. Finally, the economic analysis and institutional knowledge of the healthcare system are used to evaluate the performance of the healthcare system and analyze healthcare policy reforms.

Prerequisite: ECON 2302.

**ECON 4350 - Topics in Economics**

The study of a current national or international economic issue. May be repeated for credit when content changes.

Prerequisite: ECON 2301 and ECON 2302.

**ECON 4360 - Environmental Economics**

Concepts, tools of analysis, criteria and policy formulation related to areas of resource conservation and pollution abatement.

Prerequisite: ECON 2301 and ECON 2302.

**ECON 5199 -5699 - Independent Study**

Independent study in specific areas of economics not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied to a graduate degree.

Prerequisite: Consent of the economics advisor.

**ECON 5300 - Economic Concepts and Processes**

Elements of production costs, demand and market structures as well as income determination and monetary and fiscal policy. Will satisfy prerequisites calling for six hours of Principles of Economics. An introduction to economics for those without credit for Principles of Economics or who need a stronger background in Principles.

**ECON 5310 - International Economics**

Review of trade statements, systems for regulating balance of payments and currency exchange rate mechanisms. The nature and implication of foreign investment, trade barriers, and productivity are also considered.

Prerequisite: Six hours of principles of economics.

**ECON 5320 - Economics for Managers**

An introduction to the economic analysis most useful for managers. The material includes equilibrium analysis in competitive markets, basic optimization and analytical techniques useful for understanding the behavior and performance of a business, and selected topics in business strategy and the economics of organization.

Prerequisite: Enrollment in MBA program required.



**ECON 5330 - Central Banking and Monetary Policy**

Considers the nature of and the role played by central banks around the world. History and development of the Federal Reserve and its effectiveness are reviewed. Case studies in crisis management by central banks are examined.

Prerequisite: Six hours of principles of economics.

**ECON 5340 - Economics of Public Policy**

An analysis of current economic policy and its influence on output, employment, prices, and economic growth.

Prerequisite: Six hours of principles of economics.

**ECON 5660 - Fundamentals of the Free Enterprise System**

A study of the American free enterprise system. Includes an analysis of the role of free markets in the determination of prices and the allocation of resources, the profit motive, competition, and the interdependence of business, labor and government in the American economy. May not be taken for credit by candidates for the MBA degree or the master's degree in interdisciplinary studies. (Summer only)

**EDBE - Bilingual Education****EDBE 5338 - Science, Math, and Social Studies in Bilingual Education**

Study of methods and materials appropriate for teaching content areas in the language of the target population. Content includes development of vocabulary for instruction in Spanish, construction of lesson plans in the target language and implementation of appropriate strategies in field activities.

**EDBE 5376 - Reading and Language Arts in Bilingual Education**

Study of practical and theoretical approaches to providing effective reading and language arts programs to limited English proficient students, including dual language instruction.

**EDEC - Early Childhood Education****EDEC 5100 - Inservice Workshop**

This course is designed to provide the opportunity for groups of teachers to study specific educational problems in the early childhood area. Up to six semester hours of credit in inservice workshops may be used for degree requirements with the prior approval of the student's advisor.

**EDEC 5199-5699 - Independent Study**

Independent study in specific areas of early childhood education not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of department chair.

**EDEC 5200 - Inservice Workshop**

This course is designed to provide the opportunity for groups of teachers to study specific educational problems in the early childhood area. Up to six semester hours of credit in inservice workshops may be used for degree requirements with the prior approval of the student's advisor.

**EDEC 5300 - Inservice Workshop**

This course is designed to provide the opportunity for groups of teachers to study specific educational problems in the early childhood area. Up to six semester hours of credit in inservice workshops may be used for degree requirements with the prior approval of the student's advisor.

**EDEC 5302 - Research Project in Early Childhood Education**

Continuation of EDUC 5301. The student will complete an approved project under the direction of the instructor and student's advisor.

Prerequisite: EDUC 5301, advisor consent.

**EDEC 5310 - Integrating Nutrition Concepts into the Curriculum**

The selection and teaching of appropriate nutrition concepts to young children.

**EDEC 5327 - Contemporary Issues in Early Childhood Programs and Practices**

Investigation of current major issues related to young children. Emphasis will be on social, legal and criminal conditions which affect child rearing practices and educational programs for children.

**EDEC 5332 - The Care of Infants and Toddlers**

Observing and recording behavior and development during the first three years of life. Application of multidisciplinary theories of development to enhance age-appropriate experiences within home and institutional settings and analysis of current research are included. Field experience.

**EDEC 5335 - Developmental Language Experiences for Young Children**

A study of the developmental processes by which children attain language. Focus on the use of techniques and materials to promote communication skills from birth through eight years.

**EDEC 5337 - Creative Activities for the Young Child**

Use of art, dramatic play, music, and play media to develop the affective, cognitive, and psychomotor skills of children two through eight years of age.

**EDEC 5340 - Seminar in Early Childhood Education**

Techniques for encouraging the continuous growth and development of young children through the use of methods, materials, and activities. Students have the opportunity to study current problems and issues as well as to critically evaluate research in early childhood education.

**EDEC 5342 - Development of the Young Child**

Use of various methods of studying children with application of established principles to the solution of problems of behavior and learning. Field experience required.

**EDEC 5348 - Curriculum Development in Early Childhood**

In-depth study of basic principles underlying curriculum construction in early childhood. Emphasis will be on the selection and organization of activities and materials for use with young children.

**EDEC 5349 - Instructional Improvement in Early Childhood Education**

Innovative strategies and materials specifically related to meeting the individual learning needs of children three years of age through third grade in science, mathematics, and the social sciences.

**EDEC 5352 - Practicum in the Kindergarten**

Supervised teaching in the kindergarten. Includes observing, planning, conducting and evaluating learning experiences for young children.

Prerequisite: Nine semester hours in Early Childhood Education and consent of advisor.

**EDFB - Field-Based Education****EDFB 4338 - Literacy in the Content Areas (Grade 5-12)**

Focus on content literacy at the middle and secondary levels, includes particular emphasis on teaching and learning strategies that develop and refine students' literacy skills.

Prerequisite: Admission to the School of Education.

**EDGT - Gifted and Talented Education****EDGT 5354 - Overview of Gifted Education**

A study of education of gifted and talented students that includes historical overview of gifted education, definitions, terminology,

theories, models, and characteristics. In addition, identification and assessment procedures, program prototypes, and teacher characteristics are addressed.

**EDGT 5355 - Teaching the Gifted: Methods, Materials, and Curriculum**

A study of methods, materials, and curriculum for gifted and talented students. Content consists of the scope and sequence in gifted programs, adaptations for individual differences, organization of thematic interdisciplinary content, and teaching higher level cognitive skills, creative thinking, problem solving, critical thinking, logical thinking, and decision making.

**EDGT 5360 - Seminar: Guidance of Gifted and Talented Students**

A study of counseling and guidance of gifted students that includes differential affective characteristics of gifted and talented students, guidance techniques, communications with parents and teachers of gifted, and school role in psycho-social development.

**EDGT 5362 - Creativity: Theories, Models, and Applications**

A study of creativity in relation to development of programs for gifted and talented students. Topics include instruments and techniques for identifying creativity, theories and models of creativity, instructional strategies for enhancing creativity, problems of creatively gifted, and evaluation of creative performance and product.

**EDGT 5370 - Practicum in Gifted and Talented**

Provides students with opportunities to experience educational programs with exceptional children and youth directly related to potential professional goals. Clinical experience provided.

Prerequisite: EDGT 5354, 5355, 5360, 5362, and consent of instructor.

## EDIN - Educational Internship

**EDIN 5320 - Internship in Special Education**

This one-year field-based experience provides candidates opportunities for development of competencies in implementing an individual program for exceptional learners in grades PK-12. The intern teaches under the supervision of a public school mentor and a university faculty member. This course may not be used to meet graduate degree requirements. CR/NC only.

**EDIN 5321 - Internship in Special Education**

This one-year field-based experience provides candidates opportunities for development of competencies in implementing an individual program for exceptional learners in grades PK-12. The intern teaches under the supervision of a public school mentor and a university faculty member. This course may not be used to meet graduate degree requirements. CR/NC only.

Corequisite: EDUC 4057; Completion of all professional development courses and all EDUC courses with a minimum 2.5 GPA, and an appropriate undergraduate degree.

**EDIN 5380 - Internship in Student Teaching in Elementary School**

Provides the intern teacher with an opportunity to demonstrate identified competencies in an elementary classroom. The intern will be under the supervision of a mentor teacher and university supervisor with scheduled seminars. CR/NC only.

**EDIN 5381 - Internship in Student Teaching in Elementary School**

Provides the intern teacher with an opportunity to demonstrate identified competencies in an elementary classroom. The intern will be under the supervision of a mentor teacher and university supervisor with scheduled seminars. CR/NC only.

Corequisite: EDUC 4057; completion of all professional development courses with a minimum of 2.5 GPA, and an appropriate undergraduate degree.

**EDIN 5385 - Internship in Grades 4-8**

Provides intern teacher with an opportunity to demonstrate identified competencies in an intermediate grade (Grades 4-8) classroom. The intern serves under the supervision of a mentor teacher and a university supervisor with scheduled seminars. CR/NC only.

**EDIN 5386 - Internship in Grades 4-8**

Provides intern teacher with an opportunity to demonstrate identified competencies in an intermediate grade (Grades 4-8) classroom. The intern serves under the supervision of a mentor teacher and a university supervisor with scheduled seminars. CR/NC only.

Corequisite: EDUC 4057; completion of all professional development courses with a minimum of 2.5 GPA, and an appropriate undergraduate degree.

**EDIN 5390 - Internship in Student Teaching in Secondary School**

Provides the intern teacher with an opportunity to demonstrate identified competencies in a secondary classroom. The intern will be under the supervision of a mentor teacher and university with scheduled supervisor seminars. CR/NC only.

**EDIN 5391 - Internship in Student Teaching in Secondary School**

Provides the intern teacher with an opportunity to demonstrate identified competencies in a secondary classroom. The intern will be under the supervision of a mentor teacher and university with scheduled supervisor seminars. CR/NC only.

Corequisite: EDUC 4057; completion of all professional development courses with a minimum of 2.5 GPA, and an appropriate undergraduate degree.

## EDLR - Educational Leadership and Policy Studies

**EDLR 5100 - In-service Workshop**

This course is designed to provide opportunities for groups of educators to study specific topics and problems in the area of educational administration. Up to six semester hours of credit in Inservice Workshop may be used for degree and certification requirements with prior approval of the student's advisor.

**EDLR 5199-5399 - Independent Study**

This course provides an opportunity for the graduate student to conduct an in-depth study in a specific area of educational leadership not covered by organized graduate courses. A maximum of six hours of independent study courses may be applied toward a graduate degree and certification in educational leadership.

Prerequisite: Consent of department chair.

**EDLR 5200 - In-service Workshop**

This course is designed to provide opportunities for groups of educators to study specific topics and problems in the area of educational administration. Up to six semester hours of credit in Inservice Workshop may be used for degree and certification requirements with prior approval of the student's advisor.

**EDLR 5270 - Practicum in the Principalship I**

A minimum of 80 clock hours of practical experience as a school administrator in the area of developmental supervision. Must be taken concurrently with EDLR 5311 and EDLR 5349.

**EDLR 5271 - Practicum in the Principalship II**

A minimum of 80 clock hours of practical experience as a school administrator conducting an applied research study in a critical issue in educational leadership. Must be taken concurrently with EDLR 5320 and EDLR 5333.

**EDLR 5272 - Practicum in Principalship III**

A minimum of 80 clock hours of practical experience as a school administrator in a school setting. Experience guided and supervised by university and school administrator. Must be taken concurrently with EDLR 5330 and EDLR 5337.

**EDLR 5300 - In-service Workshop**

This course is designed to provide opportunities for groups of educators to study specific topics and problems in the area of educational administration. Up to six semester hours of credit in Inservice Workshop may be used for degree and certification requirements with prior approval of the student's advisor.

**EDLR 5310 - Educational Leadership Theory and Practice**

An overview of school administration, including economic, political, and societal influence. Must be taken concurrently with EDLR 5313.

**EDLR 5311 - Developmental Supervision**

An advanced course in school personnel supervision for building principals. This course specifically builds on the concepts of the state mandated Instructional Leadership Development model. Must be taken concurrently with EDLR 5270 and EDLR 5349.

**EDLR 5313 - Critical Issues in Educational Leadership**

An inquiry into critical issues in educational leadership. This course engages students in a systematic exploration of critical issues in educational leadership through a formal inquiry-based approach. Must be taken concurrently with EDLR 5310.

**EDLR 5315 - Instructional Leadership Development**

A study of the State Instructional Leadership Development program as it pertains to the principalship. Meets the State requirement as a prerequisite for the Professional Development Appraisal System (PDAS).

**EDLR 5320 - School Law**

An overview of school law for educators addressing legal issues that impact the operation of public schools. Must be taken concurrently with EDLR 5271 and EDLR 5333.

**EDLR 5330 - The Principalship**

An examination of the role and responsibilities of the principal as a leader in the elementary, middle, and/or secondary school. Must be taken concurrently with EDLR 5272 and EDLR 5337.

**EDLR 5333 - Administration of Special Programs in Schools**

An overview of various instructional and support programs examining federal, state and local implications for educational leaders. Must be taken concurrently with EDLR 5271 and EDLR 5320.

**EDLR 5337 - School Building Operations**

The skills of principals and assistant principals to effectively operate a school will be addressed. Skills will include the financial and personnel operations in the day-to-day functioning of a school. The associated laws and their practical application to these functions will be stressed. Emphasis will be on applied skills and practical applications. Must be taken concurrently with EDLR 5272 and EDLR 5330.

**EDLR 5340 - The Administrator and Community Relations**

An advanced course in educational leadership designed for optimizing a campus or school district's ability to further the objectives of the institution by creating partnerships with all stakeholders.

**EDLR 5349 - Leadership in the Restructured School**

An in-depth investigation into contemporary literature and case studies of advanced concepts in organizational leadership, learning and change. Students will create and design advanced learning organizations in order to facilitate the change necessary to restructure schools and learning. Must be taken concurrently with EDLR 5270 and EDLR 5311.

**EDLR 5350 - Personnel Administration**

Study of the administrator's role in recruiting, selecting, assigning, training, and evaluating staff. Such topics as personnel policy, salary schedules, fringe benefits, contractual practices and procedures, and academic freedom are considered.

**EDLR 5360 - The School Superintendent**

This course focuses on an examination of the role of the school superintendent in the public schools. Special attention is given to the leadership responsibility of the school superintendent.

**EDLR 5375 - Practicum in the Superintendency**

A field based course to provide superintendent candidates with on-the-job experiences. Requires assignment in a local school district and commitment of superintendent to supervise the practicum. Prerequisite: Recommendation of faculty advisor.

**EDLR 5453 - School Finance**

A course designed to address the basic concepts of public school finance from a national and state perspective.

**EDLR 5458 - School Facilities**

A course designed for school administrators whose responsibilities include school plant planning and management. Topics include using and maintaining existing school facilities, and the planning, designing, constructing of new school facilities.

## EDSP - Special Education

**EDSP 3351 - Managing and Instructing Diverse Learners**

An orientation to the field of special education and student diversity, including characteristics of individuals with special needs, cultural and/or linguistic differences, gifts and talents, and appropriate services for each population. Includes effective discipline models and behavior modification principles for managing diverse student populations. Prerequisite: EPSY 3340. Corequisite: EDUC 4320.

**EDSP 4199-4399 - Independent Study**

Independent study in specific areas of education of exceptional children not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**EDSP 5100-5300 - Inservice Workshop**

Designed to provide the opportunity for groups to study specific educational problems related to exceptional learners. Credit in no more than six semester hours of inservice workshops may be used for degree requirements with the prior approval of the department chair.

**EDSP 5199-5399 - Independent Study**

Independent study in specific areas of special education not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of department chair.

**EDSP 5350 - Overview of Special Education (Birth -21)**

An advanced study of the history, philosophy, and structure of educational programs for learners with exceptionalities from birth through 21 with emphasis on federal and state regulations affecting special education. Addresses educational, medical, psychological, and social factors specific to individuals with disabilities.

**EDSP 5352 - Infants and Young Children**

A study of characteristics and learning needs of infants and young children with disabilities. Includes early identification related to motor behavior, adaptive behavior, communication, and personal-social behavior, as well as interaction and management techniques.

**EDSP 5357 - Practicum in Special Education**

Provides student with opportunities to experience educational programs with individuals with disabilities directly related to potential professional goals. Clinical experience provided.

Prerequisite: EDSP 5364, EDSP 5366, EDSP 5368 and PSYC 5366, or instructor consent.

**EDSP 5360 - Seminar: Learning and Neurological Disabilities**

A study of the behavioral, motor, and learning characteristics of individuals with learning and neurological disabilities.

**EDSP 5361 - Overview of Transition Services**

The purpose of this course is to provide an overview of transition education and services for individuals with disabilities from childhood through adulthood (birth to 21). Emphasis is placed on identification and documentation of transition skills, collaboration with key stakeholders and curriculum.

**EDSP 5362 - Adolescents and Adults with Disabilities**

A study of the characteristics and learning needs of the adolescent and adult with disabilities including career and vocational alternatives, transition, and inter-agency cooperation.

**EDSP 5363 - Behavioral Disorders**

A study of the psychology of disruptive behavior, including definitions, characteristics, identification, and academic and social interventions for managing behavior. Consideration is given to functional behavioral assessments, behavioral intervention plans, Positive Behavioral Support, and other major approaches for changing behavior

**EDSP 5364 - Seminar: Assessment in Special Education**

Detailed study of test construction and test administration. Includes instruction and clinical experience in the administration and interpretation of individual standardized achievement tests.

**EDSP 5365 - Developmental Testing**

Examines approaches to assessing the academic readiness and aptitude of preschool, elementary and secondary children in terms of developmental level and intellectual functioning. Special emphasis will be given to supervised practice in the administration, scoring, and interpretation of results from selected assessment instruments.

Prerequisite: Experience with or course work on standardized testing.

**EDSP 5366 - Seminar: Full Individual Evaluation**

A study of major standardized instruments utilized in the full individual evaluation of language, sociological, physical and behavioral/emotional areas, intellectual functioning and adaptive behavior, educational achievement, and learning competencies. Clinical and field experience in administration, scoring and interpretation, comparisons with intellectual functioning for determining the existence of a handicapping condition, report writing and educational prescriptions are included.

Prerequisite: EDSP 5364 and PSYC 5366.

**EDSP 5368 - Seminar: Educational Strategies for Special Education**

Presentation and application of major educational strategies for individuals with disabilities. Includes investigation of methodology, materials, state-mandated assessments, and augmentative/assistive technology; application of current teacher evaluation system with special educational programs. Clinical experience included.

Prerequisite: EDSP 5364 and additional 12 semester hours in special education, or consent of department chair.

**EDSP 5369 - Severe/Profound and Multiple Disabilities**

A study of the major characteristics and instructional concerns of students manifesting severe/profound or multiple disabilities. Course examines current principles and practices in the development and implementation of educational and vocational curricula and programming for children and youth with these disabilities. Field experience included.

**EDSP 5370 - Learning Theory as Applied to Individuals with Disabilities**

Investigation of major learning theories and consultation applied to programs for individuals with disabilities.

**EDSP 5731 - Individual Assessment of Cognitive Functioning**

This course is designed to acquaint students with the theory, problems, ethical standards, and techniques of administering individual tests of intelligence. Specifically, each student will learn to administer, score, and interpret tests and use the results to design educational programs.

Prerequisite: EDSP 5364.

**EDSP 5378 - Administrative and Legal Issues in Special Education**

An in-depth study of federal and state education laws, court cases, related legal issues affecting special education. Content includes legal/administrative responsibilities inherent in special education program planning and development, alternative program formats, funding sources, consultation, and communication techniques.

## EDUC - Education

**EDUC 1301 - Introduction to the Teaching Profession**

Orientation to the teaching profession. Students participate in field observations at all levels of P-12 schools with varied and diverse student populations. Introduction to and analysis of the culture of schooling and classrooms. Course includes a 16-hour field component.

**EDUC 2301 - Introduction to Special Populations**

Introduces learning theory and provides an overview of schooling and classrooms from the perspectives of language, gender, socioeconomic status, ethnic, academic diversity, and equity with an emphasis on factors that facilitate learning. Provides students with opportunities to participate in early field observations of P-12 special populations. Course includes a 16-hour field component.

**EDUC 3220 - Teaching Skills and Classroom Management I**

Designed to provide pre-service elementary teachers with the opportunity to acquire skills for effective planning, implementing, and evaluating instruction. It will also present strategies available for management, communication, and discipline at the introductory level.

Prerequisite: Admission to the School of Education. .

**EDUC 3312 - Language and Literacy Acquisition**

Theories of language and literacy development in young children and English Learners. Explores ways educators can enhance language and literacy development through age appropriate, research-based approaches in diverse classrooms.

**EDUC 3313 - Integrating Arts and Movement**

Current theory and practice in an integrated arts and movement education curriculum for elementary classroom teaching. Subject matter will include teaching content through the arts and movement.

**EDUC 3356 - Instructional Programs for Students with Moderate and Severe Disabilities**

Instructional techniques for use with learners with moderate and severe disabilities. This course addresses assessment and instructional methods, accommodations, adaptations, strategies, and materials appropriate for teaching individuals with moderate and severe disabilities.

Prerequisite: EDUC 2301 or equivalent. Admission to the School of Education and approval for Phase III.

### **EDUC 3363 - Managing Classrooms and Behavior in School Settings**

A study of classroom management and disruptive behavior, including definitions, characteristics, identification, and academic and social interventions for manage instructional environments and the behavior of students with diverse needs.

Prerequisite: Admission to the School of Education. Must have completed the EC-6 Core Curriculum.

### **EDUC 4057 - Student Teaching Seminar**

Demonstration of synthesis of the preservice teacher's knowledge and skills through reflective activities, review of learner-centered proficiencies, classroom management, and a review of certification competencies. A culminating experience that prepares students for the required State exams. CR/NC only.

Corequisite: Enrollment in student teaching or internship.

### **EDUC 4058 - Educational Aide Internship**

Demonstration of knowledge and skills as applied in the classroom in which the pre-service teacher serves as an aide rather than during a traditional student teaching experience. CR/NC only.

Corequisite: Enrollment in Phase III Professional Education courses and EDUC 4057.

### **EDUC 4160-4360 - Special Topics**

Thorough explorations of topics of substantial interest in education. Special topics courses may be repeated up to 9 semester credit hours if topics vary.

Prerequisite: Instructor consent.

### **EDUC 4199-4699 - Independent Study**

Independent study in specific areas of education not covered by organized undergraduate courses. A maximum of six credit hours may be applied toward an undergraduate degree.

Prerequisite: Consent of Director of School of Education.

### **EDUC 4301 - Mathematical Problem Solving in EC6**

Topics in teaching mathematical content in EC6 classrooms through mathematical problem solving techniques such as problem- and project-based instruction.

Prerequisite: MATH 1350.

### **EDUC 4312 - Teaching Social Studies in the Middle and High School**

Study of social studies curriculum, materials, and selected instructional models. Field experience required.

Prerequisite: Successful completion of all Phase II courses.

### **EDUC 4315 - Teaching Language Arts in the Middle and High School**

Study of language arts curriculum, materials, and selected instructional techniques in the middle and high school. Field experience required.

Prerequisite: Successful completion of all Phase II courses.

### **EDUC 4320 - Teaching Skills for the Intermediate and Secondary Teacher**

Designed to provide preservice intermediate and secondary teachers with the opportunity to acquire skills of effective planning, implementing, and evaluating instruction.

Prerequisite: Admission to the School of Education.

### **EDUC 4321 - Integrating Technology in the Classroom**

Examines ways in which technology can be integrated in educational settings to enhance teaching and learning. Maximizes the opportunity for hands-on learning.

### **EDUC 4322 - Teaching Skills in EC-6**

Provides preservice elementary teachers with the opportunity to acquire skills for effective planning, implementing, and evaluating instruction. Field experience required.

Prerequisite: Admission to the School of Education. Must have completed the EC-6 Core Curriculum. .

### **EDUC 4334 - English Language Learners**

Examines characteristics of English Learners (ELL) and English as a Second Language (ESL) teaching methodologies in relation to children's cognitive and linguistic development in multilingual school settings.

Prerequisite: Admission to the School of Education and approved for Phase III.

### **EDUC 4335 - Classroom Management**

This course advances secondary/all-level students' understanding of strategies for classroom management in the secondary/all-level classroom.

Prerequisite: EDUC 4320 and successful completion of field for Phase II.

### **EDUC 4360 - Special Topics**

Thorough explorations of topics of substantial interest in education. Special topics courses may be repeated for up to 9 semester credit hours if topics vary.

Prerequisite: Instructor consent.

### **EDUC 4365 - Assessment for Instruction**

A study of assessment in education. Includes formal and informal assessment procedures, due process, procedural safeguards, and parents' rights. Clinical experience included.

Prerequisite: Admission to the School of Education. Must have completed the EC-6 Core Curriculum.

### **EDUC 4369 - Instructing Diverse Learners**

Presentation and application of instructional and behavioral strategies for individuals with special learning needs. Investigation and application of differentiated instruction and data-based decision making associated with the education of diverse and special learners. Clinical experience required.

Prerequisite: Admission to the School of Education. Must have completed the EC-6 Core Curriculum. .

### **EDUC 4376 - Collaborating with Families and Community**

A study of techniques for collaborating and consulting with professionals and parents. Addresses effective communication, teaming, collaboration in problem solving, and working with diverse families.

Prerequisite: Admission to the School of Education and successful completion of Phase III.

### **EDUC 4377 - Acquisition and Development of English as a Second Language**

Emphasis will be on theories of language acquisition and the resulting effects on communication. It will provide students with a foundation of ESL, including first- and second-language development stages, theories, communication strategies and program models.

### **EDUC 4378 - Methodology of Teaching English as a Second Language**

Theoretical foundations of second language instruction and approaches to teaching ESL students. Will include methodologies appropriate for teaching ESL through a variety of content areas, how to develop appropriate lessons to address the needs of ESL students and how to assess English development.

Prerequisite: Admission to the School of Education.

### **EDUC 4387 - Practicum in Teaching English as a Second/Foreign Language**

Internship-like experience for prospective teachers of learners of English. Student will be under the supervision of ESL faculty and an

administrator at the location where English is taught to children or adults. Course can be offered as a Study Abroad course.  
Prerequisite: EDUC 4377 and EDUC 4378.

#### **EDUC 4640 - Student Teaching EC-12**

This one semester experience will provide pre-service teachers with an opportunity to demonstrate identified competencies in the classroom. The student works under the cooperative supervision of a public school teacher and a university supervisor.  
Prerequisite: Successful completion of all Phase III or Block 3 courses.

#### **EDUC 5100 - Inservice Workshop**

This course is designed to provide instruction for groups of teachers who wish to study specific educational problems in the education area. Up to six semester hours of credit of inservice workshops may be used for degree requirements with the prior approval of the student's advisor.

#### **EDUC 5115 - Practicum in Classroom Teaching**

Supervised practicum in classroom teaching. Application of foundational and pedagogical skills and knowledge in content area teaching. CR/NC only.

Prerequisite: Advisor approval.

#### **EDUC 5199-5699 - Independent Study**

Independent study in specific areas of education not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of Director of School of Education.

#### **EDUC 5200 - Inservice Workshop**

This course is designed to provide instruction for groups of teachers who wish to study specific educational problems in the education area. Up to six semester hours of credit of inservice workshops may be used for degree requirements with the prior approval of the department chair.

#### **EDUC 5300 - Inservice Workshop**

This course is designed to provide instruction for groups of teachers who wish to study specific educational problems in the education area. Up to six semester hours of credit of inservice workshops may be used for degree requirements with the prior approval of the department chair.

#### **EDUC 5301 - Research Methods for the Behavioral Sciences**

Study of basic research techniques and methodologies in the behavioral sciences.

#### **EDUC 5302 - Research Project in Curriculum and Instruction**

Continuation of EDUC 5301. The student will complete an approved project under the direction of the designated faculty advisor.

Prerequisite: Formal admission to graduate program, EDUC 5301, consent of advisor.

#### **EDUC 5303 - Applied Learning Theories**

Emphasis on understanding and analyzing contemporary learning theories and their application to educational situations.

Prerequisite: At least three semester hours of undergraduate educational psychology or equivalent.

#### **EDUC 5305 - Secondary School Teaching**

Basic concepts of goal-referenced instruction, diagnosis, evaluation, understanding learners, and applying psychological principles in classrooms.

Prerequisite: EPSY 3340.

#### **EDUC 5306 - Selected Topics in Education**

This course can be taken up to three times for credit when content changes. Offered every Fall, Spring, and Summer.

#### **EDUC 5308 - Current Issues in Education**

Investigation of current issues facing the educational scene. Becoming aware of the new philosophical trends that are more obvious in both

public schools and colleges, attitude and attitude change which affect the structure of the modern student and, of necessity, modify the curriculum and physical plant of the schools. Criticism, conflict, and change will relate to the social, political, legal, technical, and operational dimensions as they revolve about the educational community.

#### **EDUC 5312 - Aerospace Education**

Provides teachers with the opportunity to learn how to make the subject of flight, both within and outside of the earth's atmosphere, relevant to the classroom at all grade levels. Emphasis is placed on the planning of classroom activities, and includes the acquisition of appropriate materials, films, and literature from both government and private sources.

#### **EDUC 5320 - World Wide Web Applications**

Using the resources of the World Wide Web to enhance classroom instruction and learning.

Prerequisite: Consent of Instructor.

#### **EDUC 5335 - Approaches to Classroom Management and Discipline**

Study of managerial dimensions of teaching. Skill development in management, discipline and communication.

#### **EDUC 5342 - Instructional Improvement in Secondary School Mathematics**

Emphasis of updating instructional abilities in secondary mathematics including diagnosis, alternative teaching strategies, and evaluation.

Prerequisite: Secondary teaching experience in mathematics.

#### **EDUC 5348 - Instructional Improvement in Elementary School Mathematics**

Emphasis on updating instructional abilities in elementary mathematics including diagnosis, alternative teaching strategies, and evaluation.

Prerequisite: Elementary teaching experience.

#### **EDUC 5349 - Instructional Improvement in Elementary School Science**

Emphasis on updating instructional abilities in elementary science. Process teaching approaches will be emphasized.

Prerequisite: Elementary teaching experience.

#### **EDUC 5351 - Assessment in Educational Settings**

Analysis and application of elements of pre- and post-assessment in educational settings including learning products and processes, learning environments and instructional decisions.

#### **EDUC 5352 - Curriculum Foundations**

Theory and design of curriculum materials.

#### **EDUC 5356 - Education That Is Multicultural**

Application of the concepts of multicultural curriculum, instructional methodology and fundamental educational commitments in the total school setting. Includes a study of the development of ethnic studies, multicultural education and education that is multicultural.

#### **EDUC 5359 - Educational Technology**

This introductory graduate educational technology course is for individuals who want a broad practical course in learning how to integrate emerging technologies into elementary and secondary classrooms. Students will take a constructivist approach to understanding educational technology as articulated in the National Educational Technology Standards for Teachers.

#### **EDUC 5370 - Historical and Philosophical Foundations of American Education**

A survey of major historical and philosophical eras and themes that influenced American education. Major educational contributions of other civilizations will be examined as they pertain to the development of American educational thought.

**EDUC 5372 - Models of Teaching**

Teaching methodology for secondary teaching disciplines, curriculum, materials, and instructional models.

Prerequisite: Admission to the Graduate School or Post Baccalaureate Teacher Certification.

**EDUC 5383 - Acquisition and Development of English as a Second Language**

Advanced study of theories of language acquisition and the resulting effects on the teaching process. First and second language developmental sequences and the growing body of literature in the field will be stressed. Students tutor a limited English-proficient student for a minimum of 15 hours.

**EDUC 5384 - Methodology of Teaching English as a Second Language**

Advanced study of the theoretical foundations of second-language instruction. Includes research based methodologies appropriate for teaching ESL through a variety of content areas, appropriate lessons to address the needs of ESL students and how to assess students' academic English development.

**EDUC 5387 - Practicum in Teaching ESL**

English as a Second Language experience for prospective teachers to demonstrate identified competencies in the classroom. Student will be under the supervision of ESL faculty and an administrator where English is taught to children or adults. Course can be offered as a Study Abroad course.

**EDUC 5640 - Clinical Teaching in EC-12**

This semester experience provides preservice teachers with an opportunity to demonstrate identified competencies in the classroom. The student works under the cooperative supervision of a public school teacher and a university supervisor. This course may not be counted for graduation requirements.

**EDUT - UTeach****EDUT 1170 - Step 1: Inquiry Approach**

An introduction to the theory and practice that is necessary to design and delivery inquiry-based science and mathematics instruction in elementary and middle schools. Five hours of field experience are required for this course.

**EDUT 2170 - Step 2: Inquiry-Based Lessons**

An introduction to theory and practice that is necessary to design and deliver inquiry-based mathematics and science instruction in an elementary and middle school. Five hours of field experience are required for this course.

**EDUT 3370 - Knowing & Learning Mathematics and Science**

Psychological foundations of learning; problem solving in mathematics and science education utilizing technology; principles of expertise and novice understanding of subject matter; implications of high stakes testing; and foundations of formative and summative assessment.

**EDUT 3371 - Classroom Interactions**

Principles of delivering effective instruction in various formats (lecture, lab activity, collaborative settings); examination of gender, disability, class, race, and culture in mathematics and science education; overview of policy related to mathematics and science education. Thirty hours of field experience are required for this course.

**EDUT 4170 - Apprentice Teaching**

Course objectives and activities are aligned with the State Board for Educator Certification's Learner Centered Proficiencies. The Apprentice Teachers demonstrate that they meet the state standards by preparing and submitting a final portfolio. Course activities also aid Apprentice Teachers in preparing for the TExES examination.

Corequisite: EDUC 4640.

**EDUT 4370 - Project-Based Instruction**

Foundation of project-based, case-based, and problem-based learning environments; principles of project-based curriculum development in mathematics and science education; classroom management and organization of project-based learning classrooms. Thirty hours of field experience required.

Prerequisite: EDUT 3371.

**EENG - Electrical Engineering****EENG 1301 - Engineering the Future**

An introduction to the electrical engineering profession, disciplines, and careers. Covers basic principles of electric circuits, power systems, electronics, communications, and computer engineering. Also, familiarization with electrical engineering tools, software packages and equipment. Team design project, integrated weekly lab. Two hours of lecture and three hours laboratory each week.

**EENG 2101 - MATLAB for Engineers**

An introduction to engineering problem solving in MATLAB; MATLAB environment; MATLAB functions; matrix computations; graphing and plotting data; numerical techniques. One hour of lecture with integrated lab.

**EENG 3104 - Linear Circuits Analysis I Lab**

Introduction to principles and operation of basic laboratory equipment; engineering report preparation; design and implementation of experiments based on DC and AC circuit theory, network theorems, time and frequency domain circuit analysis. One three-hour laboratory per week.

Prerequisite: Prerequisite or Corequisite EENG 3304.

**EENG 3106 - Electronics Circuits Analysis I Lab**

Circuit applications of operational amplifiers; circuit effects of non-ideal characteristics of operational amplifiers; diode characteristics; diode circuits and applications; BJT and MOSFET IV characteristics; low frequency transistor amplifier analysis and characterization. One three-hour laboratory per week. Prerequisite or

Corequisite: EENG 3306.

**EENG 3302 - Digital Systems**

Boolean algebra, logic gates; number systems and codes; combinational logic; sequential logic; design of logic circuits; analog-digital interface; memory devices. Two hours of lecture and one three-hour lab per week.

**EENG 3303 - Electromagnetic Fields**

Vector analysis; static electric fields; steady electric currents; static magnetic fields; time varying fields and Maxwell's equations; plane electromagnetic waves; transmission lines; introduction to waveguides; introduction to antennas. Three hours of lectures per week.

Prerequisite: MATH 3404, MATH 3305, and PHYS 2326/2126.

**EENG 3304 - Linear Circuits Analysis I**

Basic circuit elements (resistance; inductance, mutual inductance, capacitance, independent and controlled voltage and current sources). Topology of electrical networks; Kirchhoff's laws; node and mesh analysis; dc analysis; introduction to operational amplifiers; complex numbers; sinusoidal steady-state ac circuit analysis; AC Power; first and second-order circuits; transient analysis of first-order circuits. Three hours of lecture per week.

Prerequisite: EENG 1301. Prerequisite or Corequisite: MATH 3305 and PHYS 2326/PHYS 2126.

**EENG 3305 - Linear Circuits Analysis II**

Laplace transform and its application to circuit analysis and design; generalized transient response; convolution in time and frequency domain; transfer functions; frequency response and Bode plots;

frequency selective circuits - passive and active filter design; Fourier series; Fourier transform; two-port networks; balanced 3-phase ac circuits. Three hours of lecture per week.

Prerequisite: EENG 3304, MATH 3305, MATH 3404, and COSC 1436.

### **EENG 3306 - Electronic Circuit Analysis I**

Generalized amplifier models; two-port networks; applications of operational amplifiers; non-ideal characteristics of operational amplifiers; electrical characteristics, small-signal models and applications of diodes; bipolar junction transistors, and FETs; amplifier analysis and design; limitations of small-signal models.

Prerequisite: EENG 3304, EENG 3104 and CHEM 1311/CHEM 1111.

### **EENG 3307 - Microprocessors**

Microprocessor architecture, programming and interfacing. Introduction to assembly language programming; microcomputers, microcontrollers, instruction set, chip interfacing, addressing modes, interrupts, input/output, communication. Three hours of lecture per week with integrated laboratory sessions.

Prerequisite: EENG 3302 and COSC 1436.

### **EENG 4109 - Electronic Circuit Analysis II Lab**

Structure of a simple operational amplifier; active filters; feedback concepts and oscillators; small-signal analysis; introduction to nonlinear electronic circuits; transfer characteristics of CMOS digital circuits; introductory LabVIEW programming. One three-hour lab per week.

Prerequisite or

Corequisite: EENG 4309.

### **EENG 4110 - Electric Power Systems Lab**

Electric power circuit measurements; power transformer characteristics; synchronous machine characteristics, induction motor characteristics; and DC machine characteristics; transmission lines characteristics. One three-hour laboratory per week.

Prerequisite: Prerequisite or Corequisite: EENG 4310.

### **EENG 4115 - Senior Design I**

Establishment of goals and planning and proposal phases of a capstone design project required of all seniors in Electrical Engineering. Includes the selection of a suitable project, an analysis of the design problem, the planning required to reach the desired goals, the preparation of a project preliminary design document, and preparation and delivery of an oral presentation. Projects are defined in cooperation with representatives from industry when possible. Three hours of Design Studio Lab per week.

Prerequisite: ENGR 3314, EENG 4309, and EENG 4109. Prerequisite or co-requisite: SPCM 1315.

### **EENG 4199-4399 - Independent Study**

Independent study in a specific advanced area of electrical engineering not covered by organized courses. May be repeated as content changes. A maximum of six (6) hours may be used for undergraduate credit on the degree plan if topics vary.

Prerequisite: Consent of Instructor and Department Chair.

### **EENG 4302 - Instrumentation and Measurement Systems**

An introduction to instrumentation and measurement systems. Generalized instrument characteristics, signal conditioning, and sensors for measurement of various physical quantities. Three hours of lecture per week. Prerequisite or

Corequisite: EENG 4309.

### **EENG 4308 - Automatic Control Systems**

Introduction to automatic control systems; mathematical models of physical systems; block diagrams and signal flow graphs; transient and steady state responses; P, PI, PD, and PID controllers; stability of linear feedback systems; root-locus and Routh's criteria; frequency response methods; Nyquist and Bode plots; stability margins; state-variable formulation of dynamic systems.

Prerequisite: EENG 2101, EENG 3305 (or EENG 3304 for non-EE) and MATH 3305.

### **EENG 4309 - Electronic Circuits Analysis II**

CMOS digital circuits; structure of operational amplifiers; feedback concepts; oscillators; small-signal analysis; load-line analysis; introduction to nonlinear electronic circuits. Three hours of lecture per week.

Prerequisite: EENG 3305 EENG 3306, and EENG 3106.

### **EENG 4310 - Electric Power Systems**

Principles of electromechanical energy conversion; transformers; induction motors; synchronous machines; direct current (DC) machines; fundamentals of power system modeling; introduction to power flow analysis; introduction to fault analysis Three hours of lecture per week.

Prerequisite: EENG 3303 and EENG 3305. Prerequisite or. Corequisite: MATH 3203.

### **EENG 4311 - Signals and Systems**

Types of signals; types of systems; properties of systems; convolution; Fourier series, Fourier transforms; Laplace transforms; Difference equations; z-transform; Discrete-time systems; applications and design concepts. Three hours of lecture per week.

Prerequisite: EENG 2101 and EENG 3305.

### **EENG 4312 - Communications Theory**

Signals, systems, and modulation techniques; effects of noise in communications systems, signal-to-noise ratio; digital data transmission; probability of error. Three hours of lecture per week.

Prerequisite: EENG 4311. Prerequisite or. Corequisite: MATH 3351.

### **EENG 4315 - Senior Design II**

The senior design project, which was begun in EENG 4115, continues to completion. This capstone design project builds on previous course work, includes all stages of the design process, and takes into account a variety of realistic constraints such as manufacturability and sustainability; economic factors; and environmental, safety, and reliability issues. Preparation and presentation of final oral and written reports are required. Nine hours of Design Studio Lab per week.

Prerequisite: EENG 4115.

### **EENG 4316 - Digital Control Systems**

Sampling; z-transform; stability; frequency response; root locus; state variables in discrete time; controllability; observability; state variable feedback. Extensive use of computer programming. Three hours of lecture per week.

Prerequisite: EENG 4308.

### **EENG 4317 - Power Electronics Design and Applications**

The use of solid state components in power systems; rectifying devices; diode circuits and rectifiers; controlled rectifier circuits; AC voltage controllers; thyristor commutation techniques; DC choppers; speed-torque characteristics of motors and loads; starting, braking and transient analysis of electric motors; introduction to HVDC. Three hours of lecture per week.

Prerequisite: EENG 4309. Prerequisite or Corequisite: EENG 4310.

### **EENG 4318 - Applied Electromagnetic Theory**

Introduction to guided waves and to numerical techniques in electromagnetics; applications of Maxwell's equations and electromagnetic wave phenomena to radiation; design of antennas; transmission lines and wave guides. Three hours of lecture per week.

Prerequisite: EENG 3303.

### **EENG 4319 - Power Systems Analysis and Design**

Transmission line parameters; Transmission line models; power flow analysis; economic operation of power systems; power system stability; symmetrical components; fault analysis and sequence networks;. Three hours of lecture per week.

Prerequisite: EENG 4310.



**EENG 4320 - Computer Architecture and Design**

Introduction to computer architecture, RISC, CISC and VLIW processors; data path and control; ALU structure; pipelining, memory; cache; I/O; digital logic; micro architecture, instruction sets, addressing modes; operating systems; virtual memory; processes; assembly language. Three hours of lecture per week.  
Prerequisite: EENG 3307.

**EENG 4323 - Reliability Engineering**

Reliability; failure rates; capacity; redundancy; attribute sampling; confidence intervals; acceptance and accelerated testing; Taguchi Methods; capability indices; six sigma; mean time to failure; parameter estimation; fault tree analysis. Three hours of lecture per week.  
Prerequisite: EENG 2101, MATH 3351.

**EENG 4325 - Real Time Systems**

Basic real-time concepts; computer hardware; languages issues; real-time kernels; intertask communication and synchronization; real-time memory management; the software life cycle; system performance analysis and optimization; reliability, testing, and fault tolerance; hardware/software integration; Three hours of lecture per week with integrated lab.  
Prerequisite: EENG 3307.

**EENG 4326 - Numerical Methods for Engineers**

Numerical methods used in the solution and analysis of engineering problems with emphasis on linear systems, ordinary differential equations, and partial differential equations. Three hours of lecture per week.  
Prerequisite: MATH 3305, COSC 1436.

**EENG 4330 - Solid State Devices**

Introduction to the operation and fabrication of solid state electronic devices; Principles describing charge transport in semiconductors, standard fabrication methods for ion implantation, diffusion, oxidation and lithography; Electrical models for diodes, bipolar junction and field effect transistors. Three hours of lecture per week.  
Prerequisite: EENG 3303. Prerequisite or corequisite: EENG 4309.

**EENG 4331 - VLSI Design**

Design and fabrication of digital integrated circuits. CAD tools for the design, layout, and verification of VLSI circuits; fabrication of CMOS integrated circuits; computer modeling of submicron transistors; static and dynamic CMOS logic design; microprocessor datapath circuits and sub-system design issues; testing and verification of integrated circuits. Three hours of lecture per week.  
Prerequisite: EENG 3302 and EENG 3306.

**EENG 4332 - FPGA Design**

Digital systems design with field programmable gate arrays (FPGAs); design and synthesis of reconfigurable logic with high-level descriptor languages; logic design using FPGAs; architectural and systems design issues. Three hours of lecture per week.  
Prerequisite: EENG 3307 and EENG 4309.

**EENG 4336 - Introduction to Electromagnetic Compatibility (EMC)**

Introduction to electromagnetic compatibility (EMC); EMC requirements for electronic systems; signal spectra - relationship time domain and frequency domain; transmission lines and signal integrity; non-ideal behavior of components; emissions and susceptibility; radiated emissions and susceptibility; crosstalk; shielding; system design for EMC. Three hours of lecture per week.  
Prerequisite: EENG 3303 and EENG 3306.

**EENG 4339 - CMOS Analog Integrated Circuits**

CMOS device characteristics, fabrication, and modeling; CMOS analog subsystems (switches, current sources, and voltage references), amplifiers, and voltage comparators. Three hours of lecture per week.  
Prerequisite: EENG 4309, EENG 4109.

**EENG 4350 - Special Topics in Electrical Engineering**

Advanced studies in electrical engineering in topics not fully covered in existing undergraduate courses. May be repeated as topics change. A maximum of nine (9) hours may be applied toward the undergraduate degree. Three hours of lecture per week.  
Prerequisite: Consent of instructor.

**EENG 4370 - Undergraduate Internship**

An 8- to 16-week program providing for a learning experience in an engineering environment. A written report of the experience is required at the conclusion of the internship period. May be repeated once for credit. A maximum of three credit hours may be applied toward the undergraduate degree in Electrical Engineering.  
Prerequisite: Consent of the department chair.

**EENG 4395 - Undergraduate Research**

Directed research in electrical engineering involving a problem of mutual interest to the student and a faculty member. An oral presentation and a written report of the research results are required at the conclusion of the course. A maximum of 3 credit hours may be applied toward an undergraduate degree in Electrical Engineering.  
Prerequisite: Consent of the department chair.

**EENG 5140-5340 - Advanced Topics in Electrical Engineering**

Advanced studies in Electrical Engineering in topics not covered in regularly scheduled graduate courses. May be repeated as content changes. A maximum of nine (9) hours may be used for graduate credit on the degree plan if topics vary.  
Prerequisite: Consent of Instructor.

**EENG 5199-5399 - Independent Study**

Independent study in a specific advanced area of engineering not covered by organized graduate courses. May be repeated as content changes. A maximum of six credits of independent study courses may be applied toward a graduate degree.  
Prerequisite: Consent of instructor and department chair.

**EENG 5301 - Wireless Communications and Networks**

Introduction to Wireless Communications and Networks: transmission fundamentals, LANs, MANs, WANs, switching, ATM, TCP/IP; Wireless Communications: antennas, propagation, signal encoding, spread spectrum, error control; Wireless Networking: satellite communications, cellular networks, analog, TDMA, CDMA, cordless systems, wireless local loop, mobile IP, WAP; Wireless LANS: infrared, spread spectrum, microwave, IEEE 802.11, Bluetooth.  
Prerequisite: EENG 4312 or consent of the instructor.

**EENG 5303 - Computational Methods in Electromagnetics**

Numerical methods for the solution of boundary value problems in electrical engineering applications: the finite difference method (FDM), the charge simulation method (CSM), the method of moments (MOM) and the boundary element method (BEM). Applications include the simulation and modeling of electrostatics, magnetostatics, electromagnetic problems, optimization of high voltage electrodes and heat transfer problems. Three hours of lecture per week.  
Prerequisite: EENG 3303, MATH 3203 and MATH 3305 or consent of the instructor.

**EENG 5304 - Computer-Aided Power Systems Analysis**

Modeling of electric power systems. Fault Analysis, symmetrical components, sequence networks, load flow, stability studies. Application of computer methods to power system analysis. Machine dynamics and transients in power system analysis. Three hours of lecture per week.  
Prerequisite: EENG 4310 and MATH 3203 or MATH 3315 or consent of instructor.

**EENG 5307 - Introduction to Random Processes**

Review of probability, transformation of random variables, random processes, correlation function and power spectral density, system response to noise, optimal processing. Three hours of lecture per week. Prerequisite: EENG 4312 or consent of instructor.

**EENG 5308 - Digital Signal Processing**

Introduction to modern digital processing. Basic building blocks, the basic math (Z-Transforms, Fourier Transforms, Fast Fourier Transforms), deterministic processing, FIR and IIR filters, polyphase filtering, introduction to statistical filtering, basic power spectral density. Three hours of lecture per week. Prerequisite: ENGR 5307 or consent of instructor.

**EENG 5309 - Statistical Signal Processing**

Review of digital signal processing concepts, wavelets, autoregressive modeling, Wiener filtering, adaptive filtering, power spectral estimation, introduction to advanced topics: higher order moments and spectra. Three hours of lecture per week. Prerequisite: ENGR 5308 or consent of instructor.

**EENG 5310 - Solid State Devices**

Charge transport in semiconductors; Standard approaches for diffusion of dopants and lithography; Development of I-V models for solar cells, diodes, bipolar junction and field effect transistors; independent computer project. Prerequisite: EENG 3303 and EENG 4309; prior coursework in electromagnetic fields and electronics at the undergraduate level; or consent of instructor.

**EENG 5311 - Organic Electronics**

An introduction to electronic properties of organic materials and devices; charge transport in organic semiconductors; characterization of organic electronic devices such as transistors, organic light emitting diodes and solar cells. Three hours of lecture per week. Prerequisite: EENG 4330 or consent of instructor.

**EENG 5316 - Optical Fiber Communication**

An introduction to the analysis and design of fiber optic communication systems. Electromagnetic wave propagation treatment in optical fibers leading to single and multimode descriptions. Standard methods for measuring fiber parameters, overall communication system performance including sources and receivers. Prerequisite: EENG 3303 and EENG 4312; prior coursework at the undergraduate level in electromagnetic fields and communications theory; or consent of instructor.

**EENG 5330 - Communication Systems Engineering**

Review of the principles of amplitude and frequency modulation. The main focus for the course will be the reliability issues for digital communication systems. This will include but is not limited to information theory and coding theory. Typical base-band and pass-band modulation schemes will be analyzed in terms of their bit error rate (BER) performance. Examples taken from telephone line modems will be discussed. Link budget analysis appropriate for satellite and fiber-optics communication systems will also be covered. Three hours of lecture per week. Prerequisite: EENG 4312 or equivalent, or consent of instructor.

**EENG 5333 - Power Systems Planning and Operation**

Economic dispatch; unit commitment; power control; power system planning and supply costs; demand forecast; long-range distribution system planning; outage cost; shadow pricing and simulation of electricity markets. Three hours of lecture per week. Prerequisite: EENG 4319 or consent of instructor.

**EENG 5334 - VLSI Design**

Design and fabrication of digital ICs, CAD tools for the design of VLSI circuits; fabrication of CMOS ICs; static and dynamic CMOS logic

design; design of low voltage and low power circuits; microprocessor datapath circuits; fault tolerance.

Prerequisite: EENG 3302 and EENG 3306 or equivalent, or consent of instructor.

**EENG 5335 - FPGA Design**

Digital systems design with FPGAs; Design and synthesis of reconfigurable logic with high-level descriptor languages; Logic design using FPGAs; Architectural and systems design issues; Fine-grained versus coarse-grained fabrics. Reconfigurable computing. Prerequisite: EENG 3307 and EENG 4309, or consent of instructor.

**EENG 5336 - Real Time Systems**

Basic real-time concepts computer hardware; languages; real-time kernels; intertask communication and synchronization; real-time memory management; the software life cycle; system performance analysis and optimization; reliability, testing, and fault tolerance; hardware/software integration. Three hours of lecture per week with integrated lab, including experiments with state-of-the-art real-time hardware and software tools. Graduate-level term project or paper. Prerequisite: EENG 3307 or consent of instructor.

**EENG 5337 - Semiconductor Devices**

This course is an extension of models and principles of semiconductors developed in a prior introductory level class. The instructor can select from a number of advanced topics. These can include but are not limited to concentrated coverage for device processing, electrical characterization for solar cells, four terminal devices and modeling organic semiconductor based diodes and transistors. Three hours of lecture per week. Prerequisite: EENG 4330 or consent of instructor.

**EENG 5370 - Graduate Internship**

An 8- to 16-week program providing for a learning experience in an engineering environment, at the graduate level of study. A written report and a presentation is required at the conclusion of the internship period. A maximum of three credit hours may be applied toward the graduate degree.

Prerequisite: Consent of the Department Chair.

**EENG 5395 - Thesis I**

Selection of a research topic and development of a thesis plan. CR/NC Only.

Prerequisite: Consent of advisor.

**EENG 5396 - Thesis II**

Completion and approval of thesis. CR/NC Only. Prerequisite or Corequisite: EENG 5395.

## EHCA - Executive Health Care Administration

**EHCA 5360 - Introduction to the American Healthcare System**

An introduction to the America healthcare delivery system, its components, organizations, and management. Subjects will include the historical development, structure, operation, current and future directions of the American healthcare delivery system, and healthcare ethics.

**EHCA 5361 - Healthcare Accounting**

The purpose of this course is to provide students with essential skills of financial accounting. The course delves into many of the techniques related to financial information in healthcare: debits and credits, the recording process, accounts receivable, inventory, and depreciation methods.

**EHCA 5363 - Healthcare Negotiation and Communication**

Through readings, discussion, case studies, and role playing, student develop an understanding of the role of conflict and its dynamics, strategies for eliciting cooperation; fundamentals of negotiation; the variety of conflict resolution approaches; and communication skills.

**EHCA 5365 - Managerial Epidemiology**

An introduction to the concept of using epidemiology as a managerial tool in designing, planning, implementing, and evaluating healthcare for various populations. Emphasis is on basic epidemiological principles and methods and their role in managing healthcare services for a community or population.

**EHCA 5366 - Healthcare Advertising, Promotion, and Marketing**

This course examines marketing in the health services sector, including: consumer orientation; specific areas of healthcare marketing techniques; marketing research and information systems; and marketing planning and program development.

**EHCA 5367 - Biostatistics**

This is an introductory course in applied biostatistics. It covers both graphical and numerical methods of describing data sets, an introduction to probability and probability distributions, estimation and hypothesis testing, and regression and correlation analysis.

**EHCA 5368 - Strategic Planning for Health Care**

This course teaches the student to use strategic thinking and the techniques of strategic planning and management to develop solutions to problems that healthcare organizations face in today's dynamic environment.

**EHCA 5370 - Health Economics**

This course is designed to assist the student in developing a set of tools that can help them make economic-based policy decisions in modern healthcare organizations. Students will explore microeconomics and decision analysis as a way to approach resource allocation issues in a healthcare setting.

**EHCA 5371 - Health Services Capstone**

This course serves as the capstone course for the Executive Health Care Administration track in the MPA program and may only be taken in the student's final semester. Each student will analyze and produce a strategic plan for a healthcare organization

**EHCA 5372 - Health Care Information Systems**

This course introduces key concepts and issues surrounding the adoption and use of information systems within health care organizations. Topics will include technical aspects of information gathering and management use of information to execute health quality, clinical, and strategic systems.

**ELED - Elementary Education****ELED 4312 - Teaching Social Studies in the Elementary School**

Study of social studies curriculum, materials, and selected instructional strategies.

Prerequisite: Admission to the School of Education and approval for Phase III.

**ELED 4313 - Teaching Mathematics in the Elementary School**

Scope and sequence of the elementary mathematics curriculum, materials, and selected instructional techniques.

Prerequisite: Admission to the School of Education approval for Phase III, and MATH 1350 and MATH 1351.

**ELED 4314 - Teaching Science in the Elementary School**

A process approach will be emphasized in the study of selected science programs drawn from the biological, earth and physical sciences.

Prerequisite: Admission to the School of Education and approval for Phase III.

**EMGE - Engineering Management****EMGE 5310 - Introduction to Engineering Management**

This introduction will cover basic engineering management processes including cost control, productivity, efficient site operations, project performance, human behavior and performance, ethics, and self-motivation.

**EMGE 5320 - Financial Accounting and Costs Analysis for Engineers**

Financial Accounting emphasizes the use of financial information to make informed management decisions. It gives managers tools to understand and use financial statements to analyze and determine the financial health of a company.

Prerequisite: EMGE 5310.

**EMGE 5330 - Management of Technology and Innovation**

Productive engineering, construction, and architecture firms stay on the cutting edge of technology. This course will review the latest in management and engineering hardware and software. It will also give students tools to manage the costs of technology and training to implement the technology and determine the cost-benefit of implementing new technology.

Prerequisite: EMGE 5310.

**EMGE 5340 - Leadership and Planning Strategies for Engineering Professionals**

Effective leaders have high abilities in communication, motivation, team building, goal setting and risk taking. Students in this class will build on these abilities and learn how to effectively communicate.

Prerequisite: EMGE 5320.

**EMGE 5350 - Project Management Systems**

A systems approach to project management leads to optimization of organizational resources. This includes value engineering, scheduling of resources, risk management and consistent tracking and reporting.

Prerequisite: EMGE 5330.

**ENGL - English****ENGL 1301 - College Composition I [TCCN: ENGL 1301]**

This course studies rhetorical conventions of expository writing and argumentation. Students improve their writing skills through an intensive writing process addressing grammar, mechanics, paragraphing, and logical structure in an essay.

**ENGL 1302 - College Composition II [TCCN: ENGL 1302]**

This course familiarizes students with writing in academic disciplines through critical reading and writing under supervision. Students develop writing skills through analysis and evaluation of rhetorical conventions of academic writing in and beyond their own disciplines.

Prerequisite: ENGL 1301 or equivalent.

**ENGL 1303 - Basic Creative Writing**

This course aims to enhance student ability of language arts communication through studies and practice of non-fiction, short story, poetry, and other forms of creative human expression. This course may be substituted for ENGL 1301 to satisfy core requirements.

**ENGL 1316 - Technical and Scientific Writing**

This course aims to enhance student written communication ability by teaching effective technical writing, design, and presentation of information.

**ENGL 2310 - Literary Appreciation [TCCN: ENGL 2341]**

Study of drama, fiction, and poetry as literary genres or topics such as literature and science.

**ENGL 2322 - English Literature to the 1780's [TCCN: ENGL 2322]**

Selected writers from the Old English period to the Romantic period: the Beowulf poet, Chaucer, Shakespeare, Milton, Pope, Swift, and Johnson, among others.

**ENGL 2323 - English Literature from the 1780's to the Present [TCCN: ENGL 2323]**

Selected writers from the Romantic period to the present: Blake, Byron, the Shelleys, the Brownings, the Brontes, G. Eliot, Hardy, Shaw, Conrad, Joyce, Lawrence, and Dylan Thomas, among others.

**ENGL 2350 - American Literature Survey [TCCN: ENGL 2326]**

Major and representative American writers from the seventeenth century to the present.

**ENGL 2362 - World Literature through The Renaissance [TCCN: ENGL 2332]**

Classical to early eighteenth-century world literary figures not covered in ENGL 2322 or ENGL 2323, with special attention given to multi-continental and intercontinental literature. Periods and writers covered vary from year to year.

**ENGL 2363 - World Literature since The Renaissance [TCCN: ENGL 2333]**

Selected world literary figures from the seventeenth century to the present not covered in ENGL 2322 or ENGL 2323, with special attention given to multi-continental and intercontinental literature. Periods and writers covered vary from year to year.

**ENGL 3301 - Advanced Writing**

Advanced study, with regular writing assignments, of the principles and techniques of expository writing.

**ENGL 3308 - Writing Textual Analysis**

Intensive practice in reading and writing about literary, critical, and argumentative texts, with an emphasis on close reading and critical theory. The course emphasizes the process of writing critical essays. Required of English majors/minors and recommended for others who wish to develop advanced reading and writing skills.

**ENGL 3312 - Creative Writing I**

An introduction to the art and craft of creative writing, including fiction, nonfiction, short story, poetry, and performing writing.  
Prerequisite: ENGL 1301 and ENGL 1302 or equivalent.

**ENGL 3314 - Creative Writing II**

This course teaches creative writing skills in specific form. Designed to afford students an opportunity to practice a literary genre under supervision, to learn techniques of expression, and to establish standards of criticism. May be repeated once for credit when content changes.  
Prerequisite: ENGL 3312 or equivalent.

**ENGL 3360 - Classical Language Skills**

The course pursues two general ends: to familiarize students with specialist terminology through Greco-Latin roots and to expose students with intercultural interests to grammatical concepts common outside of English. There are no prerequisites.

**ENGL 3375 - Modern Grammar**

Basic principles of modern English grammar and usage, including a study of traditional grammar.

**ENGL 3376 - Contrastive Linguistics**

Course compares phonemic, morphological and syntactical differences between English and a sampling of other languages.

**ENGL 3385 - History of the English Language**

Historical and structural study of developments in English sounds, forms, inflections, syntax, derivations, and meanings.

**ENGL 4165-4365 - Special Topics in Literary Study**

Select topics in literary study. The course may focus on a single author or combination of authors; a literary movement; a theme; or a particular area of scholarly pursuit such as literary theory. May be repeated once for credit when content changes.  
Prerequisite: ENGL 3308, or permission of the instructor.

**ENGL 4199-4699 - Independent Study**

Independent study in specific areas of English not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.  
Prerequisite: Consent of department chair.

**ENGL 4300 - Old and Middle English Literature**

Study of Old and Middle English literature in translation, including such works as the Anglo-Saxon Chronicle, Beowulf, the Canterbury Tales, Pearl, and medieval romances.  
Prerequisite: ENGL 3308, or permission of the instructor.

**ENGL 4301 - Masters of Early British Literature**

This course examines the works of Chaucer, Shakespeare, and Milton to determine what defines their artistic excellence. Factors such as cultural, political, and religious matters will be assessed in determining how their literature reflects the milieu.

**ENGL 4305 - Renaissance Poetry and Prose**

Study of the development of English literature from 1500 to 1660: Sidney, More, Jonson, Spenser, Donne, Shakespeare, Milton, and others. Emphasis is on poetry and non-dramatic prose.  
Prerequisite: ENGL 3308, or permission of the instructor.

**ENGL 4310 - Shakespeare**

Study of Shakespeare's major plays: comedies, tragedies, and histories; and plays by such contemporaries as Ben Jonson, John Webster, and Beaumont and Fletcher.  
Prerequisite: ENGL 3308, or permission of the instructor.

**ENGL 4315 - Restoration and Eighteenth-Century Literature**

Important writers and literary trends from 1660 to 1783: Dryden, Pope, Johnson, Swift, Addison, Steele, Goldsmith, Boswell, and others.  
Prerequisite: ENGL 3308, or permission of the instructor.

**ENGL 4320 - The Romantic Period**

Representative English and continental writers from the 1780's to the 1830's: Wordsworth, Coleridge, Byron, Keats, and others.  
Prerequisite: ENGL 3308, or permission of the instructor.

**ENGL 4325 - Victorian Literature**

Important writers and literary traditions from 1832 to 1900: Tennyson, Dickens, Browning, Arnold, Carlyle, Macaulay, Mill and others.  
Prerequisite: ENGL 3308, or permission of the instructor.

**ENGL 4330 - English Twentieth-Century Literature**

Important writers and literary trends from 1900 to the present: Conrad, Shaw, Joyce, Lawrence, Woolf, Waugh, Yeats, Cary, and others.  
Prerequisite: ENGL 3308, or permission of the instructor.

**ENGL 4335 - The English Novel**

Development of the English novel from Defoe to the present. Periods covered vary from year to year.

Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4341 - Genre Studies in American Literature**

Intensive study of one genre (poetry, novel, short story, or drama) in American literature with an emphasis on the development of techniques, forms, and styles. The course will include a variety of critical approaches to the genre and will require extensive reading, research, and writing. The course may be repeated once for credit when content changes.  
Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4345 - American Literature through the Romantic Period**

Authors and literary trends from 1620 to 1835. This course may include works from the following authors: Bradstreet, Taylor, Franklin, Edwards, Child, Sedgwick, Murray, Cooper, Irving, and others.  
Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4348 - American Renaissance**

Detailed study of American authors from 1835 to 1865. The course may include works by the following authors: Emerson, Thoreau, Hawthorne, Poe, Douglass, Jacobs, and the sentimental novelists.  
Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4350 - American Realism**

Important writers and literary trends from 1865 to 1920: Whitman, Dickinson, Twain, Howells, James, Crane, Norris, Dreiser, Robinson, and others.  
Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4355 - American Twentieth-Century Literature**

Important writers and literary trends from 1900 to the present: Dreiser, Fitzgerald, Hemingway, Faulkner, Frost, Eliot, O'Neill, Miller, and others.  
Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4360 - Studies in World Literature**

Detailed study of selected themes, literary types, and authors in world literature. Content varies from year to year. May be repeated once for credit when content changes.  
Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4362 - Classical Literature in Translation**

Intensive study of the literature of the Greeks and Romans in translation. The course will include the study of a variety of ancient authors and genres (i.e., drama, epic and lyric poetry, historiography, satire, Greco-Roman mythology).  
Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4368 - Literary Settings and Influences**

Studies particular sites associated with works of literature, regions that influenced an author's literary development, and collections of manuscripts and other artifacts relevant to the study of an author and his work. The course combines classroom experience with travel. No more than six semester hours of travel/study courses may be applied to the major or teaching field requirements in English.  
Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4376 - Introduction to Linguistics**

A study of the nature of human language and of linguistic science; an introduction to speech sounds, syntax, semantics and morphology of English; an inquiry into nonverbal patterns of communication; language in society; relationship of language to thought; language will also be explored through literature.

#### **ENGL 4380 - The Language of Argument**

A survey of classical texts of the rhetorical tradition from ancient times to the present.  
Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4393 - Writing Center Theory and Practice**

Students will study the theories and practices of working in and/or running a Writing Center to increase knowledge of writing pedagogy and reflect on their own writing practices.  
Prerequisite: ENGL 3308.

#### **ENGL 4397 - Senior Seminar**

This course provides advanced students an opportunity to engage in close readings of texts in historical-literary context and to pursue independent research. Required of English majors.  
Prerequisite: 24 hours of English.

#### **ENGL 4668 - Literary Settings and Influences**

Studies particular sites associated with works of literature, regions that influenced an author's literary development, and collections of manuscripts and other artifacts relevant to the study of an author and his work. The course combines classroom experience with travel. No more than six semester hours of travel/study courses may be applied to the major or teaching field requirements in English.  
Prerequisite: ENGL 3308, or permission of the instructor.

#### **ENGL 4687 - Practicum in Teaching English as a Second/Foreign Language**

Internship-like experience for prospective teachers of learners of English. Student will be under the supervision of TESL faculty and an administrator at the location where English is taught to children or adults. Course can be offered as a Study Abroad course.  
Prerequisite: ENGL 4377 and ENGL 4378, or consent of instructor. Course includes a practicum of at least 50 hours.

#### **ENGL 5199-5699 - Independent Study**

Independent study in specific areas of English not covered by organized graduate courses. A maximum of six credit hours for independent study courses may be applied toward a graduate degree.  
Prerequisite: Consent of department chair.

#### **ENGL 5300 - Bibliography and Methods of Research**

Study of bibliographical sources and techniques of literary scholarship.

#### **ENGL 5305 - Chaucer and Middle English Literature**

A linguistic and literary study of Chaucer's major works and the works of his principal contemporaries. May be repeated once for credit when content changes.

#### **ENGL 5310 - Masters of English Literature**

Intensive study of one or more major English writers from Chaucer to the present. May be repeated once for credit when content changes.

#### **ENGL 5315 - Studies in the English Renaissance**

Selected writers from Chaucer to Milton. May be repeated once for credit when content changes.

#### **ENGL 5320 - Shakespeare**

An advanced study of Shakespeare's poems and plays. May be repeated once for credit when content changes.

#### **ENGL 5321 - Studies in English Neoclassical Literature**

Selected writers from 1660 to 1800. Figures to be studied may include Dryden, Pope, Johnson, Swift, Goldsmith, and Fielding. May be repeated once for credit when content changes.

#### **ENGL 5323 - Studies in Romanticism**

Selected writers from 1750 to 1850. Primary attention given to the works of the English romantics, but related works in continental and American romanticism will also be considered. May be repeated once for credit when content changes.

#### **ENGL 5325 - Studies in Victorian Literature**

Selected writers from 1832 to 1900. Figures to be studied may include Dickens, Tennyson, Carlyle, Browning, Arnold, Hardy, and Yeats. May be repeated once for credit when content changes.

**ENGL 5330 - English Literature: Twentieth Century**

Important works and writers of poetry, drama and prose of this period: Yeats, Eliot, Shaw, Stoppard, Pinter, Conrad, Joyce, Beckett, and Greene. May be repeated once for credit when content changes.

**ENGL 5340 - Masters of American Literature**

Intensive study of one or more major American writers from the Puritans to the present. May be repeated once for credit when content changes.

**ENGL 5346 - American Literature through the Romantic Period**

Detailed study of selected writers and literary movements from 1607 to 1835. Figures to be studied may include Bradstreet, Taylor, Franklin, Edwards, Child, Sedgwick, Murray, Cooper, and Irving. May be repeated once for credit when content changes.

**ENGL 5348 - American Renaissance**

Detailed study of American authors from 1835-1865. The course may include works by the following authors: Emerson, Thoreau, Hawthorne, Poe, Whitman, Dickinson, Douglass, Jacobs and the sentimental novelists. May be repeated once for credit when content changes.

**ENGL 5350 - Studies in American Literary Realism**

Development of the realistic tradition in nineteenth-century American literature. Chief figures to be studied may include Twain, Howells and James. May be repeated once for credit when content changes.

**ENGL 5355 - Studies in Twentieth-Century American Literature**

The development of American literature from 1900 to the present: Dreiser, Hemingway, Fitzgerald, Wolfe, Eliot, O'Neill, and others. May be repeated once for credit when content changes. May be repeated once for credit when content changes.

**ENGL 5367 - Studies in Creative Writing**

This course introduces students to terminologies, practices, and methods for discussing, writing, and critiquing Creative Writing critically with an attention to the elements of craft from the perspective of Creative Writers. Students in this course learn to teach aspects of Creative Writing. May be repeated once for credit when content changes.

**ENGL 5368 - Literary Settings and Influences**

Studies particular sites associated with works of literature, regions that influenced an author's literary development, and collections of manuscripts and other relevant artifacts. The course combines classroom experience with travel.

**ENGL 5369 - Topics in English**

In-depth study of a selected area in the field of English language use, literature, rhetoric, or theory. May be repeated for credit when content changes.

**ENGL 5370 - Studies in World Literature**

Selected writers from Homer to the present, with special attention to classical and continental literature. May be repeated for credit when content changes.

**ENGL 5379 - History of the English Language**

A study of the growth and development of English from its earliest period to the present, with emphasis on the changes in sounds, forms, sentence structure and vocabulary.

**ENGL 5380 - Advanced Grammar and Linguistics**

English sounds and syntax in their historical setting, with special attention to modern American dialectology, and to the development of linguistic skills.

**ENGL 5381 - Children's Literature**

Advanced study in the history and analysis of children's literature. Designed primarily for precollege, elementary and secondary teachers.

**ENGL 5382 - Contrastive Linguistics**

Advanced comparative study of phonemic, morphological and syntactical differences between English and a sampling of other languages.

**ENGL 5383 - Acquisition and Development of English as a Second Language**

Advanced study of theories of language acquisition and the resulting effects on the teaching process. First and second language developmental sequences and the growing body of literature in the field will be stressed.

**ENGL 5384 - Methodology of Teaching English as a Second Language**

Advanced study of the theoretical foundations of second-language instruction. Techniques for possible approaches to teaching pronunciation, grammar, reading, and writing to TESL students also will be studied. Construction and use of appropriate tests for TESL situations will be emphasized.

**ENGL 5385 - Literary Theory and Criticism**

Study of methods of literary analysis and of standards of literary appreciation.+

**ENGL 5386 - The Modern Novel**

Study of parallels in themes and techniques among modern novelists. Figures to be studied may include Proust, James, Gide, Faulkner, Conrad and Joyce.

**ENGL 5387 - Practicum in Teaching English as a Second Language**

Experience for prospective teachers to demonstrate identified competencies in the classroom.

Prerequisite: Nine semester hours of TESL course work or consent of instructor.

**ENGL 5388 - History and Practice of Rhetoric**

A study of selected primary texts by rhetoricians from the classical ages to the present and of recent scholarly theories and commentaries. Topics might include changing definitions and constructions of rhetoric, the Sophists, the relation between rhetoric and epistemology, and the role of rhetoric in the history and development of liberal education.

**ENGL 5389 - Practicum in Composition Instruction**

Theoretically guided practice in rhetoric and composition for prospective instructors to demonstrate identified competencies in teaching writing at the college level.

**ENGL 5390 - Studies in Composition**

This course introduces students to the scholarship and the historical and contemporary movements in composition in preparation for the teaching of college writing. Students read articles that represent major theoretical concepts in composition studies, including, but not limited to, conversations from such fields as rhetoric/composition, English studies, and writing with new technologies.

**ENGL 5392 - History, Theory and Practice of Writing Centers**

This course will survey the history, theory and practice of writing centers as they have developed in American universities since 1970. Students will complete extensive reading lists, give regular presentations, and complete a major research assignment. Students will also have the opportunity to observe and conduct supervised writing consultations in the UTT writing center.

**ENGL 5395 - Thesis**

Selection of a research topic, development of a thesis plan, and initiation of directed research.

Prerequisite: Consent of advisor.

### **ENGL 5396 - Thesis**

Completion and approval of thesis.

Prerequisite: ENGL 5395 or concurrent enrollment and consent of advisor.

### **ENGL 5397 - Guided Individual Study**

Required capstone course for English majors qualified to take the comprehensive exam. Allows students to demonstrate thorough understanding of a focused topic as well as mastery of critical thinking, research, and writing skills.

Prerequisite: Consent of graduate advisor (no minimal enrollment).

### **ENGL 5668 - Literary Settings and Influences**

Studies particular sites associated with works of literature, regions that influenced an author's literary development, and collections of manuscripts and other relevant artifacts. The course combines classroom experience with travel.

### **ENGL 5687 - Practicum in English as a Second Language**

Experience for prospective teachers to demonstrate identified competencies in the classroom.

Prerequisite: Nine semester hours of TESL course work or consent of instructor.

## **ENGR - Engineering**

### **ENGR 1201 - Introduction to Engineering**

An introduction to the engineering profession with emphasis on technical communication and team-based engineering design. Two hours of lecture.

Prerequisite: MATH 1314 - College Algebra or equivalent academic preparation.

### **ENGR 1204 - Engineering Graphics I**

Intro to computer-aided drafting using CAD software to generate 2- and 3-dimensional drawings based on the conventions of Eng graphical communication; to include spatial relationships, multi-view projections/sectioning, dimensioning, graphical presentation of data, and computer graphics.

### **ENGR 2301 - Engineering Mechanics: Statics**

Forces, moments, and couples acting on stationary engineering structures; equilibrium in two and three dimensions; free-body diagrams; friction; centroids; centers of gravity; and moments of inertia.

Prerequisite: PHYS 2325, PHYS 2125, MATH 2414.

### **ENGR 2302 - Engineering Mechanics: Dynamics**

Motion of particles, rigid bodies, and systems of particles; Newton's Laws; work and energy relationships; principles of impulse and momentum; application of kinetics and kinematics to the solution of engineering problems.

Prerequisite: ENGR 2301.

### **ENGR 3191-3196 - Engineering Co-Op I - VI**

First (For ENGR 3191 and second, third, fourth, fifth, sixth for ENGR 3192-3196, respectively) engineering cooperative education work experience. Full-time engineering position for length of the academic term. Requirements include submission of educational objectives for the work term, biweekly status reports, and a final technical report. In collaboration with the employer, the student hosts a work site visit by the instructor and submits at the end of the work term a performance appraisal/evaluation by the employer.

Prerequisite: Approval for participation in Engineering Cooperative Education. Graded on a credit/no credit basis.

### **ENGR 3314 - Design Methodology in Engineering**

An overview of the design activity in engineering. Topics include the product design process; project planning; quality function deployment; design specification; concept generation and selection; system and subsystem design. Also, an introduction to engineering economics and its application to the design process. Design team projects. Three hours of lecture per week.

Prerequisite: Prerequisites or co-requisites - MENG 3304, MENG 3309, MENG 3316.

### **ENGR 4009 - FE Exam Preparation**

A course specifically designed to review course contents in preparation for the Fundamentals of Engineering (FE) Examination offered through the National Council of Examiners for Engineering and Surveying (NCEES). 0 Credits.

Prerequisite: Senior standing.

### **ENGR 4109 - Senior Seminar**

Invited speakers address professional ethics, organizations, and licensure, necessity for life-long learning, environmental and political constraints, engineering in a global context, social responsibilities, leadership, and the engineer's role in business and in society. Each student will develop a resume and professional development plan to follow after graduation. One hour of lecture per week.

Corequisite: CENG 4115, EENG 4115, MENG 4115, CMGT 4195 or concurrent enrollment.

## **ENIF - Nursing Informatics**

### **ENIF 5381 - Introductory Principles of Health Care Informatics**

Provides introductory principles to understand conceptual and theoretical basis for information management in health care informatics. An interdisciplinary approach will be used to examine the clinical aspects, practice considerations, and application of information technology.

### **ENIF 5382 - Information System Design and Analysis**

Prepares the student to analyze a clinical information system and participate in all stages of selection, design, and planning of a system that will effectively support meaningful use and provide data to improve patient care outcomes.

Corequisite: ENIF 5381.

### **ENIF 5383 - Data Management for Evidence Based Practice**

Provides in-depth exploration of data management systems and skills needed to manage patient information. Use of data to determine best practices for optimal patient care will be addressed.

Prerequisite: ENIF 5382.

### **ENIF 5384 - Information System Implementation and Evaluation**

Prepares the student to function as a nursing project manager during the implementation of a clinical information system and to participate in system evaluation and maintenance.

Corequisite: ENIF 5383.

### **ENIF 5385 - Informatics and Consumer Health**

Prepares the student to understand the use of electronic consumer information resources in the patient-provider partnership. Development, implementation, and evaluation of an organizational information website and patient portal will be addressed.

Prerequisite: ENIF 5384.

## EPSY - Educational Psychology

### **EPSY 3330 - Educational Psychology: Child Development and Learning**

The study of contemporary theories and principles of development learning and motivation as they relate to the educational process. Special emphasis will be placed on applications to the early and middle childhood period.

### **EPSY 3340 - Educational Psychology: Adolescent Development and Learning**

The study of contemporary theories and principles of development, learning and motivation as they relate to the educational process. Special emphasis will be placed on applications to the adolescent period.

## FINA - Finance

### **FINA 2315 - Personal Financial Literacy**

An analysis of the impact of contemporary materialism on the psychological well-being of individuals and its effects on interpersonal relationships and societies at large. Students will develop critical thinking, communication, empirical and quantitative skills needed to make value-oriented spending, saving, borrowing and investing decisions in order to reach their personal financial goals.

### **FINA 3300 - Accounting and Finance for Small Business and Entrepreneurs**

Basic topics in financial and managerial accounting. Topics include financial statements and analysis; accounting for assets, liabilities and owner's equity, and elements of managerial accounting. This course is designed for non-business majors. Students who have more than six hours in accounting will not receive credit for this course. This course is crosslisted with ACCT 3300.

### **FINA 3311 - Principles of Finance**

The study of money and its management. Examines financial institutions and how they function within the economy; studies alternative investments for inclusion in a portfolio; explores the techniques used by financial managers of small or family businesses and corporations in deciding how to acquire and invest funds.

Prerequisite: ACCT 2301, and ECON 2301 or ECON 2302.

### **FINA 3315 - Personal Finance**

Develops proficiency in financial planning and management for the individual, sole proprietorship, and small partnership. This proficiency includes learning budgeting, cash flow management, and the proper use of credit, tax planning, risk management, investments, retirement, and estate planning. Not intended for finance majors.

### **FINA 3321 - Principles of Real Estate**

Basic principles of real estate with emphasis on contracts of sale, deeds, abstracts, leases, options, liens, taxes, financing, and market conditions.

### **FINA 3330 - Investments**

A study of securities, the markets in which they are traded, and sources of financial information. The features and characteristics of a variety of financial instruments are analyzed, including money market instruments, stocks, bonds, real estate, tax shelters, international securities, options and futures contracts.

Prerequisite: ECON 2301 or ECON 2302 and ACCT 2301.

### **FINA 4199-4699 - Independent Study**

Independent study in specific areas of finance not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree. Independent study courses are available only to degree-seeking students. The student must request a faculty member to supervise the independent study, write a proposal and have it approved by the sponsoring faculty

member and the Department Chair. The proposal and the final report become part of the student's permanent record.

Prerequisite: Consent of Department Chair.

### **FINA 4310 - Management of Financial Institutions**

A study of the structure and functions of financial institutions; their sources and uses of funds; analysis of the nature and function of credit; the effects of financial institutions on macroeconomic analysis.

Prerequisite: FINA 3311.

### **FINA 4330 - Security Analysis and Portfolio Management**

This course explores the principles of valuation and the application of alternative techniques in determining the worth of equity, fixed-income, and derivative securities. Examination of the process of setting suitable investment objectives and constructing multi-asset portfolios to meet the specific needs of individual and institutional investors.

Prerequisite: FINA 3330.

### **FINA 4340 - Managerial Finance**

A study of the conceptual and analytical framework guiding the investment, financing and dividend decisions of the firm.

Prerequisite: FINA 3311.

### **FINA 4345 - Financial Services Operations**

Focus on the products and processes in the financial system. The course examines creation and distribution of financial products and services and discusses the strategies, channels, and risk-controls employed in their delivery.

Prerequisite: FINA 3311.

### **FINA 4350 - International Finance**

Balance of international payments, exchange rate determination, export-import financing, currency arbitrage and international capital movements. This course is aimed at grounding the student in basic principles of international finance, which are becoming increasingly relevant to U.S. business and investment decisions.

Prerequisite: FINA 3311.

### **FINA 4365 - Regional Financial Analysis**

A course designed to enable students to grasp and conduct analysis of regional financial metrics. Students will learn essentials of data collection and mapping, as well as statistical analysis aimed at producing research and client reports.

Prerequisite: Instructor's consent.

### **FINA 4370 - Special Topics in Finance**

Areas of study in finance that reflect contemporary topics not covered by organized courses. May be repeated once for credit when the topics vary.

Prerequisite: Department Chair Consent.

### **FINA 4380 - Seminar in Contemporary Finance**

This is a seminar which explores contemporary issues in finance by examining new developments in this rapidly evolving field of study. Students will explore contemporary issues in finance via research, readings, simulations, and hands on experiences.

Prerequisite: FINA 3311.

### **FINA 4390 - Case Studies in Finance**

A case course designed to give the student experience in solving financial problems occurring in modern corporate enterprise.

Prerequisite: 9 hours of coursework in Finance or Instructor's consent.

### **FINA 4395 - Undergraduate Internship**

An 8 to 16 week program providing for a learning experience in an off-campus environment. CR/NC option.

Prerequisite: Consent of Department Chair.

### **FINA 5199-5699 - Independent Study**

Independent study in specific areas of finance not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied to a graduate degree. Independent study courses



are available only to degree seeking students. The student must request a faculty member to supervise the independent study, write a proposal and have it approved by the sponsoring faculty member and the Department Chair.

Prerequisite: Consent of Department Chair.

#### **FINA 5300 - Financial Concepts and Processes**

Explores the basis of the modern financial infrastructure, investing opportunities, and financial management decisions. Students who have earned credit for principles of finance or equivalent may not receive credit for this course.

#### **FINA 5310 - Financial Institutions**

Characteristics of financial institutions, savings intermediation and its effects on the allocation of investment funds, and regulation of financial intermediaries.

#### **FINA 5320 - Advanced Financial Management**

Financial management of the firm with special emphasis on financial planning, capital concepts.

#### **FINA 5330 - Investment Portfolio Management**

A study of securities and the markets in which they are traded; an analysis of the risk-return tradeoff in examining investments; development of specific tools and techniques for selecting among securities that include: equities, fixed income vehicles, options/futures, real estate, and international securities; construction of portfolios to meet specific investor objectives.

#### **FINA 5332 - Public Budgeting and Finance**

The processes and policies used to allocate limited public resources; special attention given to contemporary budgetary approaches and to methods of evaluation. The managerial role in providing fiscal accountability and control is emphasized.

#### **FINA 5370 - Special Topics in Finance**

An exploration of current finance topics that are not covered in other courses. May be repeated once for credit when the topics vary.

Prerequisite: Consent of Department Chair.

## **FREN - French**

#### **FREN 1401 - Beginning French I [TCCN: FREN 1311, 1411, or 1511]**

Designed for those students who have minimal or no experience with the language, this course introduces the skills of reading, writing and pronouncing French. These skills are supported by grammatical exercises and oral practice. The course also includes an introduction to French history and culture.

#### **FREN 1402 - Beginning French II [TCCN: FREN 1312, 1412 or 1512]**

More advanced study and use of oral expression and writing.

Prerequisite: FREN 1401 or CI.

#### **FREN 1611 - Accelerated French I**

Designed for students having no exposure to French, this course offers 6 credit hours and is equivalent to the first 2 Beginning French semesters. Speaking, listening, writing and reading skills are emphasized with a focus on the French grammar and acquisition of vocabulary.

#### **FREN 2301 - Intermediate French I [TCCN: FREN 2311]**

An intermediate reading course in French. Designed to strengthen students' grammar, vocabulary, and skills in reading and translation.

Prerequisite: FREN 1402 or CI.

#### **FREN 2302 - Intermediate French II [TCCN: FREN 2312]**

Readings in Prose and Poetry with continued grammar study.

Prerequisite: FREN 2301 or CI.

#### **FREN 2611 - Accelerated French II**

Designed for students who have completed at least 6 hours of French or who have an equivalent competence in French language. This course is accelerated, reviews the entire French grammar seen during the first year of French and builds up vocabulary, conversation skills, reading and writing skills.

#### **FREN 3315 - Advanced Grammar and Composition**

Detailed study of French grammar, with regular assignments in composition. Course taught in French.

Prerequisite: FREN 2302 or CI.

#### **FREN 3320 - Major French Writers**

Readings in selected masterpieces of French literature. May be repeated once for credit when content changes. Course taught in French.

Prerequisite: FREN 2302 or CI.

#### **FREN 4199-4699 - Independent Study**

Independent study in specific areas of French language or literature not covered by organized undergraduate courses. A maximum of six credit hours may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

## **GATE - Global Awareness Through Education**

#### **GATE 2301 - Global Service Learning: Values and Action**

This course examines social issues and incorporates experiential service-learning, while developing effective communication skills in a variety of contexts and formats.

## **GEOG - Geography**

#### **GEOG 1313 - World Regional Geography [TCCN: GEOG 1303]**

Analyzes cultural patterns in terms of physical, locational, social and economic processes. World regions are described and compared.

#### **GEOG 3320 - Physical Geography**

Provides students the opportunity to acquire a general understanding of physical systems that affect the environment. Relationships among climate, landforms, soils and vegetation will be presented in a geographical perspective.

#### **GEOG 3325 - North American Geography**

Landscapes of the United States and Canada will be surveyed through a regional approach with emphasis on land use patterns, population dynamics, resources and spatial interactions.

#### **GEOG 4199-4699 - Independent Study**

Independent study in specific areas of Geography not covered by organized undergraduate courses. A maximum of six credit hours for independent study course may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair required.

#### **GEOG 4310 - Geography of Europe**

A regional analysis of the geographic features of Europe which have affected its history and culture such as the physical landscape, climatology, and built environment. This course includes a geographic study of cities, ethnic relations and disputes, geolinguistics and politics, demography, industry, and history.

Prerequisite: GEOG 1313 or CI.

#### **GEOG 4330 - Geographic Information Systems**

Fundamentals of geographic information systems, including data capture, storage, processing, and output. Applications to various problems in the natural and social sciences.

**GEOG 4360 - Cartography and Remote Sensing**

Map interpretations and construction and applications of geographic information systems and remote sensing methods.

Prerequisite: three hours of geography or consent of instructor.

**GEOG 4365 - Topics in Geography**

Studies in geography to include such topics as historical geography, economic geography, and cultural geography. May be repeated for credit when the content changes.

**GEOG 5330 - Geographic Information Systems**

Advanced principles of geographic information systems, including data capture, storage, processing, and output. Focus will be on applications to various problems in the natural and social sciences, including public administration and planning.

Prerequisite: CI.

**GEOG - Geology****GEOG 3310 - Physical Geology and Astronomy**

Study of processes that take place in the solid earth and the role of the earth in space.

**GEOG 3314 - Oceanography and Meteorology**

Basic concepts of oceanography and meteorology with emphasis on the effects of the oceans and the atmosphere on man. Experimental methods used in both fields will be included.

**GERM - German****GERM 1401 - Elementary German Grammar: I [TCCN: GERM 1411]**

An audio-lingual and communicative approach to teach all facets of the language in a cultural setting with an emphasis on oral performance. For beginning students.

**GERM 1402 - Elementary German Grammar: II [TCCN: GERM 1412]**

A continuation of GERM 1301. An audio-lingual and communicative approach to teach all facets of the language in a cultural setting with an emphasis on oral performance.

Prerequisite: GERM 1401 or CI.

**GERM 2301 - Intermediate Conversation and Composition: I [TCCN: GERM 2311]**

A review of German grammar combined with 20th century readings. Composition and oral discussion emphasized.

**GERM 2302 - Intermediate Conversation and Composition: II [TCCN: GERM 2312]**

More advanced study and use of oral expression and writing.

**GERM 3315 - Advanced Grammar and Composition**

Detailed study of German grammar, with regular assignments in composition.

**GERM 3320 - Major German Writers**

Readings in selected masterpieces of German literature. May be repeated once for credit when content changes.

**GERM 4199-4699 - Independent Study**

Independent study in specific areas of German language or literature not covered by organized undergraduate courses. A maximum of six credit hours may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**HECC - Health and Exercise Core****HECC 4199-4399 - Independent Study**

Independent study in specific areas of health and exercise science not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**HECC 4308 - Ethics**

Study of ethical considerations encountered in health and kinesiology, emphasizing a case-study approach.

**HECC 4333 - Tests and Measurements**

Study of tests of fitness, functional capacity, and other variables commonly used in health and kinesiology programs. Test protocols and proper data collection, reduction of test data, and application of norms and criteria are emphasized.

**HECC 4353 - Program Organization and Administration**

Study of the administration of school-based and other programs related to health and kinesiology.

**HECC 4370 - Internship**

A minimum of 140 clock hours of applied learning experiences. CR/NC only.

Prerequisite: Consent of advisor.

**HECC 4371 - Internship**

A minimum of 140 clock hours of applied learning experiences. CR/NC only.

Prerequisite: Consent of advisor.

**HECC 4395 - Contemporary Issues in Health and Kinesiology**

Analysis of selected contemporary controversial problems in the areas of health and human movement, with emphasis on rational development and evaluation of viewpoints.

**HECC 5199-5699 - Independent Study**

Independent study in specific areas of health and exercise science not covered by organized graduate courses. A maximum of six hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of department chair.

**HECC 5303 - Research Design**

Study of designs commonly employed in research in health and exercise sciences.

**HECC 5315 - Reduction, Analysis and Interpretation of Data**

Study of principles and techniques of reducing, summarizing, and statistically treating data. Computer-assisted techniques are included.

**HECC 5317 - Biometric Methods**

Study of statistical analysis of basic and clinical research data.

**HECC 5370 - Ethics**

Study of ethics and its application in health and kinesiology. Emphasis is on development and evaluation of ethical viewpoints based on theory and fundamental principles.

**HECC 5376 - Seminar**

Seminar on research literature related to specific topics in the study of movement and health professions.

**HECC 5391 - Practicum in Health and Kinesiology**

A minimum of 140 clock hours of supervised experience in a health profession or exercise science setting. CR/NC only.

Prerequisite: Consent of advisor.

**HECC 5392 - Practicum in Health and Kinesiology**

A minimum of 140 clock hours of supervised experience in a health profession or exercise science setting. CR/NC only.

Prerequisite: Consent of advisor.

### **HECC 5393 - Contemporary Issues in Health and Kinesiology**

Analysis of selected contemporary controversial problems in the areas of health and human movement, with emphasis on rational development and evaluation of viewpoints.

### **HECC 5395 - Thesis I**

Selection of research topic and development of a thesis plan. CR/NC only.

Prerequisite: At least 15 graduate hours, HECC 5303 or equivalent, and consent of advisor.

### **HECC 5396 - Thesis II**

Completion and approval of thesis. CR/NC only.

Prerequisite: HECC 5395 or consent of advisor.

### **HECC 5397 - Internship**

A minimum of 200 hours of applied activities in clinical or field-based settings. Intended to provide the educational link between more closely supervised university faculty- or campus-related instruction and the independence of the real-world setting.

Prerequisite: Consent of advisor and Department Internship Coordinator.

### **HECC 5398 - Internship**

A minimum of 200 hours of applied activities in clinical or field-based settings. Intended to provide the educational link between more closely supervised university faculty- or campus-related instruction and the independence of the real-world setting.

Prerequisite: Consent of advisor and Department Internship Coordinator.

## **HIST - History**

### **HIST 1301 - United States History I [TCCN: HIST 1301]**

A survey of the significant diplomatic, economic, political, and social developments in the United States from the colonial period through the Civil War and reconstruction. May be taken in fulfillment of the statutory requirements for a baccalaureate degree.

### **HIST 1302 - United States History II [TCCN: HIST 1302]**

A survey of the significant diplomatic, economic, political, and social developments in the United States since reconstruction. May be taken in fulfillment of the statutory requirements for a baccalaureate degree.

### **HIST 1303 - History of Technology and Innovation in U.S Society since 1865**

A survey of the ways technology and innovation have impacted and transformed the United States' economic, political and social developments since the Civil War and Reconstruction.

### **HIST 2321 - World Civilizations I [TCCN: HIST 2321]**

A survey of the rise and development of the major civilizations of the world up to the modern era.

### **HIST 2322 - World Civilizations II [TCCN: HIST 2322]**

A survey of the historical development of the major civilizations of the world in modern times.

### **HIST 3300 - Historical Methods and Research**

A practical study of the historical method, research, and writing. Required of all history majors and students seeking a secondary teaching field in history.

### **HIST 3301 - Patterns of World History**

Advanced studies in world civilizations from earliest times to the present.

### **HIST 3352 - Renaissance Europe**

A study of the political, social, and economic changes in Europe during the fourteenth and fifteenth centuries. Study will focus upon the artistic, literary, and intellectual developments in Italy.

### **HIST 3353 - Reformation Europe**

A history of Europe in the sixteenth century. Special emphasis on the rise and spread of Protestantism and the Catholic Reformation.

### **HIST 3354 - Medieval Europe**

The fusion of classical, Christian, and barbarian cultures and the emergence of a distinctly Western civilization in medieval Europe from the fourth to the fifteenth century.

### **HIST 3356 - Seventeenth Century Europe**

A study of the major political, economic, social, cultural, scientific, and intellectual developments in Europe during the seventeenth century to 1715.

### **HIST 3357 - Eighteenth Century Europe**

A study of European developments in the eighteenth century, 1715-1815, focusing on the political, philosophical, cultural, and industrial revolutions that helped shape the course of modern history.

### **HIST 3358 - Nineteenth-Century Europe**

A study of European developments from the downfall of Napoleon to the coming of World War I (1815-1914) emphasizing the growth of liberalism, nationalism, industrialization, and imperialism.

### **HIST 3359 - Twentieth-Century Europe**

A study of European developments from the beginning of World War I in 1914 to the present, emphasizing the problems of the Paris peace settlement, the rise of fascism, the impact of the depression, the effects of World War II, and the shaping of the contemporary period.

### **HIST 3360 - Perspectives on Science and Mathematics**

An overview of the history and philosophy of mathematics and science.

### **HIST 3382 - Mediterranean Civilization**

The Ancient Near East and Greco-Roman civilization from the Bronze Age to the fourth century. Emphasis on contributions to the cultural heritage of the western world.

### **HIST 3383 - Tudor and Stuart England**

Study of the origins of modern England. Emphasis on religious reformation, religious and constitutional conflicts, civil war and revolution, and social, economic and cultural developments.

### **HIST 3395 - History of Russia**

A study of Russia examining the Kievan and later medieval polities, the Muskovite state, Imperial Russia, and the Soviet and post-Soviet regime to the present.

### **HIST 4199-4699 - Independent Study**

Independent study in specific areas of history not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of instructor and department chair.

### **HIST 4320 - History of Texas**

Study of the development of Texas from pre-history to the modern era.

### **HIST 4322 - The American South**

Study of the development of the South as a historically distinct section of the United States. .

### **HIST 4323 - 20th Century Presidential Leadership**

A critical study of the 20th century presidents. Considers how their personality shaped their leadership and public approval and, in turn, how they affected policy decisions.

### **HIST 4327 - Early American Diplomatic History**

Traces the history of American foreign relations from the revolutionary era to 1914. Special attention is paid to external world influences as well as internal domestic influences on the conduct of American foreign policy.

**HIST 4328 - Modern American Diplomatic History**

Traces the history of American foreign relations from 1914 to the present. Special attention is paid to external world influences as well as internal domestic influences on the conduct of American foreign policy.

**HIST 4329 - Early American Military History**

Overview of U.S. military history from the colonial period to 1900. Focus is on the creation of American military institutions, the origins of policy-making, and the influence of the armed forces as social institutions.

**HIST 4330 - Modern American Military History**

An overview of U.S. military history since 1900. Focus is on the interrelationship between foreign and military policy, the conduct of war, and the influence of American society upon the armed forces as social institutions.

**HIST 4334 - Women in US History**

An examination of the private and public lives of women in the US from pre-colonial times to the present, and how women's experiences have been shaped by factors such as race, class, religion, sexuality, and region.

**HIST 4360 - African History I**

This course introduces African history, culture, and society before 1885. It introduces students to the historical and cultural developments of Africa and Africans. The course provides the skills to think about the diversity and complexity of Africa based on African structures and frameworks.

**HIST 4361 - African History II**

This class examines African history after the European 1885 partition covering African colonialism, nationalism, and modern Africa. The objective of the class is to provide students with the skills to think about and understand the complexity of Africa, its people, and history.

**HIST 4368 - Field Experience in History**

Provides the student with the opportunities to study historical sites and museums, use archival records, and conduct field research on a given topic which includes some travel. Classroom experiences employing the lecture and seminar methods complement the field experience.

Prerequisite: Consent of instructor. No more than three semester hours of travel/study courses may be applied to the major or teaching field requirements in history.

**HIST 4370 - Internship Program**

A 16-week program offering a learning experience in an off-campus environment. Students will work with local public and private agencies and may be asked to share experiences and discuss common problems.

Prerequisite: Consent of instructor.

**HIST 4371 - History of Mexican-Americans**

A study of the history of Mexican-Americans, tracing their history, culture, community creation, identity, and contributions to the United States.

**HIST 4372 - History of African Americans**

A study of the history of African Americans from the African experience to the Civil Rights movement of the 20th Century.

**HIST 4376 - Native American History**

A study of North American Indians and their relationships with citizens and governments of the United States from the eighteenth century to the present.

**HIST 4377 - American Borderlands**

A study of the multiple frontiers that emerged in North America prior to the twentieth century with special emphasis on the peoples, empires, and events key to their development.

**HIST 4379 - The Age of Jackson**

An analysis of American society in the period of Andrew Jackson, 1815-1848, with particular emphasis on the emergence of democratic institutions and the impact of slavery on American life and politics.

**HIST 4384 - Colonial America**

A study of the peoples and events that influenced European settlement of North America from 1492 to 1754.

**HIST 4385 - Revolutionary America**

A study of the peoples and events that influenced the colonial independence movement and formative period of United States history between 1754 and 1815.

**HIST 4386 - Civil War and Reconstruction**

This course explores the era of the American Civil War, 1848-1877, including the growth of sectionalism and the causes of the war, the course of the conflict, and the impact of the war on social, political, and economic issues.

**HIST 4387 - Industrial and Progressive America**

A study of American history from 1877 to 1917 which includes the rise of industrial America, the pursuit of empire, the Progressive Era, and foreign affairs on the eve of America's involvement in World War I.

**HIST 4388 - America During the World Wars**

A study of American history from 1917 to 1945, which includes America's responses to the challenges of World War I, the social conflicts of the 1920's, the Great Depression, and World War II.

**HIST 4389 - America Since 1945**

A study of American history since the end of World War II, which includes the expansion and contraction of the welfare state, the rise and fall of the cold war, as well as significant social and economic developments.

**HIST 4391 - Colonial Latin America**

A study of European and Indian background, Iberian exploration and conquest, political, economic, cultural, and social developments to the eve of independence.

**HIST 4392 - Modern Latin America**

Traces the evolution of the countries of Latin America from the era of the colonial wars of independence to the modern period.

**HIST 4393 - Japanese Civilization**

A study of Japanese civilization from its origins to modern day, emphasizing cultural and social developments.

**HIST 4394 - Chinese Civilization**

A study of Chinese civilization from its origins to modern day, emphasizing cultural and social developments.

**HIST 4395 - Modern Middle East**

Rise and spread of Islamic civilization, Ottoman Empire, European imperialism, rise of nationalism, Zionism and emergence of Israel, Arab-Israel conflict, impact of oil, recent Islamic reform, revolution, and resurgence.

**HIST 4397 - Topics in History**

Advanced studies in history to include such areas as comparative or non-Western history, or other specialized historical topics. May be repeated once for credit when content changes.

**HIST 4668 - Field Experience in History**

Provides the student with the opportunities to study historical sites and museums, use archival records, and conduct field research on a given topic which includes some travel. Classroom experiences employing the lecture and seminar methods complement the field experience.

Prerequisite: Consent of instructor. No more than three semester hours of travel/study courses may be applied to the major or teaching field requirements in history.

**HIST 5199-5699 - Independent Study**

Independent study in specific areas of history not covered by organized graduate classes. A maximum of six credit hours may be applied toward a graduate degree.

Prerequisite: Consent of instructor and department chair.

**HIST 5310 - Seminar in History**

Research and writing in selected areas of history. May be repeated for credit when content changes.

Prerequisite: 6 hours of reading seminars.

**HIST 5320 - Seminar in State and Local History**

Seeks to build an appreciation for significant state and local history. Emphasis on historiography and use of primary source material.

Prerequisite: 6 hours of reading seminars.

**HIST 5352 - Renaissance Europe**

In-depth study of literature in Renaissance European history.

**HIST 5353 - Reformation Europe**

In-depth study of literature in Reformation European history.

**HIST 5354 - Medieval Europe**

In-depth study of the literature of Medieval European history.

**HIST 5356 - Seventeenth-Century Europe**

In-depth study of historical literature in seventeenth-century Europe to 1715.

**HIST 5357 - Eighteenth-Century Europe**

In-depth study of historical literature in European history of the eighteenth century, 1715-1815.

**HIST 5358 - Nineteenth-Century Europe**

In-depth study of historical literature in European history of the nineteenth century, 1815-1914.

**HIST 5359 - Twentieth-Century Europe**

In-depth study of literature in European history of the twentieth century, 1914-present.

**HIST 5372 - Public History Internship**

Internship with public and private agencies in the East Texas region.

Prerequisite: Consent of instructor.

**HIST 5376 - Native American History**

In-depth study of the literature related to Native American relationships with the United States.

**HIST 5377 - American Borderlands**

In-depth study of the literature related to the history of American Borderlands.

**HIST 5379 - The Age of Jackson**

In-depth study of the literature in American history from 1815 to 1848.

**HIST 5384 - Colonial America**

In-depth study of the literature in American history from 1492 to 1754.

**HIST 5385 - Revolutionary America**

In-depth study of the literature in American history from 1754 to 1815.

**HIST 5386 - Civil War and Reconstruction**

In-depth study of the literature in American history from 1848 to 1877.

**HIST 5387 - Industrial and Progressive America**

In-depth study of the literature in American history from 1877 to 1917.

**HIST 5388 - America During the World Wars**

In-depth study of literature in American history from 1917 to 1945.

**HIST 5389 - America Since 1945**

In-depth study of literature in American history since 1945.

**HIST 5391 - Early and Colonial Latin America**

This course offers an in-depth study of the scholarship in Latin American history from pre-contact societies to independence at the graduate level. It is designed to help graduate students simultaneously become familiar with the history and historiography of early and colonial Latin American history from pre-contact societies up through independence. At the same time, this course will help students explore the various types of history that historians embrace.

**HIST 5392 - Modern Latin America**

This course offers an in-depth study of the scholarship in Latin American history from independence to the twenty-first century at the graduate level. It is designed to help graduate students simultaneously become familiar with the history and historiography of modern Latin American history from the beginning of independence movements in 1810 up to the present. At the same time, this course will help students explore the various types of history that historians embrace.

**HIST 5394 - Historiography**

Analyzes historical writing and the philosophy of history. Considers the works of important historians and schools of thought since Herodotus.

**HIST 5395 - Thesis**

Selection of a research topic and development of a thesis plan.

Prerequisite: Consent of thesis director.

**HIST 5396 - Thesis**

Completion and approval of thesis.

Prerequisite: HIST 5395 or concurrent enrollment and consent of thesis director.

**HIST 5397 - Topics in History**

In-depth study of literature in selected areas of history. May be repeated for credit when content changes.

**HIST 5668 - Field Experience in History**

Provides the graduate student with opportunities to study historical sites and museums, use archival records, and conduct field research on a given topic which includes some travel. Classroom experiences employing the lecture and seminar methods complement the field experience.

Prerequisite: Consent of instructor.

## HNRS - Honors

**HNRS 1351 - World, Text, and Image I**

Comparative study in the humanities and social sciences from antiquity to the Renaissance. This seminar course takes an interdisciplinary approach to literature, history, and art of this period. This course is writing intensive.

Prerequisite: Invitation by the Honors Committee. Satisfies core requirement for either Communication (ENGL 1301) or World/European Literature.

**HNRS 1352 - World, Text, and Image II**

Comparative study in the humanities and social sciences from the Renaissance to the Twentieth Century. This course takes an interdisciplinary approach to literature, history, and art of this period. Course is writing intensive.

Prerequisite: HNRS 1351 and invitation by the Honors Committee. Satisfies core requirement for either Communication (ENGL 1302) or Humanities.

**HNRS 2351 - World, Text, and Image III**

This seminar course takes an interdisciplinary approach to the social sciences and may include integrated study of any such fields including anthropology, history, sociology, and/or geography. This course is writing intensive.

Prerequisite: HNRS 1352 and invitation by Honors Committee. Satisfies core requirements for Social and Behavioral Sciences.

**HNRS 2352 - World, Text, and Image IV**

This seminar course takes an interdisciplinary approach to the fine and performing arts and may include integrated study of any such fields including music, theater, and/or art history. This course is writing intensive.

Prerequisite: HNRS 2351 and invitation by Honors Committee. Satisfies core requirements for Fine and Performing Arts.

**HNRS 2413 - Honors Calculus I**

Interdisciplinary approach to the development of calculus and physics. Calculus concepts will be motivated by physics concepts, giving physics concepts mathematical justification followed by experimental verification. This course covers all topics covered in MATH 2413 plus additional topics.

Prerequisite: Concurrent registration in HNRS 2425 and invitation by Honors Committee. Students cannot receive credit for both HNRS 2413 and MATH 2413.

**HNRS 2414 - Honors Calculus II**

Interdisciplinary approach to the development of calculus and physics. Calculus concepts will be motivated by physics concepts, giving physics concepts mathematical justification followed by experimental verification. This course covers all topics covered in MATH 2414 plus additional topics.

Prerequisite: Concurrent registration in HNRS 2426 and invitation by Honors Committee. Students cannot receive credit for both HNRS 2414 and MATH 2414.

**HNRS 2425 - Honors University Physics I**

Interdisciplinary approach to the development of calculus and physics. Calculus concepts will be motivated by physics concepts, giving physics concepts mathematical justification followed by experimental verification. This course covers all topics covered in PHYS 2325/PHYS 2125 plus additional topics.

Prerequisite: Concurrent registration in HNRS 2413 and invitation by Honors Committee. Students cannot receive credit for HNRS 2425 and PHYS 2325/PHYS 2125.

**HNRS 2426 - Honors University Physics II**

Interdisciplinary approach to the development of calculus and physics. Calculus concepts will be motivated by physics concepts, giving physics concepts mathematical justification followed by experimental verification. This course covers all topics covered in PHYS 2326/PHYS 2126 plus additional topics.

Prerequisite: Concurrent registration in HNRS 2414 and invitation by Honors Committee. Students cannot receive credit for both HNRS 2426 and PHYS 2326/PHYS 2126.

**HRD - Human Resource Development****HRD 3301 - Introduction to HRD and Performance Management Systems**

An overview of human resource development to include training, organizational development, career development and performance management techniques.

**HRD 3306 - Team Building**

This course provides an insight into the use of teams in business and industry. Topics include the purpose of teams and the team-building process, conflict resolution, talent management, and team-building activities. The course will also examine the basic structure of teams, why they are important, how they are developed, and how they are managed and evaluated.

**HRD 3312 - Training, Selection and Recruiting**

Overview of the process of planning, implementing and the evaluation of training and development in a variety of settings; includes conceptual tools needed to develop and design training.

**HRD 3333 - Human Relations**

Study of establishing and maintaining effective working relationships among teachers and trainers in educational, industrial, and business settings.

**HRD 3342 - Career Development and Human Resource Planning**

This course covers topics on evolving career development theories. Focus will be placed on knowledge and skills that enable students to effectively develop and link personal competencies to organizations.

**HRD 4199-4699 - Independent Study**

Independent study in specific areas of Human Resource Development not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of academic advisor.

**HRD 4311 - Instructional Delivery**

Study of methods and technologies of delivering instruction including diagnosis, alternative teaching strategies, and evaluation.

**HRD 4313 - Management of the Instructional Environment**

Designed to provide trainers instruction on best practices for organizing and managing learning situations.

**HRD 4321 - Introduction to E-Learning**

Introduction to the field of distance learning through the study and application of distance learning principles to educational and training settings via a variety of distance learning modalities.

**HRD 4323 - Developing Web-Based Instruction**

A study of concepts and practices relating to the development, implementation and teaching of Internet courses.

**HRD 4324 - Multimedia and Animation Techniques**

A technical course that develops advanced knowledge and skills in the use of computers for multimedia presentations and digital animation. It introduces students to 3-D modeling and rendering techniques and resources. This hands-on course allows students to create, edit, and render objects, and to design and produce multimedia presentations that use images, video, and audio resources to deliver a message.

**HRD 4331 - Workforce and Organizational Development**

Evaluation of the workforce of the nation and identifying, assessing and evaluating the needs of industry and education for a quality work force.

**HRD 4332 - Instructional Design and Assessment**

A study of the fundamentals of course construction including job and trade analysis to determine the skills and related technical competencies needed in development of a course of study.

**HRD 4350 - Human Resource Development Topics**

Areas of study in human resource development that reflect contemporary topics not covered by organized courses. Studies to include selected topics such as performance improvement, organization development and workplace learning. A maximum of six credit hours may be applied toward an undergraduate degree.

**HRD 4370 - Undergraduate Internship Program**

An eight to 16-week program providing for a teaching experience in an off-campus environment. CR/NC only.

Prerequisite: Consent of Department chair and 3.0 minimum GPA.

**HRD 4371 - Undergraduate Internship Program**

An eight to 16-week program providing for a teaching experience in an off-campus environment. CR/NC only.

Prerequisite: Consent of Department chair and 3.0 minimum GPA.

**HRD 5307 - Measurement and Evaluation in Human Resource Development/Technology Education**

A study of course measurement methods, evaluation procedures, and assessment criteria for learning that takes place in formal business and industrial training and academic classroom environments.

**HRD 5313 - Management of Instructional Environment**

Designed to provide HRD managers and instructors opportunities in properly organizing and managing learning situations in the classroom, laboratory, or training room.

**HRD 5322 - Concepts of E-Learning**

A study of the theoretical framework, historical development and practical applications of distance learning. Emphasis is placed on readings, discussion, and hands-on application for the purpose of developing a sound philosophy and knowledge of distance education.

**HRD 5326 - Planning and Development of Human Resource Development**

Planning, organizing, and developing programs in human resource development.

**HRD 5327 - Instructional Delivery**

Emphasis on updating instructional abilities including diagnosis, alternative teaching strategies, and evaluation.

**HRD 5328 - Human Resource Development Topics**

Areas of study in human resource development that reflect contemporary topics not covered by organized courses. Studies to include selected topics such as performance improvement, organization development, and workplace learning. May be repeated for up to 9 hours when topics change.

**HRD 5331 - Workforce Development**

Evaluation of the work force of the nation and the development of research techniques for identifying, assessing, and evaluating the needs of industry and education for a quality work force.

**HRD 5332 - Instructional Design and Assessment**

A study of the fundamentals of course construction including job and trade analysis to determine the skills and related technical competencies needed in the development of a course of study.

**HRD 5333 - Human Relations**

Study of establishing and maintaining effective working relationships among teachers, trainers, and trainees in education, industrial and business settings.

**HRD 5336 - Adult Learning**

Theory and methods of instruction in adult and continuing education to include learning principles, curriculum organization, evaluation techniques and effective classroom interaction.

**HRD 5342 - Trends in Training**

Designed to help people in industry best utilize resources for increasing productivity.

**HRD 5343 - Foundations of Human Resource Development**

Study of the set of systematic and planned activities designed by an organization to provide its employees with the necessary skills to meet current and future job demands: learning and human resource development, needs assessments, task analysis, designing and implementing training programs, evaluating training programs, career development, organizational development.

**HRD 5344 - Conflict Resolution**

This course involves the study of current theories and techniques on interpersonal, group, and inter-group conflict related to constructive management of organization conflicts and negotiations within organizations.

**HRD 5347 - Performance Consulting**

Practice oriented models, approaches, and techniques of performance consulting in organizational settings. Students will learn critical skills in identifying gaps for performance improvement and proposing HRD interventions. General performance consulting process will be covered.

**HRD 5350 - Leadership and Ethics in Human Resource Development**

Students will gain an understanding of the leadership process and leadership models relative to helping people and organizations adjust to and accept strategic leadership approaches.

**HRD 5352 - Organization Development**

This course is designed to provide students with different perspectives on Organization Development at the individual, group, and organizational levels of analysis. Theoretical models will be studied, along with practitioner examples of organizations utilizing organization development interventions.

**HRD 5370 - Internship in Human Resource Development**

An 8 to 16 week program providing a learning experience in an off-campus environment. The course requires a minimum of 125 clock hours in the approved internship activity.

Prerequisite: Consent of Department Chair and 3.0 minimum GPA.

**HRD 5371 - Internship in Human Resource Development**

An 8 to 16 week program providing a learning experience in an off-campus environment. The course requires a minimum of 125 clock hours in the approved internship activity.

Prerequisite: Consent of Department Chair and 3.0 minimum GPA.

**HRD 5384 - Change Diversity and Conflict Resolution**

Students will gain an understanding of the change process and change models relative to helping people and organizations adjust to and accept change; research and theory in diversity issues; and the theoretical underpinnings for understanding and managing conflicts at all levels will be discussed.

**HRD 6195-6995 - Dissertation**

Research and preparation of a dissertation required to earn the Ph.D. degree. Dissertation hours must be approved by the student's major professor. The dissertation hours are graded C/NC.

Prerequisite: Admission to doctoral candidacy.

**HRD 6310 - Advanced Theoretical Foundations of Human Resource Development**

The review and assessment of human resource development theories and the scholarly process that is required to develop sound theory in applied disciplines.

**HRD 6311 - Organizational Change**

An analysis of the theories and research on individual and organizational change including incremental and transformational change and top-down versus bottom-up change.

**HRD 6312 - Contemporary Issues in the Human Resource Development Literature**

An analysis of contemporary cutting edge issues in the workforce and workplace. The impact of shifting demographics, the information age, and the global integration of work and workplace are studied.

**HRD 6314 - Application of Management, Technology, and Interventions in Human Resource Development**

The application of management theories and tools to human resource development along with the utilization and integration of information and communication technology to achieve human resource development goals.

**HRD 6330 - Organizational Performance and Behavior**

Principles and practices of diagnosing organizational performance requirements, creating performance improvement proposals,

documenting workplace expertise, and assessing results from performance improvement interventions

#### **HRD 6334 - Organizational Consulting**

This course offers examination and application of the organizational consulting process that improves organizational effectiveness and efficiency.

#### **HRD 6336 - Human Resource Development Strategy**

This advanced course examines Human Resource Development strategy from a senior management perspective and fosters a broad understanding of the importance of strategically integrated HRD as a critical component of overall corporate strategy.

#### **HRD 6350 - Disciplined Inquiry in Human Resource Development**

This course is designed to provide learners with an overview of research in general and the research process in particular. It is intended to increase students' understandings of research concepts and procedures, develop an appreciation for HRD research, and to enable students to design and develop a research proposal.

#### **HRD 6351 - Intermediate Statistics**

This course covers an intermediate set of quantitative statistical analyses that are key to creating new knowledge in human resource development. Students will learn how to interpret, conduct, and report select quantitative statistical techniques that answer research questions or hypotheses that involve one dependent variable.

#### **HRD 6352 - Advanced Quantitative Research in Human Resource Development**

Advanced conception and design of quantitative studies with particular application to the content and context of human resource development. The course leads students through the quantitative research process from start to finish and covers key decisions researchers must make at each stage of the process.

#### **HRD 6353 - Advanced Qualitative Research in Human Resource Development**

This course examines qualitative methods and tools for HRD research including designs/methods, data collection, data analysis and reporting of findings. Learning includes a combination of lecture, field assignments, writing, and reporting.

#### **HRD 6355 - Advanced Statistics in Research**

A study of advanced statistical methods tools for HRD research including research designs/methods, data collection, statistical analysis (ANOVA, MANOVA, Regressions, Factor Analysis, SEM etc. SPSS-AMOS). Learning includes a combination of lecture, writing, labs and presentation.

#### **HRD 6359 - Research Seminar in Human Resource Development**

This course is designed for carrying our disciplined research and strengthening dissertation proposal in doctoral studies. Focus is on research criteria, integrating and applying existing knowledge and skills in quantitative and qualitative methods and developing publishable conference manuscripts.

#### **HRD 6360 - Proposal Development**

As an advanced doctoral seminar, this course will introduce learners to the concepts of a literature review and research proposal which are critical to the dissertation process.

#### **HRD 6391 - Advanced Topics in Human Resource Development**

Selected contemporary topics in human resource development will be presented. May be repeated for credit. Up to nine semester hours may be applied to the degree.

## JAPN - Japanese

#### **JAPN 1411 - Beginning Japanese I**

Designed for the student having little or no previous exposure to the Japanese language, this course concentrates on developing the ability to understand, speak, read, and write in Japanese. Class conversation is a key element in the instruction. Course also includes basic vocabulary, grammatical structures, and cultures. Not open to native speakers.

#### **JAPN 1412 - Beginning Japanese II**

Designed for the student having little or no previous exposure to the Japanese language, this course concentrates on developing the ability to understand, speak, read, and write in Japanese. Class conversation is a key element in the instruction. Course also includes basic vocabulary, grammatical structures, and culture. Not open to native speakers.

#### **JAPN 1611 - Accelerated Japanese I**

Designed for students having no exposure to Japanese, this course offers 6 credit hours a semester to accelerate student learning. It emphasizes speaking, listening, and reading skills along with a focus on basic grammar and development of vocabulary.

#### **JAPN 2311 - Intermediate Japanese I**

This course continues development of skills in Japanese conversation, composition, cultural readings, and grammar review. Not open to native speakers.

Prerequisite: JAPN 1411 and 1412 or 3 units of high school Japanese.

#### **JAPN 2312 - Intermediate Japanese II**

This course continues the development of skills in Japanese conversation, composition, cultural readings, and grammar review. Not open to native speakers.

Prerequisite: JAPN 1411, 1412, and 2311 or 4 units of high school Japanese.

#### **JAPN 2611 - Accelerated Japanese II**

Designed for students who have completed at least 6 hours of Japanese or the equivalents, this course offers 6 credit hours to accelerate student learning. It emphasizes speaking, listening, and reading skills along with a focus on advanced grammar and vocabulary.

#### **JAPN 4199-4699 - Independent Study**

Independent study in specific areas of Japanese language or literature not covered by organized undergraduate courses. A maximum of six credit hours may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

## KINE - Kinesiology

#### **KINE 1101 - Health-Related Fitness Activities [KINE 1301=TCCN PHED 1301]**

Study of one or more activities that can be used to improve health-related fitness. Emphasis is on improving health-related fitness and developing activity-specific skills. Attention is also given to rules and etiquette, historical and cultural aspects of the activity, and activity-specific training techniques. May be repeated as activities vary.

#### **KINE 1102 - Sport Activities**

Study of one or more sport activities, with emphasis on skill development and improvement. Attention is also given to rules and etiquette, historical and cultural aspects of the sport, health and fitness considerations and sport-specific training techniques. May be repeated as sport activities vary.

#### **KINE 1201 - Health-Related Fitness Activities [KINE 1301=TCCN PHED 1301]**

Study of one or more activities that can be used to improve health-related fitness. Emphasis is on improving health-related fitness and developing activity-specific skills. Attention is also given to rules and etiquette,



historical and cultural aspects of the activity, and activity-specific training techniques. May be repeated as activities vary.

#### **KINE 1202 - Sport Activities**

Study of one or more sport activities, with emphasis on skill development and improvement. Attention is also given to rules and etiquette, historical and cultural aspects of the sport, health and fitness considerations and sport-specific training techniques. May be repeated as sport activities vary.

#### **KINE 1214 - Circuit Crunch**

This activity course will explore the benefits of circuit training through active participation. Great for all levels.

#### **KINE 1301 - Health-Related Fitness Activities [KINE 1301=TCCN PHED 1301]**

Study of one or more activities that can be used to improve health-related fitness. Emphasis is on improving health-related fitness and developing activity-specific skills. Attention is also given to rules and etiquette, historical and cultural aspects of the activity, and activity-specific training techniques. May be repeated as activities vary.

#### **KINE 1302 - Sport Activities**

Study of one or more sport activities, with emphasis on skill development and improvement. Attention is also given to rules and etiquette, historical and cultural aspects of the sport, health and fitness considerations and sport-specific training techniques. May be repeated as sport activities vary.

#### **KINE 2337 - Care and Prevention of Athletic Injuries**

Study of principles and practice of techniques involved in prevention and treatment of injuries related to athletic performance.

#### **KINE 3102 - Clinical Experiences in Athletic Training I**

This is a laboratory based course designed to introduce students to basic level clinical skills necessary to complete upper level athletic training clinical education requirements of the program.

#### **KINE 3103 - Clinical Experiences in Athletic Training II**

This is a laboratory based course designed to introduce students to basic level clinical skills necessary to complete upper level athletic training clinical education requirements of the program.

Prerequisite: KINE 3102.

#### **KINE 3112 - Physiology of Exercise Laboratory**

Laboratory assessment of responses to acute and chronic exercise.

Prerequisite: BIOL 2301, BIOL 2101, BIOL 2302, BIOL 2102, KINE 3306. Corequisite: KINE 3311.

#### **KINE 3132 - Human Motor Control and Learning Laboratory**

Laboratory and field analyses related to learning and control of motor skills.

Corequisite: KINE 3331.

#### **KINE 3135 - Biomechanics and Anatomical Kinesiology Laboratory**

Laboratory and field analyses related to mechanics and musculoskeletal involvement in movement.

Corequisite: KINE 3334.

#### **KINE 3301 - Assessment of Athletic Injuries I: Lower Extremity**

Study of knowledge, skills and abilities related to the assessment of lower body injuries commonly found in athletics.

Prerequisite: KINE 2337, BIOL 2301, BIOL 2101.

#### **KINE 3302 - Assessment of Athletic Injuries II: Upper Extremity**

Study of knowledge, skills and abilities related to the assessment of upper body injuries commonly found in athletics.

Prerequisite: KINE 3301.

#### **KINE 3303 - Motor Development**

Study of growth and physical development throughout different stages of life and the acquisition of neuromotor control of movement at different levels of development.

#### **KINE 3306 - Fitness Assessment Skills**

Development of knowledge and skills required for evaluation of health-related and sport-related fitness.

Prerequisite: BIOL 2301, BIOL 2101, BIOL 2302, BIOL 2102.

#### **KINE 3311 - Physiology of Exercise**

Study of functional responses to acute and chronic exercise.

Prerequisite: BIOL 2301, BIOL 2101, BIOL 2302, BIOL 2102, KINE 3306. Corequisite: KINE 3112.

#### **KINE 3320 - Success in Sports**

Success in Sports (SIS) is an integration of cross-boundary research documenting the determinants of success in sports. Special emphasis will be placed on elite athletic performance. Will be organized around theoretical accounts for the attainment of elite performance.

#### **KINE 3331 - Human Motor Control and Learning**

Study of principles, theories, and processes involved in learning motor skills and the control of movement. Application is made to sport, ergonomics and rehabilitation.

Corequisite: KINE 3132.

#### **KINE 3334 - Biomechanics and Anatomical Kinesiology**

Analysis of human movement, applying principles from Newtonian mechanics and study of structure and function of major joints and muscle groups.

Prerequisite: BIOL 2301, BIOL 2101, BIOL 2302 and BIOL 2102.

Corequisite: KINE 3135.

#### **KINE 3340 - Assessment of Athletic Injuries**

Study of knowledge, skills and abilities related to assessment of injuries by the athletic trainer.

Prerequisite: KINE 2337 and admission to Athletic Training Program.

#### **KINE 3342 - Therapeutic Modalities for Athletic Trainers**

Study of knowledge, skills and abilities related to use of therapeutic modalities by the athletic trainer.

Prerequisite: KINE 3340.

#### **KINE 4101 - Clinical Experiences in Athletic Training III**

This is a laboratory based course designed to introduce students to basic level clinical skills necessary to complete upper level athletic training clinical requirements of the program.

Prerequisite: KINE 3103.

#### **KINE 4102 - Clinical Experiences in Athletic Training IV**

This is a laboratory based course designed to introduce students to basic level clinical skills necessary to complete upper level athletic training clinical education requirements of the program.

Prerequisite: KINE 4101.

#### **KINE 4304 - Principles of Training: Endurance**

Study of principles, guidelines, and procedures related to prescribing exercise training programs aimed at enhancing cardiorespiratory endurance.

Prerequisite: KINE 3311, KINE 3112, KINE 3334, KINE 3135.

#### **KINE 4305 - Principles of Training: Strength and Power**

This course emphasizes the application of physiological principles of exercise training for improvement of muscular endurance, strength, and power. Includes study of resistance training programs for enhancing health, fitness and performance of various populations.

Prerequisite: KINE 3112, KINE 3135, KINE 3311, KINE 3334.

**KINE 4308 - Adapted Physical Education**

Study of selected disabilities with emphasis on movement characteristics and modification of activities and equipment to permit individuals to engage in leisure and sport activities, particularly in the school setting.

**KINE 4314 - Prescriptive Exercise**

Study of principles, guidelines, and procedures for prescribing remedial and preventive exercise programs.

Prerequisite: KINE 3311 and KINE 3112.

**KINE 4319 - Aging and Physical Performance**

Course provides students with an overview of the physiological changes associated with aging and age-associated decreases in physical function, and the role of exercise in healthy aging.

Prerequisite: KINE 3311.

**KINE 4321 - Sports Nutrition**

Study of nutrition as it relates to optimal training and performance of sports activities.

**KINE 5116 - Exercise Metabolism Laboratory**

Study and practice of laboratory techniques used in evaluating metabolic responses to exercise.

Corequisite: KINE 5216.

**KINE 5216 - Exercise Metabolism**

In-depth study of metabolic responses to acute and chronic exercise.

Corequisite: KINE 5116 or 5217.

**KINE 5217 - Exercise Metabolism Laboratory**

Study and practice of laboratory techniques and clinical procedures used in evaluating metabolic responses to exercise.

Corequisite: KINE 5216.

**KINE 5219 - Exercise for Special Populations I**

Study of principles of prescribing exercise for individuals with selected cardiovascular, pulmonary and metabolic diseases, with overview of pathophysiology, medical and surgical management, and physical assessment related to these diseases.

Prerequisite: CEPH 5213/CEPH 5214. Corequisite: KINE 5220.

**KINE 5220 - Exercise for Special Populations I Laboratory**

Practice in writing exercise prescriptions and observing and assisting with exercise sessions for individuals with selected cardiovascular, pulmonary and metabolic diseases.

Prerequisite: CEPH 5213/CEPH 5214. Corequisite: KINE 5219.

**KINE 5221 - Exercise for Special Populations II**

Study of principles of prescribing exercise for individuals with selected orthopedic/musculoskeletal, neuromuscular and immunologic diseases and disabilities, with overview of pathophysiology, medical and surgical management, and physical assessment related to these diseases and disabilities.

Prerequisite: CEPH 5213/CEPH 5214. Corequisite: KINE 5222.

**KINE 5222 - Exercise for Special Populations II Laboratory**

Practice in writing exercise prescriptions and observing and assisting with exercise sessions for individuals with selected orthopedic/musculoskeletal, neuromuscular and immunologic diseases and disabilities.

Prerequisite: CEPH 5213/CEPH 5214. Corequisite: KINE 5221.

**KINE 5304 - Exercise Psychology**

Study of how exercise affects and is affected by psychological and sociological variables related to health and fitness.

**KINE 5305 - Motor Development**

An overview of the life changes that occur in physical fitness, physical skills, and perceptual motor skills. Individual variations due to genetic factors and environmental interventions are examined.

**KINE 5306 - Topics in Motor Performance**

In-depth study of selected topics related to motor performance, including the areas of biomechanics, exercise physiology, motor control, motor development, and motor learning. May be repeated once for credit when content changes.

**KINE 5307 - Motor Learning**

Study of the individual processes of skill acquisition, including the involvement of transfer, timing, feedback, practice, retention and motivation.

**KINE 5308 - Adapted Physical Education for Children and Adults**

An in-depth study of selected disabilities and adaptations needed to permit participation in leisure and sports activities. Emphasis is given to recreational activities and training techniques appropriate for competitive athletics.

**KINE 5309 - Advanced Motor Control**

An in-depth study of central and peripheral neural mechanisms involved in implementing physical and perceptual skills.

**KINE 5310 - Sport Psychology**

Study of cognitive, social and emotional factors in sport performance.

**KINE 5313 - Exercise Physiology I**

Study of neuromuscular and metabolic responses to acute and chronic exercise.

**KINE 5315 - Exercise Physiology II**

Study of cardiovascular and respiratory responses to acute and chronic exercise.

**KINE 5317 - Training Methods**

Study of training methods used to improve performance.

**KINE 5318 - Strength Development**

Study of muscular strength: physiology, factors that affect strength, and training methods.

**KINE 5319 - Aging and Physical Performance**

Study of the complex physiological changes that accompany advancing age, and the role of exercise training in improving physical performance with aging.

**KINE 5333 - Topics in Biomechanics**

In-depth study of selected topics related to mechanical components of human motion. May be repeated once for credit when content changes.

**KINE 5335 - Biomechanics**

Study of kinematic and kinetic analysis of human motion.

**KINE 5338 - Issues in Athletic Training and Sports Medicine**

Study of current issues related to athletic training and sports medicine, with specific application to competitive athletics.

Prerequisite: Undergraduate course on athletic injuries and training, or consent of instructor.

**KINE 5341 - Sports Nutrition**

Study of nutrition as it relates to optimal training and performance of sports activities.

Prerequisite: ALHS 5322 Nutrition, Health and Disease or equivalent graduate or upper-division undergraduate general nutrition course.

**LATN - Latin****LATN 1301 - Beginning Latin I [TCCN: LATI 1311]**

Designed for those students who have minimal or no experience with the language. Course introduces the skills of reading, writing, and pronouncing Golden-Age Latin. These skills are supported by

grammatical exercises and a number of readings by Roman authors. The course also includes an introduction to Roman history and culture.

**LATN 1302 - Beginning Latin II [TCCN: LATI 1312]**

This course will build upon the skills learned in LATN 1301. The mastering of Latin grammar will be emphasized and supported by a variety of reading and composition exercises.

Prerequisite: LATN 1301 or consent of instructor.

**LATN 2301 - Intermediate Latin I [TCCN: LATI 2311]**

An intermediate reading course in Latin, focused on Roman prose. Designed to strengthen students' grammar, vocabulary, and ability in reading and translation.

Prerequisite: LATN 1302 or CI.

**LATN 2302 - Intermediate Latin II [TCCN: LATI 2312]**

An intermediate reading course in Latin, focused on Roman prose. Designed to strengthen students' grammar, vocabulary, and ability in reading and translation.

Prerequisite: LATN 2301 or CI.

**LATN 3305 - Readings In Latin**

Selections from Cicero, Livy, Horace, Ovid, Tacitus, Pliny, and others. May be repeated once for credit when content changes.

Prerequisite: CI.

**LATN 4199-4399 - Independent Study**

Intensive study of the Latin texts of an author or authors chosen in consultation with the advisor. Allows advanced students to explore authors not covered in other LATN courses, or to cover individual authors in more depth.

Prerequisite: CI.

## MANA - Management

**MANA 1300 - Introduction to Business [TCCN: BUSI 1301]**

Provides a brief survey of the major functional areas of business including management, marketing, accounting, finance, and information technology, as well as core topics such as ethics and social responsibility, forms of ownership, small business, and international business.

**MANA 3170 - How to Get a Job**

Develop job search, networking, and career management skills including business etiquette, salary negotiations, interviewing, and career management. Students will understand the concept of a personal brand, and develop resumes and cover letters to help meet career objectives.

**MANA 3300 - Critical and Analytical Thinking in Business**

This course focuses on critical and analytical thinking involved with business decisions. Topics include the elements of reasoning, interpretation of data, learning how to critique and construct arguments, and understanding complex business problems.

Prerequisite: MANA 1300.

**MANA 3305 - Operations Management**

Management of the production function in business firms with special attention given to production, transportation, inventory, quality, and cost control.

Prerequisite: TECH 2323; and MATH 1342; or completed or concurrently enrolled in TECH 4310.

**MANA 3311 - Fundamentals of Management**

An understanding of individual characteristics and behavioral management concepts. Topics include personality, attribution theory, individual bias, motivation, team building, conflict resolutions, change management, leadership, interpersonal communication, and organizational design. Students who have completed HRD 3333 or HRD 4330 may NOT receive credit for this course.

**MANA 3312 - International Business**

This course focuses on understanding of globalization mechanics and application of business strategy, operation and practices in a global perspective. This includes national differences in context (political, economical, socio-cultural), and their implications in company-level actions and international management, assumptions and practices; impact of foreign exchange, of international monetary and financial community, and capital markets, companies' international ventures and risks; impact of trade policies on companies' international strategies and risks; key choices managers have in internationalization strategy, organizational architecture, supply chain/operations, marketing, human resources and financial management, and import/export operations. Prerequisite: ECON 2302. Recommended MANA 3311 and MARK 3311 prior to enrollment.

**MANA 3315 - Managing Modern Organizations**

Integration of theory to address issues managers face when trying to lead individuals and units to achieve organizational objectives. The focus of the course emphasizes individual and group level analysis as well as strategies for organizational change.

**MANA 3320 - Human Resource Management**

An examination of the human resource functional areas of 1) planning, selection, and recruitment, 2) compensation, 3) human resource development, 4) employee and labor relations, and 5) safety, health, and security.

**MANA 3325 - Entrepreneurship**

Exploration of all aspects of entrepreneurship and the process of creating new ventures. Topics will include the role of entrepreneurship in the economy, opportunity recognition and evaluation, bootstrapping, entrepreneurial strategies, venture financing, and managing the growth process.

**MANA 3330 - Management Information Systems**

A survey of the tools and techniques for the gathering of business information and structuring and manipulation of data to support managerial decision making. Main topic area includes decision support system technology, artificial intelligence tools, expert systems and business applications such as SAP.

Prerequisite: TECH 2323 or equivalent.

**MANA 3370 - Business Writing and Oral Presentations**

Opportunity for development of clear and persuasive business communication skills, study of interpersonal communication channels in internal and external environments, and experience in writing business letters, reports, and other professional communications.

**MANA 4199-4699 - Independent Study**

Independent study in specific areas of management not covered by organized undergraduate courses. A maximum of six credit hours for independent study may be applied toward an undergraduate degree. Independent study courses are available only to degree seeking students. The student must request a faculty member to supervise the independent study, write a proposal and have it approved by the sponsoring faculty member and the Department chair. The proposal and the final report become part of the student's permanent record.

Prerequisite: Consent of academic advisor.

**MANA 4310 - International Management**

Focuses upon the globalization of markets, technologies and business practices and how organizational leaders and managers deal with these changing forces. Topics include managing international trade, foreign manufacturing and global service industries such as transportation and mass communications.

Prerequisite: MANA 3311.

**MANA 4315 - Managerial Decision Making**

This course develops integrative decision-making skills in business. Topics include problem definition, generation of alternatives, data

collection, quantitative analysis, and qualitative analysis. Course requires familiarity with Microsoft Office Suite and SAP.

Prerequisite: MATH 1342 and TECH 2323.

#### **MANA 4320 - New Venture Planning**

An application course designed to show students how to identify potential business opportunities, determine what constitutes a good business model, and how to implement a new business model. Students will prepare and present business plans during the semester.

#### **MANA 4325 - Compensation Administration**

Job analysis and evaluation; development of a comprehensive compensation program including incentive systems, supplemental compensation, executive compensation, and benefits analysis.

Prerequisite: MANA 3311 or HRD 3333.

#### **MANA 4335 - Labor Relations**

Overview of labor law, rights of employers and unions in organizing and bargaining, grievance processing, arbitration, and collective bargaining strategy and tactics.

Prerequisite: MANA 3311 or HRD 3333.

#### **MANA 4345 - E-Commerce**

The effective use of e-commerce applications is becoming increasingly important to sustain competitive advantage in today's global environment. The course topics include e-commerce business models, internet consumer retailing, key e-commerce applications, support services strategy and implementation and website development.

Prerequisite: TECH 2323.

#### **MANA 4350 - Database Information Systems**

The basics of constructing, managing, and deploying relational database and ERP systems such as SAP in support of electronic-based commerce activities. Topics include the requirements of defining and using data in relational databases, and incorporating the collection, management, and use of data as an integral part of successful e-business endeavors.

#### **MANA 4365 - Undergraduate Internship**

An 8 to 16 week program providing a learning experience in an off-campus environment.

Prerequisite: Consent of Department Chair and 3.0 minimum GPA.

#### **MANA 4370 - Special Topics in Management**

Studies in management to include such topics as organizational theory and structure, global challenges in management, and ethical issues confronting management. A maximum of six semester hours may be applied to a degree. May be repeated once for credit when content changes.

Prerequisite: Consent of academic advisor.

#### **MANA 4385 - Strategic Leadership**

Application of leadership theories across all levels of the firm. Topics may include top management team dynamics, team building, transformational change processes and corporate restructuring.

Prerequisite: Consent of academic advisor.

#### **MANA 4395 - Strategic Management**

Capstone course that integrates accounting, economics, law, finance, management, and marketing in the solution of an organization's problems. Focus on the problems and perspectives of the firm's top management team as they attempt to achieve and retain competitive advantages.

Prerequisite: Completion of Common Business Core and senior status.

#### **MANA 5199-5699 - Independent Study**

Independent study in specific areas of management not covered by organized graduate courses. A maximum of six credit hours of independent study may be applied to a graduate degree. Independent study courses are available only to degree seeking students. The student must request a faculty member to supervise the independent study, write

a proposal and have it approved by the sponsoring faculty member and the College of Business and Technology coordinator of graduate programs. The proposal and the final report become part of the student's permanent record.

#### **MANA 5300 - Management Concepts and Processes**

A study of the management process, behavioral and structural properties of organizations, and environmental influences surrounding organizations. Students with six undergraduate hours of management may not receive graduate credit for this course.

#### **MANA 5305 - Decision Making in Operations Management**

Analysis of the operations management function from a manager's perspective. Quantitative techniques related to decision making such as linear programming, statistics and selected operational models are applied to operations management problems in both the service and manufacturing industries.

#### **MANA 5315 - Quantitative Management Tools**

Topics to be covered include quantitative techniques for decision making, linear programming, inferential statistics and selected quantitative models with computer applications such as SAP.

#### **MANA 5320 - Leading and Managing People**

Investigation of issues managers face when trying to lead individuals and organizational units to achieve corporate objectives. Focus of the course emphasizes the individual and group levels of analysis.

#### **MANA 5340 - Applications for E-Commerce**

Study of advanced applications of management information systems (MIS) in business. Topics include E-Business applications such as SAP for enterprise resource planning and E-Commerce topics such as web design/development and web business models.

#### **MANA 5345 - Strategic Leadership Processes**

Focuses on leadership and development issues addressed by members of the top management team and other upper-level managers. Topics include coordination between and among units, managerial control systems, and the development of management talent within the firm.

#### **MANA 5350 - Strategic Human Resources Management**

Focus is on the role of HR managers and practices in developing competitive advantage for the firm. Considers the role of both specific HR practices and the overall HR architecture in enhancing firm performance.

#### **MANA 5360 - Global Business Perspectives**

An intensive study of the different aspects of international business including, but not limited to international politics, culture, economics, finance, technology, marketing, ethical decision-making, strategic planning and management, and human resource development in a global environment.

#### **MANA 5361 - Introduction to the American Healthcare System**

An introduction to the American healthcare delivery system, its components, organizations, and management. Subjects will include the historical development, structure, operation, current and future directions of the American healthcare delivery system, and healthcare ethics.

#### **MANA 5370 - Special Topics in Management**

An exploration of current management topics that are not covered in other courses. May be repeated once for credit when the topics vary.

Prerequisite: Consent of graduate advisor.

#### **MANA 5375 - Special Topics in Health Management**

An exploration of current health management topics that are not covered in other courses. May be repeated twice when the topics vary.

Prerequisite: Consent of Department Chair.

**MANA 5385 - New Venture Commercialization**

Examine the theoretical ideas and concepts, investigate phases of the entrepreneurial processes. Explore the development of entrepreneurial strategy foundation and implementation together with the incorporation of technology into business, and the development of a business plan. This course may require students to participate in a business plan competition.

**MANA 5390 - Designing Effective Organizations**

Focus is on the design characteristics of a firm that managers can manipulate to maximize the firm's alignment with the competitive environment. Theoretical and applied examination of the major imperatives in organizational theory including the environmental, technological, and strategic imperatives.

**MANA 5395 - Formulating and Implementing Strategy**

Students adopt the top management's view of the firm and focus on positioning the firm to gain strategic advantage in the competitive marketplace. Industry analysis, planning and implementation of competitive strategy, evaluation of strategy alternatives, utilization of appropriate controls, and the evaluation of the administrative process are emphasized.

Prerequisite: Should generally be completed in the final semester.

**MARK - Marketing****MARK 3311 - Principles of Marketing**

Marketing institutions, current market practices and structure of the market. Analysis of marketing functions, institutions, pricing, promotion, costs, marketing legislation and international marketing.

**MARK 3325 - Retailing in the 21st Century**

Fundamental operations of retail institutions. Consideration is given to store location, merchandising, sales promotion, inventory control, store organization, and the use of enterprise resource planning systems such as SAP to integrate activities.

Prerequisite: MARK 3311.

**MARK 3350 - Consumer Behavior**

Analysis of psychological, sociological, and cultural aspects of human behavior affecting consumer's actions in the market place. Consumer purchase decision processes are also analyzed.

Prerequisite: MARK 3311.

**MARK 4199-4699 - Independent Study**

Independent study in specific areas of marketing not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree. Independent study courses are available only to degree-seeking students. The student must request a faculty member to supervise the independent study, write a proposal and have it approved by the sponsoring faculty member and the department chair. The proposal and the final report become part of the student's permanent record.

Prerequisite: Consent of academic advisor.

**MARK 4300 - Services Marketing**

Decision making in the service industries such as accounting, education, finance, health, and other professional fields will be studied. Emphasis will be on problem solving for marketing in areas that are unique to the service sector.

Prerequisite: MARK 3311.

**MARK 4305 - Integrated Marketing Communication**

Special attention is given to planning, strategy, analysis, and measurement of advertising effectiveness. Explores the subject of ethics and truth in advertising.

Prerequisite: MARK 3311.

**MARK 4310 - Sports Marketing**

A study of basic marketing concepts with applications to sport organizations, both amateur and professional. Topics include promotions and public relations, sport behavior, strategic market planning, marketing information management communications, and sponsorship.

**MARK 4325 - Retail Operations**

This course is an examination of retail operations standards, including methods, practices, and key performance indicators. Attention will be paid to in-store as well as corporate practices.

Prerequisite: MARK 3311.

**MARK 4340 - Retail Analytics**

Industry overview, highlighting a variety of critical retail metrics, how they are derived, and their implications. Utilizes technology to gain experience with metrics and the use of data in decision making.

Prerequisite: MARK 3311.

**MARK 4350 - Personal Selling**

This marketing course includes the principles of personal selling for both industrial and retail sales persons. Topics include prospecting, approaching, presenting, closing, and follow-up. The major emphasis is to understand the customer's needs, and contributing to the success of customer.

Prerequisite: MARK 3311.

**MARK 4360 - International Marketing**

This course focuses on marketing strategy and management within the context of global and international markets. It evaluates cultural differences and aims to enhance your skills in developing and implementing marketing strategies and decision making in international contexts.

Prerequisite: MARK 3311.

**MARK 4365 - Sales Management**

Decision making for sales executives. Organization and administration of sales departments with special attention to sales forecasting.

Prerequisite: MARK 3311.

**MARK 4370 - Special Topics in Marketing**

Areas of study in marketing that reflect contemporary topics not covered by organized courses. May be repeated once for credit when content changes.

Prerequisite: MARK 3311.

**MARK 4375 - Undergraduate Internship**

An 8 to 16 week program providing a learning experience in an off-campus environment.

Prerequisite: Consent of Department Chair and 3.0 minimum GPA.

**MARK 4380 - Marketing Research**

Informational input for decision making, scientific method, research design, and sampling relative to the research process for the solution of marketing problems.

Prerequisite: MARK 3311 and MATH 1342.

**MARK 5199-5699 - Independent Study**

Independent study in specific areas of marketing not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied to a graduate degree. Independent study courses are available only to degree-seeking students. The student must request a faculty member to supervise the independent study, write a proposal and have it approved by the sponsoring faculty member and College of Business Administration coordinator of graduate programs. The proposal and the final report become part of the student's permanent record.

**MARK 5300 - Marketing Concepts and Processes**

Survey of marketing processes, management and procedures. Topics include consumer behavior, marketing plans, supply chains, media needs, selling, and marketing strategies. Students with six (6) undergraduate semester hours of marketing may not receive graduate credit for this course.

**MARK 5320 - Advanced Marketing Fundamentals**

An analysis of contemporary problems in marketing with emphasis on dynamic market characteristics.

**MARK 5360 - Advanced Service Marketing**

A study of the production, consumption, and marketing of services; the solutions to problems faced by service managers; and the development of an organization marketing system for the delivery of quality service.

**MARK 5365 - Retail Management**

Conceptual foundations of retail management and retail consulting. Consideration is given to retail best practices including customer service, visual merchandising, category management, and SAP Retail.

Prerequisite: MARK 5300 or equivalent.

**MARK 5370 - Health Care Marketing in Contemporary Society**

A review and analysis of current trends in the health care field with a focus on managed care and the implication for business and marketing practitioners.

Prerequisite: MARK 5320.

**MARK 5375 - Special Topics in Marketing**

Areas of study in marketing that reflect contemporary topics not covered by organized courses.

**MARK 5380 - Marketing Research and Analysis**

Examination of approaches and methods of marketing research employed by marketing managers to solve marketing problems; emphasis on survey methodology and applications of statistical methods.

Prerequisite: MARK 5320.

**MATH - Mathematics****MATH 0303 - Intermediate Algebra**

A study of the real number system, fractions, decimals, absolute values, percentages, comparisons and proportional reasoning, signed numbers, solving linear equations and inequalities, simplifying expressions and functions. Does not count toward any degree program or electives.

**MATH 1314 - College Algebra [TCCN: MATH 1314]**

Study of linear and quadratic equations and inequalities, logarithmic and exponential functions, graphs, systems of equations, matrices, partial fractions, binomial theorem, theory of equations.

Prerequisite: Appropriate score on ACT, SAT or TSI. Credit not given for both MATH 1314 and MATH 1324 or MATH 1332.

**MATH 1316 - Trigonometry [TCCN: MATH 1316]**

A study of trigonometric functions of angles, degree and radian measure, circular functions, graphs, identities, inverse trigonometric functions, polar coordinates, solution of general triangles, complex numbers.

Prerequisite: Appropriate score on ACT, SAT or TSI.

**MATH 1324 - Mathematics for Business and Economics I [TCCN: MATH 1324]**

Topics include review of basic algebraic concepts, linear equations and inequalities, mathematics of finance, matrices, introduction to linear programming, topics in probability.

Prerequisite: Appropriate score on ACT, SAT or TSI. Credit not given for both MATH 1324 and MATH 1314 or MATH 1332.

**MATH 1325 - Mathematics for Business and Economics II [TCCN: MATH 1325]**

Study of the real number system, sets, functions, graphs, linear equations, linear inequalities, differential and integral calculus.

Prerequisite: MATH 1324 or MATH 1314. (Credit not given to mathematics majors, minors, or students using mathematics as a secondary teaching specialization.).

**MATH 1332 - Math for Liberal Arts Majors I**

Topics may include logic and mathematical reasoning, sets, problem solving, applications, networks, graphs, probability, statistics, geometry, mathematics of finance, and number theory.

Prerequisite: Appropriate score on ACT, SAT or TSI. Credit not given for both MATH 1332 and MATH 1324 or MATH 1314.

**MATH 1333 - Math for Liberal Arts Majors II**

Topics may include statistics, probability, combinatorics, game theory, voting theory, and mathematics of finance.

Prerequisite: MATH 1314, MATH 1324, or MATH 1332.

**MATH 1342 - Statistics [TCCN: MATH 1342]**

Measures of central tendency and dispersion, sampling, probability, testing of hypothesis, correlation and regression, and analysis of variance.

Prerequisite: Appropriate score on ACT, SAT or TSI.

**MATH 1343 - Statistics II**

A second course in statistics covering a variety of topics in statistical inference, including: inference of means, proportions, regression, and both one- and two-way analysis of variance. Additional topics may be included.

Prerequisite: A grade of C or better in MATH 1342.

**MATH 1350 - Concepts of Modern Mathematics I [TCCN: MATH 1350]**

Study of topics in logic, set theory, and conceptual foundations of elementary number systems. Course for Interdisciplinary Studies majors only.

Prerequisite: MATH 1314 or equivalent. (Credit not given to mathematics majors or minors.).

**MATH 1351 - Concepts of Modern Mathematics II [TCCN: MATH 1351]**

Study of geometry and elementary probability and statistics. Course for Interdisciplinary Studies majors only.

Prerequisite: MATH 1350 or equivalent. (Credit not given to mathematics majors or minors.).

**MATH 2113 - Calculus I Computer Lab**

Calculus I concepts illustrated and expanded through the use of a computer algebra system. Graphing and symbolic and numerical computations will be emphasized.

Corequisite: MATH 2413.

**MATH 2114 - Calculus II Computer Lab**

Calculus II concepts illustrated and expanded through the use of a computer algebra system. Graphing and symbolic and numerical computations will be emphasized.

Corequisite: MATH 2414.

**MATH 2312 - Precalculus**

A survey of college algebra, trigonometry and analytical geometry to prepare students for calculus. Topics include algebraic functions and their graphs, exponential and logarithmic functions, trigonometric functions and identities, two and three dimensional analytical geometry. Credit not given for both MATH 2312 and MATH 1316.

Prerequisite: Appropriate score on ACT, SAT or TSI.

**MATH 2325 - Functions and Modeling**

Modeling using families of functions (including linear, exponential, polynomial, and trigonometric functions), conic sections, parametric equations and polar equations. Use of multiple representations, transformations, data analysis techniques, and interconnections among geometry, probability, and algebra.

Prerequisite: MATH 2413.

**MATH 2330 - Discrete Structures**

Study of mathematical logic, sets, combinations, relations, functions, graphs and trees, Boolean algebra, and algebraic structures.

Prerequisite: MATH 1325 or MATH 2413 or equivalent and one high-level computer language. Students may not receive credit for both MATH 2330 and MATH 3425.

**MATH 2413 - Calculus I [TCCN: MATH 2413]**

A study of functions, limits, continuity, differentiation of algebraic and trigonometric functions, applications of the derivative, definite and indefinite integrals with applications.

Prerequisite: Satisfactory math score on SAT, ACT or THEA and "C" or better in MATH 1316, or passing score on departmental trigonometry test, or "C" or better in MATH 2312. Corequisite: Mathematics majors must concurrently take MATH 2113.

**MATH 2414 - Calculus II [TCCN: MATH 2414]**

A study of differentiation and integration of transcendental functions, polar coordinates, techniques of integration, sequences, series, indeterminate forms, improper integrals.

Prerequisite: MATH 2413. Corequisite: Mathematics majors must concurrently take MATH 2114.

**MATH 3104 - Multivariate Calculus Computer Lab**

Multivariate Calculus concepts illustrated and expanded through the use of a computer algebra system. Graphing and symbolic and numerical computations will be emphasized.

Corequisite: MATH 3404.

**MATH 3203 - Matrix Methods in Science and Engineering**

Matrices and matrix algebra, determinants, systems of linear equations, Gaussian elimination, eigenvalues and eigenvectors, linear transformations, applications in science and engineering.

Prerequisite: MATH 2413.

**MATH 3305 - Ordinary Differential Equations**

Study of ordinary differential equations. Emphasis is given to equations of the first order, linear equations, and solution by series.

Prerequisite: MATH 2414.

**MATH 3315 - Linear Algebra and Matrix Theory**

Study of finite dimensional vector spaces and linear transformations. Emphasis is given to the basic theory of matrices. Co- or

Prerequisite: MATH 3425. Students may not receive credit for both MATH 3315 and MATH 3203.

**MATH 3336 - Abstract Algebra I**

Study of groups, rings, fields, and vector spaces.

Prerequisite: MATH 3425.

**MATH 3345 - Real Analysis I**

Study of metric spaces, sequences, series, continuous functions, differentiation, and integration.

Prerequisite: MATH 2414 and MATH 3425.

**MATH 3351 - Probability and Statistics for Engineers and Scientists**

Fundamentals of probability and statistics with relevant engineering and science applications. Discrete and continuous random variables, statistical inference, parameter estimation, regression, experimental design, and model verification.

Prerequisite: MATH 2414. Students may not receive credit for both MATH 3351 and MATH 4350.

**MATH 3365 - Geometric Systems**

Study of Euclidean and non-Euclidean geometries.

Prerequisite: MATH 3425.

**MATH 3373 - Applied Mathematics I**

This course explores topics in applied mathematics as they pertain to the physical sciences. Topics include linear and nonlinear systems, Laplace transforms and Fourier series with a focus on theoretical development and physical application.

Prerequisite: MATH 3305, MATH 3203 or MATH 3315, MATH 3425.

**MATH 3380 - Algorithms in Applied Mathematics**

Study of applications selected from descriptive statistics, combinatorics, numerical methods, and matrices utilizing the computer.

Prerequisite: MATH 2413.

**MATH 3404 - Multivariate Calculus**

Vector calculus in Euclidean  $n$ -space, functions of several variables, partial differentiation and multiple integration.

Prerequisite: MATH 2414. Corequisite: Mathematics majors must concurrently take MATH 3104.

**MATH 3425 - Foundations of Mathematics**

Study of elementary logic, intermediate set theory, relations, functions and countable number systems.

Prerequisite: MATH 2414.

**MATH 3452 - Advanced Concepts of Mathematics**

Study of geometry, probability and counting, number theory and math history. Course for Interdisciplinary Studies majors only.

Prerequisite: MATH 2330. (Credit not given to mathematics majors or minors.)

**MATH 4160 - Senior Seminar I**

Reviews and integrates concepts from different branches of mathematics in the curriculum.

Prerequisite: The student must be within 3 semesters of graduation with a B.S. in mathematics.

**MATH 4161 - Senior Seminar II**

This "capstone" course is designed to evaluate what the student has learned as a math major at UT Tyler and to give the student an opportunity to explore additional mathematical ideas from start to finish outside the classroom with a faculty mentor.

Prerequisite: MATH 4160.

**MATH 4195-4395 - Undergraduate Research**

Directed mathematical research on a problem of mutual interest to a student and a mathematics faculty member. An oral presentation and a written report are required at the conclusion of this course. May be repeated for a maximum of six credit hours.

Prerequisite: Approval of department chair.

**MATH 4199-4399 - Independent Study**

Independent study in specific areas of mathematics not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**MATH 4336 - Abstract Algebra II**

A continuation of MATH 3336 focusing on rings, fields, and vector spaces.

Prerequisite: MATH 3336.

**MATH 4341 - Real Analysis II**

Continuation of MATH 3345. Study of metric spaces, sequences, series, continuous functions, differentiation and integration.

Prerequisite: MATH 3345.

**MATH 4342 - Introduction to Complex Variables**

Study of functions of a complex variable. Emphasis is given to analytic functions, differentiation, integration, series expansions.

Prerequisite: MATH 3345.

**MATH 4350 - Theory of Probability**

Study of mathematical probability theory. Emphasis is given to combinatorial analysis, axioms of probability, conditional probability, random variables, density functions, distribution functions, moments, and limit theorems.

Prerequisite: MATH 2414 and MATH 3425.

**MATH 4351 - Applied Statistics**

Emphasis on statistical thinking and real world applications. Topics include: experimental design, sampling distributions, confidence intervals, hypothesis testing, regression and correlation, analysis of variance, chi-squared tests, and non-parametric methods.

Prerequisite: MATH 4350.

**MATH 4373 - Applied Mathematics II**

Continuation of MATH 3373. Development of mathematical ideas needed to solve problems in the physical sciences. Topics include heat, wave and Laplace equations, use of Fourier methods to solve boundary value problems and the development of Sturm-Liouville Theory.

Prerequisite: MATH 3373.

**MATH 4380 - Modeling and Numerical Analysis**

Study of the development of mathematical models focusing on the numerical analysis which forms the basis for the models.

Prerequisite: MATH 3380.

**MATH 5199-5399 - Independent Study**

Independent study in specific areas of mathematics not covered by organized courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of department chair.

**MATH 5305 - Logic and Foundations**

Mathematical logic, detailed and rigorous study of set theory, introduction to axiomatic systems, examination of real number systems.

Prerequisite: Graduate Standing.

**MATH 5311 - Advanced Engineering Mathematics**

Advanced mathematical concepts needed in the study of engineering. Topics: Partial differential equations, Fourier analysis, complex analysis and optimization.

Prerequisite: Ordinary Differential Equations (MATH 3305 or equivalent) and Linear Algebra (MATH 3203 or equivalent).

**MATH 5331 - Algebra**

Basic structure, substructure, morphisms, and quotient structures in the categories of groups, rings, and modules.

Prerequisite: MATH 3336 or equivalent.

**MATH 5333 - Topics in Algebra**

Topics may include group actions, p-groups, Galois theory, polynomial rings, field theory, vector spaces, modules over a PID, algebraic geometry, homological algebra, representation theory. Course may be repeated when content changes.

Prerequisite: MATH 5331.

**MATH 5341 - Real Analysis**

Topics include set theory, the real number system, Lebesgue measure, the Lebesgue integral, differentiation and integration, classical Banach spaces.

Prerequisite: MATH 4341 or equivalent.

**MATH 5343 - Topics in Real Analysis**

Topics may include general topology, Banach spaces, generalized measure and integration, or related topics. Course may be repeated when content changes.

Prerequisite: MATH 5341.

**MATH 5351 - Mathematical Probability**

Axiomatic development of probability, distributions, mathematical expectation, moments, and generating functions.

Prerequisite: MATH 3345 or equivalent.

**MATH 5352 - Mathematical Statistics**

Study of the mathematical basis of statistical analysis with emphasis given to sampling distributions, testing hypotheses, interval estimation, and multivariate analysis.

Prerequisite: MATH 5351.

**MATH 5381 - Applied Mathematics I**

Ordinary differential equations, partial differential equations, and dynamical systems, complex variables, spectral theory, transformations and modeling.

Prerequisite: MATH 3203 and MATH 3305 or Consent of Instructor.

**MATH 5383 - Topics in Applied Mathematics**

An exploration of various topics in applied and computational mathematics. Materials covered may include mathematical modeling, optimization and control theory, game theory, mathematical physics, and mathematical biology. Course may be repeated when content changes.

Prerequisite: MATH 5381.

**MATH 5390 - Selected Topics in Mathematics**

Topics are selected to meet the needs of students and vary from semester to semester. Courses may be repeated when the content changes.

Prerequisite: Consent of department chair.

**MATH 5391 - Selected Topics in Mathematics**

Topics are selected to meet the needs of students and vary from semester to semester. Courses may be repeated when the content changes.

Prerequisite: Consent of department chair.

**MATH 5395 - Research**

Research methodology in mathematics, requires individual research, and culminates in a written report.

Prerequisite: Completion of 15 graduate credit hours of mathematics and consent of instructor.

**MATH 5396 - Thesis**

Student research that culminates in the completion of a formal thesis.

Prerequisite: MATH 5395 and appointment of a thesis advisor.

## MCOM - Mass Communication

**MCOM 2306 - Media Design & Production**

Emphasis on training in the use of several innovative software applications such as InDesign, Illustrator and Photoshop. Applications are used for designing and producing layouts for newspapers, magazines, advertising, and public relations. (Must take within first 9 hours in program.)

**MCOM 2307 - Mass Media and Society [TCCN: COMM 1307]**

Examines the relationship between mass communication processes and both the individual and society; their influence on knowledge, attitudes and behavior. In addition, this course explores interrelationship between social, economic, political and cultural change and media outlets.

**MCOM 2311 - Writing for Mass Media [TCCN: COMM 2311]**

Techniques of information gathering and writing for various audiences. Practice in interviewing, objective observation, document research



including the Internet, and analysis skills. Emphasis on integration of new media. (Must take within first 9 hours in program.)

#### **MCOM 2313 - Introduction to Multimedia Production**

Introduction to digital media equipment operation, with an emphasis on the development of technical and aesthetic skills. (Must take within first 9 hours in program.)

#### **MCOM 2340 - Introduction to Advertising**

Introduction to advertising with an emphasis on the current media climate and how advertising fits into integrated communication plans.

#### **MCOM 2375 - Introduction to Public Relations**

Introduction to public relations, including why it is a communication discipline, a practical overview of the public relations process, and the basic norms, theories and practices associated with the profession.

#### **MCOM 3301 - Feature Writing**

A study of the purposes, character, and subject matter of feature stories. Emphasis is placed on writing and marketing the feature for multimedia platforms, including print and digital magazines and newspapers. Students will contribute features to the student news media.

Prerequisite: MCOM 2311.

#### **MCOM 3303 - News Writing**

Focus on journalistic writing skills for print media with an emphasis on developing news judgment, source development, interviewing, and research.

Prerequisite: MCOM 2311.

#### **MCOM 3311 - Visual Design**

Visual Design covers the theory and practice of visual design. The emphasis in the course is on graphic design products such as corporate identity, advertising layout, ad design, logo design, and other related products.

Prerequisite: MCOM 2306 Media Design or demonstrated competency with software.

#### **MCOM 3312 - Publication Design**

Theory and practice of newspaper, magazine, and web layout and design. emphasis on publication design, corporate identity and advertising layout.

Prerequisite: MCOM 2306.

#### **MCOM 3318 - Media Law and Ethics**

Study of major areas of media law, including: First Amendment, libel, privacy, regulations, free press/fair trial. Study of ethics and mass media issues, including: ethical foundations, conflict of interest, truth-telling, social justice, privacy, and entertainment.

Prerequisite: Junior/Senior standing.

#### **MCOM 3340 - Principles of Advertising**

Advertising with an emphasis on the print and electronic media. Layout, design, and the evaluation of advertising campaigns are emphasized.

#### **MCOM 3350 - Video Production**

Study of digital video communication for multimedia, corporate, public relations, advertising, and news applications with an emphasis on message design, pre-, post-, and production skills, and evaluation.

Prerequisite: MCOM 2311 and MCOM 2313.

#### **MCOM 3360 - Photojournalism**

A study of use and layout of photographs in newspapers, magazines, and websites with emphasis on news judgment. Practical skills in caption writing, picture story, and multi-image presentations for web. Students must provide their own camera as approved by instructor.

Prerequisite: MCOM 2313.

#### **MCOM 3365 - Digital Photography**

Theory and practice of electronic photography for publication in the areas of journalism, public relations, websites, graphic design and

advertising. Application of visual communication theories include composition, human perception, psychology of color, principles of design and storytelling.

Prerequisite: MCOM 2313.

#### **MCOM 3370 - Web Design**

The students will be introduced to various ways of putting web pages together by the use of HTML, Dreamweaver and CSS, and prepare web appropriate images with Photoshop.

Prerequisite: MCOM 2306.

#### **MCOM 3375 - Principles of Public Relations**

Survey of public relations, including the nature of communication, public opinion, persuasion, theories, principles, techniques, and media use.

#### **MCOM 3385 - History of Mass Media**

Exploration of the development of American media from colonial times to the present; examination of the historically centered relationship between media and social, economic, and political forces. Topics will include the development of the concepts of the fourth estate and freedom of the press.

#### **MCOM 3390 - Mass Communication Theory**

An overview of mass communication theories emphasizing their development and application in practicum and research. Theories will include those concerning effects, audience psychology and sociological aspects of mass media.

#### **MCOM 3395 - Writing for Public Relations and Advertising**

Examines and applies the writing skills required in public relations and advertising. Competency is developed in writing news releases, feature articles, newsletters, advertising copy, and other mediated tools.

Prerequisite: MCOM 2311 and MCOM 2313 plus MCOM 2375 or MCOM 2340.

#### **MCOM 4199-4699 - Independent Study - Mass Communication**

Independent study in specific areas of mass communication not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

#### **MCOM 4300 - Opinion Writing**

Analysis of current public issues with an emphasis on expressing opinions in writing on those issues. Students will write editorials, columns, critical reviews, news analysis stories, and web blogs.

Prerequisite: MCOM 2311, MCOM 3303.

#### **MCOM 4310 - Community Journalism**

A critical study of mass media with an emphasis on the perception of its role in serving towns and homogenous communities within urban areas. Diversity's role in communities also will be discussed.

#### **MCOM 4325 - Multimedia Writing and Storytelling**

Study and practice of basic elements of multimedia journalistic storytelling, including writing for audio, video, photo slideshows, and other online journalism formats.

Prerequisite: MCOM 2306, MCOM 2311, MCOM 2313.

#### **MCOM 4329 - Topics in Mass Communication**

Study of selected mass communication topics with emphasis on current ideas and literature. May be repeated once for credit when content changes.

Prerequisite: Consent of instructor.

#### **MCOM 4332 - Advanced Multimedia News**

Advanced multimedia news production methods, tools, and storytelling.

Prerequisite: MCOM 4325.

**MCOM 4361 - Media Ethics**

Study of the ethical issues in mass media in such areas as censorship, conflict of interest, portrayal of minorities, media as accessory to criminal action, sensationalism, and other issues. Emphasis on journalism, public relations, advertising, and new media.

**MCOM 4363 - Public Relations Case Studies**

Application and analysis of public relations principles to cases in business and industry, government, institutions, trades, and professions. Prerequisite: MCOM 3395 plus MCOM 2375 or MCOM 2340.

**MCOM 4365 - Public Relations Campaigns**

Capstone course. Focus on planning, budgeting, and managing public relations campaigns. Prerequisite: MCOM 2306, MCOM 2311, MCOM 2313, MCOM 3395, MCOM 4363, plus MCOM 2375 or MCOM 2340.

**MCOM 4368 - Field Experience in Mass Communication**

Study of mass communication facilities, personnel, procedures, and field research, which includes travel. Classroom lectures and seminar methods supplement the field experience. May be repeated up to 3 hours. Prerequisite: Consent of instructor.

**MCOM 4370 - Undergraduate Internship Program Mass Communication**

An 8- to 16-week program offering a learning experience in a professional environment. CR/NC option. Prerequisite: 12 semester credit hours of upper-division mass communication courses and consent of the department chair.

**MCOM 4371 - Undergraduate Internship Program Mass Communication**

An 8- to 16-week program offering a learning experience in an off-campus environment. CR/NC option. Prerequisite: 12 semester credit hours of advanced mass communication and consent of department chair.

## MENG - Mechanical Engineering

**MENG 1201 - Mechanical Engineering I**

An introduction to CAD-based engineering design graphics, including spatial visualization, projection theory and parametric, feature-based, solid modeling techniques. Both skill development and project oriented laboratory sessions. Team based semester-long mechanical engineering design project. One hour of lecture and three hours of laboratory per week. Prerequisite: ENGR 1201.

**MENG 2201 - Mechanical Engineering II**

An introduction to computer based problem solving in mechanical engineering. Excel, Mathcad and Matlab software tools are used for data analysis, equation solving, plotting and graphing, matrix operations, and an introduction to object oriented programming. One hour of lecture and three hours of laboratory per week. Prerequisite: MATH 2413.

**MENG 3210 - Mechanical Engineering Laboratory I**

Experimental measurement of electromechanical systems. Sensors for measuring Strain, Force, Pressure, Displacement, Acceleration, and Temperature will be introduced as well as data acquisition and signal processing techniques. Student teams will design, analyze and document an experimental procedure. All procedures will result in a professional quality laboratory report. One hour of lecture and three hours of laboratory per week. Prerequisite: ENGR 1201 or completion of a technical writing course, MENG 2201, PHYS 2326, PHYS 2126.

**MENG 3211 - Mechanical Engineering Laboratory II**

Introduction to basic Thermal/Fluid sciences laboratory procedures and practices with uncertainty analysis. Experimental topics to include fluid flow, heat exchanger basics, and basics of refrigeration. Student teams will design, analyze and document an experimental procedure. All procedures will result in a professional quality laboratory report. One hour of lecture and one three-hour lab per week. Prerequisite: MENG 3210; Concurrent enrollment in or completion of: MENG 3304, MENG 3316.

**MENG 3301 - Thermodynamics I**

Properties; heat and work; first and second laws; thermodynamic processes; Carnot heat engines and heat pumps. Three hours of lecture per week. Prerequisite: PHYS 2325 and 2125.

**MENG 3303 - Dynamics of Machinery**

Analysis of the kinematics and forces in mechanical mechanisms and assemblies. Three hours of lecture per week. Prerequisite: ENGR 2302.

**MENG 3304 - Thermodynamics II**

Power and refrigeration cycles, chemical reactions, combustion, gas mixtures, psychometrics, availability analysis. Three hours of lecture per week. Prerequisite: MENG 3301, MATH 3305.

**MENG 3305 - Transport Processes**

Basic study of momentum, energy, and mass transport, dimensional analysis, includes laminar and turbulent fluid flow, conduction heat transfer, convection heat transfer, and radiation heat transfer. Three hours of lecture per week. (Not for mechanical engineering majors.) Prerequisite: MENG 3301.

**MENG 3306 - Mechanics of Materials**

Stress and strain; uniaxially loaded members; centroids and area moments of inertia; normal and shear stresses; beam deflections; buckling of columns; pressure vessels; combined stresses; failure criteria. Three hours of lecture per week. Prerequisite: ENGR 2301.

**MENG 3309 - Mechanical Systems Design**

Characterization, design, selection, and integration of mechanical systems and components including shafts, bearings, seals, gears, springs, mechanical fasteners, linkages. Three hours of lecture per week. Prerequisite: MENG 3303 and MENG 3306.

**MENG 3310 - Fluid Mechanics**

Basic concepts of a fluid, and the fundamentals and applications of ideal and real fluid flow. Topics include fluid statics, conservation principles, the Bernoulli equation, fluid flow in pipes, open channel flow, and fluid flow measurement devices. Three hours of lecture per week. Prerequisite: ENGR 2302, MATH 3404, MATH 3305.

**MENG 3316 - Heat Transfer**

Fundamentals and applications of conduction, convection, and radiation heat transfer. Analysis of steady-state and transient conduction employing analytical methods and numerical techniques. Simple theory of laminar and turbulent, free and forced convection and use of practical correlations. Basic thermal radiation concepts and applications. Three hours of lecture per week. Prerequisite: MENG 3301 and MENG 3310.

**MENG 3319 - Materials Science and Manufacturing**

Introduction to materials science including the structure of metals and polymers, the testing of mechanical properties of materials, the relationship between material properties, structure and processing techniques, and the capabilities and limitations of modern manufacturing methods. Two one-hour lectures and one three-hour lab per week.

Prerequisite: CHEM 1311 and CHEM 1111 or equivalent, ENGR 1201 or completion of a technical writing course, MENG 1201 or completion of a Computer Aided Drafting course.

#### **MENG 4115 - Senior Design I**

The goal establishment, planning and concept generation phases of a capstone design project required of all seniors in Mechanical Engineering. Includes the selection of a suitable project, an analysis of the design problem, the planning required to reach the desired goal, and the preparation of a project preliminary design document. Multidisciplinary teams will work on design problems defined in cooperation with representatives from industry when possible. Three-hour design studio per week.

Prerequisite: ENGR 3314, SPCM 1315, concurrent registration or completion of MENG 3309, MENG 4312, MENG 4313.

#### **MENG 4150-4350 - Topics in Mechanical Engineering**

Studies in mechanical engineering topics not covered in regularly scheduled undergraduate courses. May be repeated as content changes. A maximum of nine credit hours may be used for undergraduate credit.

Prerequisite: Consent of instructor and department chair.

#### **MENG 4199-4399 - Independent Study**

Independent study in a specific advanced area of mechanical engineering not covered by organized courses. May be repeated as content changes. A maximum of six (6) hours may be used for undergraduate credit on the degree plan if topics vary.

Prerequisite: Consent of Instructor and Department Chair.

#### **MENG 4302 - Intermediate Dynamics**

Kinematics and dynamics of particles and rigid bodies with engineering applications: kinematics, inertia properties, Newton-Euler equations of motion, Lagrange's equations of motion. Three hours of lecture per week.

Prerequisite: ENGR 2302, MATH 3305, MATH 3203.

#### **MENG 4312 - System Dynamics and Control**

Dynamics of mechanical, electrical, thermal, fluid, and hybrid systems. System response using Laplace transform. Transfer functions. Transient response, Stability, Basic control algorithms, PID tuning methods, Frequency response, basic controller design and case studies.

Prerequisite: EENG 3304, MENG 3301, MENG 3310.

#### **MENG 4313 - Thermal/Fluid Systems Design**

Characterization, component selection, and integration of thermal systems and components including engines, turbines, compressors, pumps, and heat exchangers. Two hours of lecture and one three-hour lab per week.

Prerequisite: MENG 3211, MENG 3304 and MENG 3316.

#### **MENG 4315 - Senior Design II**

The senior design project, which was begun in MENG 4115, continues to completion. This major capstone design project builds on previous course work, includes all stages of the design process, and takes into account a variety of realistic constraints, such as manufacturability and sustainability; economic factors; and environmental, safety, and reliability issues. Preparation and presentation of final oral and written reports are required. The design project may be a team effort and may be defined in conjunction with industry. Three three-hour design studios per week.

Prerequisite: MENG 4115.

#### **MENG 4316 - Introduction to Building Energy Simulation**

The course covers the fundamentals of building energy modeling. Examples of common analytical models for energy consumption in buildings are introduced. Software such as EnergyPlus, BEopt, and OpenStudio in energy simulation examples.

Prerequisite: MENG 3301. Corequisite: MENG 3316.

#### **MENG 4317 - Vibrations**

Analysis and prediction of the free and forced dynamic behavior and of mechanical systems; first, second, and higher order systems; vibration isolation and absorption; vibration characteristics of rotating machinery. Three hours of lecture per week.

Prerequisite: ENGR 2302 and MATH 3305.

#### **MENG 4318 - Heating, Ventilation, and Air Conditioning**

Analysis and design necessary to plan and specify equipment for heating, refrigeration, and air conditioning systems; heat transfer analysis of structures and equipment, psychometric analysis, thermodynamic and economic analysis. Three hours of lecture per week with integral laboratory emphasizing design.

Prerequisite: MENG 3304 and MENG 3316.

#### **MENG 4320 - Design for Manufacturing**

Design principles for achieving quick, low cost product introduction through consideration of cost, quality, reliability, maintainability, appearance and ergonomics; consideration of the interaction between design, materials, and method of production. Three hours of lecture per week.

Prerequisite: MENG 3319.

#### **MENG 4322 - CAD/CAM**

This course covers topics in object representation, geometric transformation, solid modeling, feature-based modeling, computer numerical control, kinematic modeling, and machining simulation and computer animation appropriate for the undergraduate level of work. Three hours of lecture per week.

Prerequisite: MATH 3404, MENG 1201.

#### **MENG 4323 - Introduction to Industrial Robotics**

An overview of industrial robots including manipulator arm selection guidelines and the application of robots in manufacturing and assembly. Principles of kinematics, dynamics and control of robotic manipulators. Robotic sensors, end effectors and actuators. Coordinate frames and homogeneous transformations. Robotic system integration, and path planning. Industrial robot programming in a laboratory setting. Three hours of lecture per week with integrated laboratory sessions.

Prerequisite: MENG 3309, MATH 3203 and MATH 3305.

#### **MENG 4325 - Digital Control of Mechanical Systems**

Computer control of machines and processes. Topics include digital control theory, signal processing strategies, analog-to-digital and digital-to-analog (A/D-D/A) conversion, dedicated microprocessor control, sensor and actuator selection. Two hours of lecture and one three-hour laboratory per week.

Prerequisite: Concurrent enrollment in or completion of MENG 4312.

#### **MENG 4326 - Finite Element Methods in Mechanical Engineering**

An introduction to the finite element method in mechanical engineering. Emphasizes linear stress and strain analysis, but includes other field problems. Utilizes commercial computer codes to solve stress analysis, heat transfer, and other engineering related problems. Three hours of lecture per week with integrated lab.

Prerequisite: MATH 3203, MENG 3306, and MENG 3316.

#### **MENG 4327 - Introduction to Turbomachinery**

Fundamental aerothermodynamics and design of turbomachinery components, including axial and centrifugal compressors, and axial and radial turbines, as well as in depth analysis of Brayton cycles. Three hours of lecture per week with integrated laboratory sessions.

Prerequisite: MENG 3301, MENG 3304, and MENG 3316.

#### **MENG 4328 - Fundamentals of Aerospace Sciences**

An introduction to fundamental concepts of aerospace engineering. Three hours of lecture per week.

Prerequisite: MENG 3304 and MENG 3310.

**MENG 4329 - Compressible Flow**

Introductory analysis of compressible flows, mathematical background, and physical concepts of isentropic flow, shock waves, expansion waves, and applications. Three hours of lecture per week.

Prerequisite: MENG 3304 and MENG 3310.

**MENG 4330 - Process Control & Automation**

The use of controls in the process industry and in automation; measurement of variables, controller types, final elements, application of controllers, application of programmable logic controllers, ladder logic, general instrumentation design and practice.

Prerequisite: MENG 4312 or instructor approved Automatic Controls course.

**MENG 4370 - Undergraduate Internship**

A program providing a new learning experience in mechanical engineering and environment appropriate for the undergraduate level of work with a minimum of 150 hours work. A written report describing the activities and accomplishments of the student during the internship is required at the conclusion of the internship period. May be repeated once for credit. A maximum of three (3) credit hours may be applied toward the undergraduate degree. Offer every Fall, Spring, and Summer. CR/NC only.

Prerequisite: Consent of the department chair.

**MENG 4395 - Undergraduate Research**

Directed research in Mechanical Engineering involving a problem of mutual interest to the student and a faculty member. An oral presentation and a written report of the research results are required at the conclusion of the course. A maximum of 3 credit hours may be applied toward an undergraduate degree in mechanical engineering.

Prerequisite: Consent of the department chair.

**MENG 5140-5340 - Advanced Topics in Mechanical Engineering**

Advanced studies in topics not covered in regularly scheduled graduate courses. May be repeated as content changes. A maximum of nine credit hours may be used for graduate credit on the degree plan.

Prerequisite: CI.

**MENG 5199-5399 - Independent Study**

Independent study in specific areas of Mechanical Engineering not covered by organized graduate courses. A maximum of six credit hours may be used for graduate credit on the MSME degree. One to three hours of course meeting per week.

Prerequisite: CI.

**MENG 5306 - Intermediate Solid Mechanics**

Concepts from the theory of elasticity and topics from advanced mechanics of materials, including exact solutions for bending and torsion, axisymmetrically loaded members, and thin plates.

Prerequisite: MENG 3306 or equivalent.

**MENG 5307 - Solar Engineering**

Introduction to solar energy and solar radiation. Components of solar systems and methods of solar collection. Applications of solar energy to meet energy needs.

Prerequisite: MENG 3304, MENG 3316, MENG 3310 or equivalent and graduate standing.

**MENG 5318 - Manufacturing Systems**

A study of modern production practices and manufacturing systems including operations and materials planning, inventory control methods, production scheduling, layout of manufacturing cells, machine monitoring, and automation. Three hours of lecture per week.

Prerequisite: MENG 3319 or equivalent.

**MENG 5322 - CAD/CAM**

This course covers topics in object representation, geometric transformations, solid modeling, feature-based modeling, computer

numerical control, kinematic modeling, and machining simulation and computer animation appropriate for the graduate level of work. Co-listed MENG 4322.

Prerequisite: MENG 1201, MATH 3404 or equivalents.

**MENG 5324 - Engineering Project Management**

Project planning; task definition; work breakdown structure; task sequencing, Gantt charts; cost analysis; resource allocation; project tracking; completion projections. Use of commercial project management computer codes. Three hours of lecture per week with integrated computer assignments.

Prerequisite: Graduate standing in Engineering and CI.

**MENG 5326 - Vibration Analysis of Rotating Machinery**

Instrumentation, measurement techniques, and analytical techniques used in monitoring, diagnosing and evaluating the vibration of rotating machines in industrial environments. Three hours of lecture per week with integrated laboratory.

Prerequisite: MENG 4317 or equivalent.

**MENG 5327 - Quality Control and Engineering Statistics**

Statistical methods and theory applicable to problems of product and process development and process monitoring; control charts, feedback control; experimental techniques and analysis in robust product design and process improvement; sampling, elements of six-sigma methodology.

Prerequisite: MATH 3351 or equivalent.

**MENG 5328 - Finite Element Analysis**

The mathematical principles of the finite element method applied to the solution of field problems in mechanical engineering. Solutions implemented using current commercial computer application codes. Three hours of lecture per week with integrated computer lab exercises.

Prerequisite: MENG 3306, MENG 3316, MATH 3203 or equivalents.

**MENG 5329 - Advanced Production Engineering**

Analysis and computer simulation of advanced topics in manufacturing. Topics include servo positioning systems, dynamics of the metal cutting process, machine tool chatter, stress and forces in metal forming and heat transfer in welding.

Prerequisite: MENG 3319 or equivalent.

**MENG 5331 - Constraints Management**

An introduction to the Theory of Constraints and its methodology for finding factors that block improvement in simple and complex systems, for identifying effective breakthrough solutions, and for developing improvements in manufacturing systems and engineering projects. Three hours of lecture per week.

Prerequisite: CI.

**MENG 5332 - New Product Development**

The new product development process and the role of multidisciplinary teams in the product development cycle. The integration of business concepts with engineering methods such as quality function deployment, concept generation and selection, prototyping and FMEA. Three hours of lecture per week.

Prerequisite: CI.

**MENG 5333 - Composite Materials**

Explores fundamental relationships between both the mechanical and hygrothermal behavior and the composition of multiphase media with an emphasis on fiber-reinforced polymers. Topics include using analytical tools to calculate strength, behavior, and failure of lamina.

Prerequisite: MENG 3306 or equivalent.

**MENG 5334 - Continuum Mechanics**

Study of the physical and mathematical principles relating to the behavior of continuous media and interrelationships between fluid and solid mechanics. Topics include compatibility, constitutive relations, isotropy and orthotropy, field equations, and ME applications.

Prerequisite: MENG 3306 or equivalent.

### **MENG 5336 - Intermediate Fluid Mechanics**

Differential equations of fluid flow, mathematical modeling of Newtonian and non-Newtonian fluids, boundary layer theory, numerical modeling of turbulent flow, and an introduction to compressible flow.

Prerequisite: MENG 3310 or equivalent undergraduate fluid mechanics course.

### **MENG 5337 - Viscous Flow**

Fundamental laws of motion for a viscous fluid; classical solution of the Navier-Stokes equations; inviscid flow solutions; laminar boundary layers; stability criterion.

Prerequisite: MENG 3310 or equivalent undergraduate fluid mechanics course.

### **MENG 5338 - Conduction Heat Transfer**

Analytical methods in conduction; Bessel functions, separation of variables, Laplace transforms, superposition, oscillating solutions; computer methods; finite differences, finite elements.

Prerequisite: MENG 3316 or equivalent undergraduate heat transfer course.

### **MENG 5339 - Convection Heat Transfer**

Development of formulations governing forced, buoyancy induced, and phase change transport and convective motions with emphasis on the underlying conservation principles.

Prerequisite: MENG 3316 and MENG 3310 or equivalent undergraduate heat transfer and fluid mechanics courses.

### **MENG 5341 - Advanced Thermodynamics**

First law and second law of thermodynamics for closed and open systems. Fundamental relations. Entropy generation or exergy destruction. Exergy analysis. Application of thermodynamics to engineering energy systems. Entropy generation minimization.

Prerequisite: MENG 3304 or equivalent.

### **MENG 5342 - Energy Management**

Introduction to concepts and tools related to energy management program, energy audit, energy accounting, economic analysis, and energy conservation measures for systems that use energy. Industrial applications are included.

Prerequisite: MENG 3301, MENG 3304 or equivalents.

### **MENG 5343 - Intermediate Heat Transfer**

Multidimensional steady and transient heat conduction; forced and natural convection; and radiation exchange.

Prerequisite: MENG 3316 or equivalent.

### **MENG 5344 - System Dynamics**

Mathematical modeling of dynamic mechanical engineering systems. Analytic and numerical simulation. Effects of physical characteristics of system elements on system design and dynamic behavior.

Prerequisite: MENG 3306, MENG 3310 and MENG 3301 or equivalents.

### **MENG 5350 - Engineering Project**

Faculty directed independent study that culminates in a professional quality Engineering Report on a significant design or analysis project. May be repeated once for credit. CR/NC only.

Prerequisite: 12 hours of graduate coursework and CI.

### **MENG 5370 - Graduate Internship**

A program providing a new learning experience in a mechanical engineering environment appropriate for the graduate level of work with a minimum of 150 hours of work. A written report describing the activities and accomplishments of the student during the internship is required at the conclusion of the internship period. May be repeated once for credit. A maximum of three (3) credit hours may be applied toward the graduate degree. Offer every Fall, Spring and Summer. CR/NC only.

Prerequisite: Consent of the Department Chair.

### **MENG 5395 - Thesis I**

Completion and approval of thesis.

Prerequisite: Advisor approval.

### **MENG 5396 - Thesis II**

Completion and defense of an acceptable master's thesis.

Prerequisite: MENG 5395.

### **MENG 5650 - Engineering Project**

Faculty directed independent study that culminates in a professional quality Engineering Report on a significant design or analysis project. May be repeated once for credit. CR/NC only.

Prerequisite: 12 hours of graduate coursework and CI.

## **MTED - Mathematics**

### **MTED 5198-5398 - Topics in Mathematics Education I**

Topics are selected to meet the needs of the students and vary from semester to semester. Courses may be repeated when content changes.

Prerequisite: Consent of graduate advisor.

### **MTED 5199-5399 - Topics in Mathematics Education II**

Topics are selected to meet the needs of the students and vary from semester to semester. Courses may be repeated when content changes.

Prerequisite: Consent of graduate advisor.

## **MUAP-Music Applied**

### **MUAP 1111 - Harmony and Keyboard I**

Beginning piano study for music majors, incorporating keyboard harmony assignments on level with MUSI 1311.

Corequisite: MUSI 1311 and MUSI 1116.

### **MUAP 1112 - Harmony and Keyboard II**

Second semester of piano study for music majors, incorporating keyboard harmony assignments on level with MUSI 1312.

Corequisite: MUSI 1312 and MUSI 1117.

### **MUAP 1125 - Jazz Improvisation**

The basics of listening skills, chord structure, and scales are used as a foundation for improvisation. May be repeated for credit.

### **MUAP 2111 - Harmony and Keyboard III**

Intermediate-level piano study for music majors, incorporating keyboard harmony assignments on level with MUSI 2311.

Corequisite: MUSI 2311 and MUSI 2116.

### **MUAP 2112 - Harmony and Keyboard IV**

Continued intermediate-level piano study for music majors, incorporating keyboard harmony assignments on level with MUSI 2312.

Corequisite: MUSI 2312 and MUSI 2117.

### **MUAP 3000 - Junior Recital**

Required public performance for junior-level music performance majors and senior-level pedagogy and music education majors. The recital program should contain 30 minutes of music and be approved by faculty committee. CR/NC only.

### **MUAP 3125 - Jazz Improvisation**

The basics of listening skills, chord structure, and scales are used as a foundation for improvisation. May be repeated for credit.

### **MUAP 3169 - Piano**

Applied instruction in piano, including individual lessons and a weekly performance class.

Prerequisite: MUAP 2169.

**MUAP 3171 - Accompanying**

Applied instruction in accompanying, including weekly lessons, performance classes and student recital performances.  
Prerequisite: MUAP 1171, MUAP 2171.

**MUAP 4100 - Recital**

Required public performance for senior-level music performance majors. The recital program should include one hour of music and be approved by faculty committee.

**MUAP 4101 - Analytical/Research Project**

Directed studies in music history or music theory leading to a formal paper. Required of Bachelor of Arts in Music degrees.

**MUAP 4169 - Piano**

Applied instruction in piano, including individual lessons and a weekly performance class.  
Prerequisite: MUAP 3169.

**MUAP 4171 - Accompanying**

Applied instruction in accompanying, including weekly lessons, performance classes and student recital performances.  
Prerequisite: MUAP 3171.

**MUAP 5201 - Violin****MUAP 5205 - Viola****MUAP 5209 - Violincello****MUAP 5213 - Contrabass****MUAP 5220 - Flute****MUAP 5221 - Oboe****MUAP 5226 - Bassoon****MUAP 5229 - Clarinet****MUAP 5233 - Saxophone****MUAP 5237 - Trumpet****MUAP 5241 - French Horn****MUAP 5246 - Trombone****MUAP 5253 - Tuba****MUAP 5257 - Percussion****MUAP 5261 - Guitar****MUAP 5266 - Organ****MUAP 5269 - Piano****MUAP 5270 - Harpsichord****MUAP 5271 - Accompanying****MUAP 5272 - Group Piano****MUAP 5281 - Voice****MUED - Music Education****MUED 5199-5699 - Independent Study**

Independent study in specific areas of music education not covered by organized graduate courses. A maximum of six credit hours for independent study courses may be applied toward a graduate degree.  
Prerequisite: Consent of SPA Director.

**MUED 5311 - Problems in Music Education**

Study of one or more problems in music. Problems chosen may not duplicate the scope of another course offered for credit.  
Prerequisite: Consent of instructor.

**MUEN - Music Ensembles****MUEN 1131 - Instrumental Chamber Ensemble**

Chamber music coaching and performance for various types of small ensembles.

**MUEN 1135 - Jazz Ensemble**

A performing music ensemble open to all students by audition. Compositions performed are for traditional "big band" instrumentation. Several public performances per semester are required. May be repeated for credit.

**MUEN 1140 - Wind Ensemble**

Open to all students with prior instrumental experience. Audition not required for enrollment, although consultation with instructor recommended. Performance of the best instrumental literature from the Renaissance to modern masterworks. May be repeated for credit.

**MUEN 1145 - University Chorale**

University Chorale is open to any student who is interested in expanding his/her skills in choral singing and broadening his/her experience by performing a variety of choral literature from the Renaissance to the present day. Generally two to three concert performances will be presented each semester. No audition is necessary, although a conference with the director is required prior to enrollment. May be repeated for credit.

**MUEN 1151 - Opera and Music Theatre Production**

Participation in a staged production. Course content may focus on music theatre, opera, chamber opera, operetta or scenes. Course credit is available for singers, instrumentalists and technical personnel.

**MUEN 1155 - Patriot Singers**

The Patriot Singers is the premiere vocal ensemble of the university and is open to qualified students who exhibit advanced vocal and musicianship skills, as well as dedication and commitment to personal and performance excellence. In addition to departmental concerts, the Patriot Singers perform a diverse repertoire at academic, civic and professional events and tour as musical ambassadors for the university. Enrollment is by audition. May be repeated for credit.

**MUEN 3131 - Instrumental Chamber Ensemble**

Chamber music coaching and performance for various types of small ensembles.

**MUEN 3135 - Jazz Ensemble**

A performing music ensemble open to all students by audition. Compositions performed are for traditional "big band" instrumentation. Several public performances per semester are required. May be repeated for credit.

**MUEN 3140 - Wind Ensemble**

Open to all students with prior instrumental experience. Audition not required for enrollment, although consultation with instructor recommended. Performance of the best instrumental literature from the Renaissance to modern masterworks. May be repeated for credit.

**MUEN 3145 - University Chorale**

University Chorale is open to any student who is interested in expanding his/her skills in choral singing and broadening his/her experience by performing a variety of choral literature from the Renaissance to the present day. Generally two to three concert performances will be presented each semester. No audition is necessary, although a conference

with the director is required prior to enrollment. May be repeated for credit.

#### **MUEN 3151 - Opera and Music Theatre Production**

Participation in a staged production. Course content may focus on music theatre, opera, chamber opera, operetta or scenes. Course credit is available for singers, instrumentalists and technical personnel.

#### **MUEN 3155 - Patriot Singers**

The Patriot Singers is the premiere vocal ensemble of the university and is open to qualified students who exhibit advanced vocal and musicianship skills, as well as dedication and commitment to personal and performance excellence. In addition to departmental concerts, the Patriot Singers perform a diverse repertoire at academic, civic and professional events and tour as musical ambassadors for the university. Enrollment is by audition. May be repeated for credit.

#### **MUEN 5125 - Jazz Improvisation**

The basics of listening skills, chord structure, and blues scales are used as a foundation for improvisation.

#### **MUEN 5135 - Jazz Ensemble**

A performing music ensemble open to all students by audition. Compositions performed are for traditional "big band" instrumentation. Several public performances per semester are required.

#### **MUEN 5140 - Wind Ensemble**

Open to all students with prior instrumental experience. Audition not required for enrollment, although consultation with instructor recommended. Performance of the best instrumental literature from the Renaissance to modern masterworks. May be repeated for credit.

#### **MUEN 5145 - University Chorale**

University Chorale is open to any student who is interested in expanding his/her skills in choral singing and broadening his/her experience by performing a variety of choral literature from the Renaissance to the present day. Generally two to three concert performances will be presented each semester. No audition is necessary, although a conference with the director is required prior to enrollment. May be repeated for credit.

#### **MUEN 5151 - Opera and Musical Theatre Production**

Participation in a staged production. Course content may focus on opera, operetta, or musical. Students will sing and act in opera/musical theatre with costumes and staging for public performances. Students are expected to develop strong solo and collaborative performing skills through music and staging rehearsals. Participation in non-performing components are also included.

#### **MUEN 5155 - Patriot Singers**

The Patriot Singers is the premiere vocal ensemble of the university and is open to qualified students who exhibit advanced vocal and musicianship skills, as well as dedication and commitment to personal and performance excellence. In addition to departmental concerts, the Patriot Singers perform a diverse repertoire at academic, civic and professional events and tour as musical ambassadors for the university. Enrollment is by audition. May be repeated for credit.

## **MUSI - Music**

#### **MUSI 1000 - Recitals, Concerts and Productions**

Recital, concert and production attendance for all music majors and minors. CR/NC only.

#### **MUSI 1116 - Aural Skills I [TCCN: MUSI 1116]**

Ear training and sight singing using material on level with study in MUSI 1311.

Corequisite: MUSI 1311 and MUAP 1111.

#### **MUSI 1117 - Aural Skills II [TCCN: MUSI 1117]**

Ear training and sight singing using material on level with study in MUSI 1312.

Corequisite: MUSI 1312 and MUAP 1112.

#### **MUSI 1301 - Music Fundamentals**

An introduction to the elements of music, including study of clefs, staff, key signatures, notation, meter, rhythm, sight singing, major and minor chords and scales, ear training, basic keyboard skills, and basic songwriting. Open to all students. Core curriculum course.

#### **MUSI 1306 - Music Appreciation [TCCN: MUSI 1306]**

A survey course covering elements of music and an overview of musical forms, historical periods and composers. Emphasis is placed on listening to representative repertoire.

#### **MUSI 1311 - Music Theory I [TCCN: MUSI 1311]**

An elementary study of melody, rhythm, and diatonic tonal harmony in four voices and in simple instrumental textures. Emphasis on rudiments of music, voice leading, harmonic progression, and elemental melodic forms.

Corequisite: MUSI 1116 and MUAP 1111.

#### **MUSI 1312 - Music Theory II [TCCN: MUSI 1312]**

Continuing elementary study of melody, rhythm, and diatonic tonal harmony in four voices, incorporating more complex instrumental textures. Covers voice leading, harmonic progression, elemental forms and simple modulation.

Prerequisite: Grade of C or better in MUSI 1311 and MUSI 1116.

Corequisite: MUSI 1117 and MUAP 1112.

#### **MUSI 2116 - Aural Skills III [TCCN: MUSI 2116]**

Ear training and sight singing using material on level with study in MUSI 2311.

Corequisite: MUSI 2311 and MUAP 2111.

#### **MUSI 2117 - Aural Skills IV [TCCN: MUSI 2117]**

Ear training and sight singing using material on level with study in MUSI 2312.

Corequisite: MUSI 2312 and MUAP 2112.

#### **MUSI 2301 - Music of the Americas**

Provides students a broad and meaningful perspective on the cultural and musical history of Native Americans, African Americans, and Latin Americans, and demonstrates the significance of such music to U.S. history and culture.

#### **MUSI 2308 - Music Literature [TCCN: MUSI 1307]**

Historical overview of music from antiquity to the present day.

#### **MUSI 2311 - Music Theory III [TCCN: MUSI 2311]**

Advanced study of melody, rhythm, diatonic and chromatic harmony in four voices, incorporating complex instrumental textures. Covers voice leading, advanced harmonic progression, basic forms, and advanced modulation.

Prerequisite: Grade of C or better in MUSI 1312 and MUSI 1117.

Corequisite: MUSI 2116 and MUAP 2111.

#### **MUSI 2312 - Music Theory IV [TCCN: MUSI 2312]**

Advanced study of melody, rhythm, diatonic and chromatic harmony in four voices, incorporating complex instrumental textures. Covers voice leading, advanced harmonic progression, forms, and further advanced modulation. Survey of post-Romantic harmony and twentieth-century techniques.

Prerequisite: Grade of C or better in MUSI 2311 and MUSI 2116.

Corequisite: MUSI 2117 and MUAP 2112.

#### **MUSI 3214 - Advanced Conducting and Score Reading**

Advanced techniques of conducting, including score analysis, interpretation, and rehearsal preparation.

Prerequisite: Grade of C or better in MUSI 3311.

**MUSI 3220 - Woodwind Methods**

Instruction on woodwind instruments for music majors. Includes fundamentals of performance, essential pedagogy, maintenance of instruments and materials and literature.

**MUSI 3221 - Brass Methods**

Instruction on brass instruments for music majors. Includes fundamentals of performance, essential pedagogy, maintenance of instruments, and materials and literature.

**MUSI 3222 - Percussion Methods**

Instruction in fundamental techniques on the most frequently used percussion instruments, both of definite and indefinite pitch. Includes fundamentals of performance, conventions of notations, essential pedagogy, maintenance of instruments and materials and literature.

**MUSI 3223 - String Methods**

Instruction in fundamental techniques on string instruments. Includes fundamentals of performance, essential pedagogy, maintenance of instruments and materials and literature.

**MUSI 3224 - Diction I**

An introduction to English, Latin and Italian lyric diction. Course content includes use of the International Phonetic Alphabet as a tool for proper pronunciation of foreign language sounds.

**MUSI 3225 - Diction II**

An introduction to German and French lyric diction. Course content includes use of the International Phonetic Alphabet as a tool for proper pronunciation of foreign language sounds.

**MUSI 3226 - Choral Conducting and Score Reading**

Fundamentals and techniques of conducting choral ensembles with practical application through the study of choral literature.  
Prerequisite: Grade of C or better in MUSI 3311.

**MUSI 3228 - Instrumental Seminar for Vocal Majors**

Basic instrumental techniques are explored in this class designed for vocal music education majors. Introductory instruction in woodwinds, brass, percussion and string instruments common in public school instrumental programs.

**MUSI 3229 - Vocal Seminar for Instrumental Majors**

Basic singing technique is explored in this class designed for instrumental music education majors. Students learn the basic physical structures used in singing, the parallels in vocal production to good tone development for an instrument, and gain confidence in using their own voice in modeling melodic lines for music classes.

**MUSI 3230 - Song Literature**

A survey of concert song literature from the 17th-21st century, including Lied, melodie, art song, and song cycle, and programming and presentation of this repertoire.

**MUSI 3231 - Vocal Pedagogy**

The study of vocal pedagogy. Topics will include, but not be limited to, the anatomy and physiology of singing, the establishment of a teaching studio, performance practice and anxiety, vocal health, repertoire for teaching, technical evaluation of singers, and historical pedagogical texts.

**MUSI 3240 - Marching Band Procedures**

This course provides the student an opportunity to learn organization, administration, drill design, and music rehearsal skills used in directing the marching band.

**MUSI 3311 - Conducting**

Study of the role of the conductor in musical ensembles with particular attention to the use of gesture as a means of musical communication.

**MUSI 3313 - Music Theatre**

A study of the development of popular American musical theatre, its literature, dance, and comedy as they contribute to character and plot development, and as an outgrowth of our experience as a nation.

**MUSI 3318 - Musics of the World**

A study of the means, language, character, and function of music in various cultures, of the interrelationship of music and other arts, and of the thinking and values which are presented through music.

**MUSI 3319 - Music History I**

Survey of stylistic trends, major compositions, composers and genres from antiquity through 1750.  
Prerequisite: MUSI 2308.

**MUSI 3320 - Music History II**

Survey of stylistic trends, major compositions, composers and genres from 1750 to the present.  
Prerequisite: MUSI 2308.

**MUSI 3321 - History of Jazz**

A study of jazz styles, musicians, and recordings designed to foster an appreciation and understanding of the origins and periods of jazz history.

**MUSI 3325 - Teaching Music in the Elementary School**

Teaching music in the elementary school (early childhood through 5th grade). Introduction of notation, song materials, rhythm bands and appreciation methods. For music majors in all level teaching.

**MUSI 3327 - Teaching Music in Secondary Schools**

Teaching music in middle and high schools. Choral and instrumental music materials, the organization of ensembles, teaching of music appreciation and theory and integration of music into the entire school curriculum. Explanation of music contests, prescribed repertoire lists and fund-raising techniques.

**MUSI 3330 - Topics in Pedagogy and Literature**

Studies in music pedagogy and literature such as 18th, 19th, or 20th century harmony, pedagogical methods, solo literature or chamber music literature from various periods of musical history. May be repeated twice when topic changes.

**MUSI 3335 - Piano Pedagogy**

An apprenticeship experience in private piano teaching through discussion and observation. Includes a holistic study of teaching piano through various elements and how they relate to the learning and performing process.

**MUSI 3342 - Electronic Music**

A survey of music technology, along with a practical introduction to contemporary music hardware and software applications.

**MUSI 3348 - Composers Seminar**

A survey of topics necessary for composers building a professional career, including presenting one's original music, score study, and lectures on special topics (rehearsal etiquette, preparation of score and parts, etc.).  
Prerequisite: MUSI 2312 (or equivalent).

**MUSI 4199-4699 - Independent Study**

Independent study in specific areas of music not covered by organized undergraduate courses. A maximum of six credit hours of independent study courses may be applied toward an undergraduate degree.  
Prerequisite: Consent of SPA Director.

**MUSI 4201 - Internship in Piano Pedagogy**

Practical teaching experience for undergraduate piano majors. Students will teach individual lessons and assist in college piano classes with supervision and evaluation by piano faculty. Consent of Department required.



**MUSI 4225 - Choral Literature and Methods I**

A study of literature, concert programming, rehearsal methods and performance practices, emphasizing short choral forms from standard and new repertoire. This course also includes instruction on music administration concepts unique to choral ensembles.

**MUSI 4226 - Choral Literature and Methods II**

A study of literature, concert programming, rehearsal methods and performance practices, emphasizing extended choral forms, 20th century works, and multicultural repertoire. This course also includes instruction on music administration concepts unique to choral ensembles.

**MUSI 4326 - Instrumental Materials and Band Administration**

Study of techniques, materials, and literature used in the development of an instrumental program in schools.

**MUSI 4340 - Counterpoint**

Study in the analysis and composition of contrapuntal style from the 16th through the 18th centuries.

**MUSI 4342 - Form and Analysis**

A study of the musical relationships, patterns, and processes that contribute to a musical composition's structure. Begins with an examination of small forms such as motive and phrase, and progresses to large forms such as fugue, variation and sonata.

Prerequisite: MUSI 2312.

**MUSI 4343 - Topics in Music Theory**

Selected topics in music theory and analysis. May be repeated three times for credit when content changes.

Prerequisite: MUSI 2117 and MUSI 2312.

**MUSI 4345 - Arranging for Choral and Instrumental Ensembles**

Offers students practical experience in arranging for a specific combination of voices and/or instruments.

**MUSI 5199-5699 - Independent Study**

Independent study in specific areas of music not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of SPA Director.

**MUSI 5301 - Introduction to Graduate Music Research**

Introduction to music reference works general music bibliography and research methods.

**MUSI 5306 - Post-Tonal Analysis**

Essential concepts and techniques of set theory, serial theory, and other non-tonal twentieth-century methods, and their application to music of the Twentieth Century.

**MUSI 5315 - Symphonic and Operatic Literature**

Provides a historical overview of Western symphonic and operatic works with an emphasis on developing skills for recognizing and analyzing stylistic progression. Individual works from ca. 1600-2000 will be studied in consideration of their socio-cultural, intellectual and aesthetic contexts.

**MUSI 5321 - Advanced Analytical Techniques**

An in-depth application of standard, tonal analytical techniques to compositions of various style periods within the common practice era.

**MUSI 5330 - Studies in Music History, Literature, and Theory**

Selected topics from one or more areas of music history, literature and theory. May be repeated three times for credit when content changes.

**MUSI 5395 - Graduate Music Practicum**

Capstone experience for the Master of Arts in Interdisciplinary Studies degree when music is the primary field. Projects may include a recital,

curriculum design, pedagogical study, written study, or other experience germane to the student's focus.

## NURS - Nursing

**NURS 3115 - Clinical Applications**

This course is designed for the student seeking re-admission to the nursing program after non-continuing status for 1 year or more, or for the registered nurse seeking a mechanism to update clinical skills. This course is a mechanism to evaluate retained knowledge and clinical competency to ensure patient safety.

Prerequisite: Application to the BSN program. Registered Nurse status in Texas.

**NURS 3205 - Nursing Concepts and Theories**

This course introduces the discipline of nursing based on a liberal education in the arts and sciences. Emphasis is on the development of professional identity through exploration of the major concepts of nursing.

Prerequisite: College of Nursing advisor approval.

**NURS 3302 - Medical Terminology**

This web-based course will introduce the pre-nursing student to medical terminology and concepts used throughout healthcare settings.

**NURS 3303 - Pathophysiology of Acute Care**

This course focuses on the etiology, pathophysiology, and clinical presentation of selected human diseases across the life span.

Prerequisite: Anatomy & Physiology I & II; Chemistry and Microbiology; College of Nursing advisor approval.

**NURS 3304 - Application of Genomics to Health Issues**

Study of the basic concepts of human genetics and genomics for application in nursing and other health professions; including health, social, legal, and ethical issues in the application of genetics and genomics in today's society.

**NURS 3307 - Pharmacological Basis for Nursing**

Pharmacotherapeutic aspects of nursing care are introduced and supported by evidenced based findings to improve patient care. Emphasis is on principles of safe administration of medications and patient education for major drug classifications. The impact of technology, economic, and regulatory forces as well as collaboration with the health team are discussed. Ethical/legal and cultural considerations are explored across the life span.

Prerequisite: Admission to the nursing program.

**NURS 3310 - Health Assessment**

This course focuses on knowledge and skills to perform a health history and head to toe assessment of individuals across the lifespan. Students practice health assessment skills in laboratory and selected settings.

Prerequisite: Admission to the nursing program and successful completion of NURS 3205 and NURS 3303. (Credit: 1:2).

**NURS 3312 - Health Assessment for Registered Nurses**

This WEB based course for the registered nurse augments knowledge and skills in order to complete comprehensive health assessments of individuals across the lifespan in selected clinical settings.

Prerequisite: Admission to the RN-BSN track. (Credit: 2:1).

**NURS 3333 - Nursing Research**

This course introduces evidence based practice as it relates to the science of nursing. Findings of selected research studies are appraised and presented. Ethical considerations and methods of protection of human subjects are integrated throughout the course.

Prerequisite: Successful completion of NURS 3205, statistics and for the RN, NURS 3415. Special permission required from College of Nursing to take out of sequence.

**NURS 3415 - Professional Development for the RN**

This WEB based course for registered nurses broadens existing knowledge of the discipline of nursing based on a liberal education in the arts and sciences. Emphasis is on professional role expansion through exploration of contemporary nursing issues.

Prerequisite: Admission to the RN-BSN or RN-MSN track.

**NURS 3513 - Psychiatric/Mental Health Nursing**

This course utilizes theories and concepts related to human behavior and alterations in human behavior. Using a holistic nursing approach, emphasis is on communication skills, self-awareness, and therapeutic use of self in selected settings.

Prerequisite: Successful completion of NURS 3205, NURS 3303, NURS 3307, NURS 3310, and NURS 3603. (Credit: 2:3).

**NURS 3603 - Nursing Competencies**

This course introduces nursing process, basic nursing skills supported by evidence based standards, nursing principles and technology to provide safe care for adults. Students demonstrate assessment skills, fundamental therapeutic nursing interventions, and nursing procedures in the laboratory and selected settings.

Prerequisite: Successful completion of NURS 3205 and NURS 3303 and admission to the nursing programs. (Credit: 3:3).

**NURS 3611 - Medical/Surgical Nursing I**

This medical/surgical course introduces holistic nursing care of adults experiencing acute or chronic illness in selected structured settings.

Prerequisite: Successful completion of NURS 3205, NURS 3303, NURS 3307, NURS 3310, and NURS 3603. (Credit: 3:3).

**NURS 4199-4699 - Independent Study**

Independent study in specific areas of nursing not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of Associate Dean.

**NURS 4212 - Gerontological Nursing**

This course introduces gerontologic principles. Emphasis is on promotion and preservation of health as well as management of care in well and vulnerable older adults.

Prerequisite: Successful completion of NURS 3333, NURS 3513, and NURS 3611 and for the RN admission to the RN-BSN/MSN track.

**NURS 4234 - Issues in Professional Nursing**

This course synthesizes the ethical/legal concepts related to the roles of the registered nurse. Emphasis is on professional values and value based behaviors as a member of the profession.

Prerequisite: Successful completion of NURS 4212, NURS 4632, and NURS 4723 for the generic student. Successful completion of NURS 3303, NURS 3312, and NURS 3415 for the RN. Special permission required from the College of Nursing to take out of sequence.

**NURS 4313 - Emergency Nursing**

This course is an introduction to the concepts, theory, and practice of Emergency Nursing.

Prerequisite: Completion of NURS 3611 or RN licensure.

**NURS 4314 - Nursing Care of the Perioperative Client**

This course introduces the concepts, theories, and practice of perioperative nursing.

Prerequisite: Completion of NURS 3611 or licensure as an RN. (Credit: 2-1).

**NURS 4318 - Women's Health Issues**

This course covers a wide variety of issues relating to women's health and is available to all majors. A holistic approach is used to investigate issues impacting the health of women.

**NURS 4323 - Holistic Health: The Art and Science of Caring and Healing**

This course is designed to introduce the student to holistic philosophy, theory, and practice. Included will be seminar discussion, demonstration, and experiential sessions on holistic health assessment and alternative treatment modes to promote health and healing in practice and in daily living. Open to all majors.

**NURS 4330 - Contemporary Issues in Nursing Practice**

This WEB based course is designed to prepare the inactive professional registered nurse (RN) in the State of Texas to re-enter the practice arena. The course is structured to expand the RN's knowledge of nursing process, pharmacologic principles, documentation in the medical record, legal and ethical foundations of nursing practice, and the role of the professional nurse.

Prerequisite: Consent of Associate Dean for Undergraduate Nursing Programs.

**NURS 4332 - Art & Science of Precepting**

This course will develop nurse preceptors who will assist new nurses to become competent, caring, and valued members of the health care team. The preceptor will assist in acclimating the new nurse to the work culture of professional nursing and in making the transition from student to professional.

**NURS 4336 - Pediatric Environmental Health**

An introduction to environmental health and how chemicals and physical agents may affect children's health. Included are the health effects of specific agents and environments with an emphasis on the special susceptibility of children.

Prerequisite: Consent of the instructor or advisor.

**NURS 4340 - Perinatal Clinical Practice**

Expands on the concepts of perinatal coursework with development of knowledge and skills in perinatal clinical areas. Emphasis is on the use of multi-dimensional assessment and care planning focusing on high-level clinical judgment and decision-making abilities.

Prerequisite: Consent of the Associate Dean.

**NURS 4341 - Special Topics in Nursing**

Topics are designed to provide additional theory and/or opportunity to practice nursing skills in selected clinical areas. Up to twelve hours may be applied to a degree.

**NURS 4342 - Maternal Infant Clinical Practice**

Expands on the concepts of maternal/infant coursework with development of knowledge and skills in maternal/infant clinical areas. Emphasis is on the use of multi-dimensional assessment and care planning focusing on high-level clinical judgment and decision-making abilities.

Prerequisite: Consent of the Associate Dean.

**NURS 4344 - Neonatal Clinical Practice**

Expands on the concepts of neonatal coursework with development of knowledge and skills in the neonatal clinical areas. Emphasis is on the comprehensive use of multidimensional assessment and care planning focusing on high-level clinical judgment and decision-making skills.

Prerequisite: Consent of the Associate Dean.

**NURS 4345 - The Older Adult: Dimensions of Care**

This course provides an opportunity for synthesis of selected issues related to health care of the older adult in societal context. The focus is on health status and equality of life. Participants will review issues of aging and health care in both local and national society through the professional literature, recent research, and interaction with guest faculty of older adults.

**NURS 4346 - Medical-Surgical Clinical Practice**

Expands on the concepts of medical-surgical coursework with development of knowledge and skills in medical-surgical clinical areas.

Emphasis is on the comprehensive use of multi-dimensional assessment and care planning focusing on high-level clinical judgment and decision-making abilities.

Prerequisite: Consent of Associate Dean.

#### **NURS 4348 - Critical Care Clinical Practice**

Expands on the concepts of critical care coursework with development of knowledge and skills in critical-care clinical areas. Emphasis is on the comprehensive use of multi-dimensional assessment and care planning focusing on high-level clinical judgment and decision-making abilities.

Prerequisite: Consent of Associate Dean.

#### **NURS 4501 - Community Nursing**

This course introduces concepts of community health utilizing the population focused nursing process. Emphasis is on health promotion, risk reduction, and disease management in selected community settings.

Prerequisite: Successful completion of NURS 4212, NURS 4632, and NURS 4723 for generic students. Admission to the RN-BSN/MSN track for the RN student. (Credit: 2:3).

#### **NURS 4631 - Nursing Leadership and Management**

This course presents concepts of nursing leadership, management and professional development. Emphasis is on the synthesis of skills, knowledge and attitudes to coordinate holistic, evidence based care in healthcare organizations.

Prerequisite: Successful completion of NURS 4212, NURS 4632, and NURS 4723 for generic students. Successful completion of NURS 3303, NURS 3312, and NURS 3415 for the RN-BSN/MSN student. (Credit: 3:3).

#### **NURS 4632 - Medical/Surgical Nursing II**

This advanced medical/surgical course expands on previously learned knowledge and skills acquired in prior nursing courses. Emphasis is on care of complex high acuity adult patients in selected settings.

Prerequisite: Successful completion of NURS 3333, NURS 3513, and NURS 3611. (Credit: 3:3).

#### **NURS 4723 - Family Health**

This course introduces holistic nursing care of childrearing families. Emphasis is on normal pregnancy and childbirth along with major health alterations during pregnancy and illness in children from birth through adolescence in selected settings.

Prerequisite: NURS 3333, NURS 3513, and NURS 3611 (Credit: 4:3).

#### **NURS 5111 - The Advanced Practice Role**

Study of the Advanced Practice Nurse (APN) role. The evolution of the role, current and continuing issues relevant to advanced practice nursing, and clinical practice issues related to health promotion and disease prevention.

#### **NURS 5141-5641 - Special Topics in Nursing**

The study of a variety of current topics in nursing practice. May be repeated for credit when content changes.

Prerequisite: Consent of associate dean.

#### **NURS 5199 - 5699 - Independent Study**

Independent study in specific areas of nursing not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of Associate Dean.

#### **NURS 5201 - Capstone I**

Students develop proposals addressing access to care, reduction of barriers, and/or improvement of health outcomes. Projects consider interprofessional collaboration, research evidence, health delivery systems, and clinical expertise to impact population health.

Prerequisite: 18 hrs. MSN credit or advisor approval.

#### **NURS 5202 - Capstone II**

Refinement, approval, and implementation of the project developed in Capstone I. Students will work with interprofessional team members and stakeholders.

Prerequisite: NURS 5201.

#### **NURS 5222 - Diagnostic Methods and Procedures for Advanced Practice**

This course is for APN students to learn clinical decision making for selecting appropriate tests, procedures, and interpretation of diagnostic test results. Students will use evidence based research to appropriately gather, interpret and manage diagnostic data. (1:1)

#### **NURS 5301 - Translational Science I**

In order to facilitate ethical translation of current evidence into practice, this course provides an overview of theory and its relationship with research. Qualitative research designs and methods are explored.

Prerequisite: Graduate student admission or faculty approval.

#### **NURS 5302 - Translational Science II**

This course will explore quantitative research designs and statistical analytical techniques for advancing nursing science.

Prerequisite: NURS 5301 or CI.

#### **NURS 5308 - Contemporary Healthcare Ethics**

Provides a thorough grounding in ethical theories and principles as reflected in current health care issues and policies. Students are introduced to a variety of frameworks for ethical decision making and policy analysis. Current trends in the political, economic, and legal spheres in the contemporary health care arena are analyzed through the use of case studies.

#### **NURS 5309 - Congregational Nursing**

Prepares nurses to deliver holistic, primary care in all types of congregations and organizations. Based on the Parish Nursing concept, the congregational nurse's practice responds to the unique health care needs and priorities of an individual congregation. Congregational nurse functions include educator, counselor, referral agent, care coordinator and advocate.

Prerequisite: Baccalaureate degree in nursing.

#### **NURS 5312 - Nursing Theory**

Provides an introduction to the nature of scientific explanation and inquiry. Origins of and strategies for theory development in nursing are examined for their importance in guiding the development of the profession. Nursing theory is analyzed as a foundation for nursing practice and research.

Prerequisite: Admission to the MSN program.

#### **NURS 5313 - Emergency Nursing**

Designed as an exploration of advanced theories and practice of emergency nursing specifically dealing with patients experiencing medical, trauma, pediatric, obstetric, or psychiatric emergency situations. Course projects include practicum experience.

Prerequisite: Baccalaureate degree in nursing.

#### **NURS 5314 - Nursing Care of the Perioperative Client**

Explores the advanced theories and practice of perioperative nursing. Course projects include a nursing research proposal related to the perioperative area.

Prerequisite: Baccalaureate degree in nursing. (Credit: 2-1).

#### **NURS 5317 - Graduate Statistics for Health Providers**

This course covers descriptive and inferential statistics as applied to health related fields. Topics include basic and intermediate concepts for testing statistical hypotheses, construction and interpretation of confidence intervals, and applying selected nonparametric techniques.

**NURS 5318 - Women's Health Issues**

Covers a wide variety of issues relating to women's health and is available to all majors. A holistic approach is used to investigate issues impacting the health of women. The course projects include a research proposal for an issue relating to women's health.

**NURS 5320 - Research Design**

Builds on content presented in undergraduate research. Research is evaluated for its usefulness in contributing to nursing's scientific knowledge base. The conduct of nursing research, application, and utilization are discussed and analyzed. Elements of a grant proposal will be discussed. The course culminates in the development of a research proposal.

Prerequisite: Admission to the MSN program; HECC 5317 or equivalent.

**NURS 5321 - Health Policy for Population Health**

This course explores the reciprocity between health care policies and population health.

Prerequisite: Admission to MSN program or CI.

**NURS 5323 - Holistic Health: The Art and Science of Caring and Healing**

Explores the application of holistic philosophy and theory into practice. Included will be seminar discussion, demonstration, and experiential sessions on holistic health assessment and alternative treatment modes to promote health and healing in practice and daily living. Course projects include analysis of current and projected trends in the provision of health care, the role of the informed consumer of health care, comparative studies of traditional versus alternative medicine, and research based holistic health care. Open to all majors; graduate status required.

**NURS 5324 - Health Care Informatics**

This course prepares the student to utilize informatics and health care technologies in the management of individuals, groups and organizations for the improvement of patient outcomes.

**NURS 5325 - Organizational and Systems Leadership**

Explores healthcare delivery systems and the economic, ethical, legal, and political factors that influence health care. Applies leadership skills in effectively implementing safety and quality improvement initiatives within context of the inter-professional team.

Prerequisite: Admission to the MSN program.

**NURS 5327 - Nursing Education Curriculum Development**

Theories and procedures of educational program and course development applied to nursing education. Includes philosophical values, educational concepts, and theories of learning used to link nursing education to standards of nursing practice. Guides students to develop curriculum plans and propose related teaching and evaluation strategies.

Prerequisite: Admission to the MSN program.

**NURS 5328 - Evaluation in Nursing Education**

Assessment of theories and strategies of measurement and evaluation as they apply to nursing education. Combines theories of measurement and evaluation with outcomes based approaches to promote safe effective professional nursing practice. Experiential exercises in the development, use, and critique of measurement and evaluation methods to classroom and clinical learning situations as well as to nursing education program evaluation. Prerequisite or

Corequisite: NURS 5327.

**NURS 5329 - Nurse Educator Role Strategies and Practicum**

An exploration of the nurse educator role in structuring teaching strategies that assure effective undergraduate student outcomes in regard to individual and group learning, safe clinical practice, and a commitment to lifelong learning. Nurse educator practicum placements are arranged within pre-licensure nursing education programs.

Prerequisite: NURS 5327 and NURS 5328. (Credit 0:3).

**NURS 5331 - Leadership in the Healthcare Environment**

Enables the professional nurse to demonstrate organizations and systems leadership by synthesizing principles of leadership and management theory, organizational science, professional communication, and informatics. Theories are applied in the consideration of evidenced based practice.

Prerequisite: NURS 5302 and NURS 5325.

**NURS 5333 - Art of Precepting**

This course is designed as a method to develop nurse preceptors who will assist new nurses to become competent, caring, and valued members of the health care team. The preceptor will assist in acclimating the new nurse to the work culture of professional nursing and in making the transition from student to professional.

**NURS 5334 - Professional Scholarship**

Facilitates synthesis of previous knowledge of theory, research and professional role into a framework for advanced evidence-based practice. The contracted project may include but is not limited to the following: the development of a scholarly paper, development of a special project, or grant proposal in collaboration with a role mentor. All project reports will be disseminated into the public domain.

Prerequisite: NURS 5308, NURS 5312, NURS 5320, NURS 5356 or CI.

**NURS 5335 - Legal, Regulatory, and Financial Management**

Focuses on the legal, ethical, regulatory, and fiscal environment faced by nurse administrators. Enables the professional nurse to manage the ethical, legal and regulatory issues facing healthcare organizations and actively participate in the fiscal management of healthcare divisions and organizations.

Prerequisite: Admission to the MSN program, NURS 5302 and NURS 5325.

**NURS 5336 - Pediatric Environmental Health**

An introduction to environmental health and how chemical and physical agents may affect children's health. Included are the health effects of specific agents and environments with an emphasis on the special susceptibility of children. A term paper is required.

Prerequisite: CI or consent of graduate advisor.

**NURS 5337 - Nursing Administration: Delivery of Care**

Focuses on the Delivery of Care within the Healthcare Environment at the organizational, community, state, and national levels. Enables the professional nurse to participate in the design of care delivery systems within healthcare organizations in community, state and national environments.

Prerequisite: Admission to the MSN program, NURS 5302 and NURS 5325.

**NURS 5338 - Family Theory for Nurses**

Examination of theories of family and the dynamics influencing family life, role behavior, coping, change, and response to crisis. Emphasis is on assessment and analysis of family dynamics as applied to the nursing role.

Prerequisite: graduate standing.

**NURS 5339 - Diagnostic Methods and Procedures**

Selected clinical procedures, diagnostic laboratory and imaging tests utilized by Advanced Practice Nurses (APN) are explored. Evidence based clinical decision making for selecting appropriate tests or procedures, and interpretation of diagnostic tests are evaluated.

Prerequisite: Admission to NP Program.

**NURS 5340 - Advanced Perinatal Clinical Practice**

Expands on the concepts of undergraduate perinatal coursework with development of advanced knowledge and skills in perinatal clinical areas. Emphasis is on the use of multi-dimensional assessment and care planning focusing on high-level clinical judgment and decision-making abilities.

Prerequisite: CI.

**NURS 5342 - Advanced Maternal Infant Clinical Practice**

Expands on the concepts of maternal infant coursework with development of advanced knowledge and skills in maternal infant clinical areas. Emphasis is on the use of multi-dimensional assessment and care planning focusing on high-level clinical judgment and decision-making abilities.

Prerequisite: CI.

**NURS 5344 - Advanced Neonatal Clinical Practice**

Expands on the concepts of neonatal coursework with development of advanced knowledge and skills in neonatal clinical areas. Emphasis is on the comprehensive use of multi-dimensional assessment and care planning focusing on high-level clinical judgment and decision-making abilities.

Prerequisite: CI.

**NURS 5345 - The Older Adult: Dimensions of Care**

Provides an opportunity for synthesis of selected issues related to health care of the older adult in a societal context. The focus is on health status and quality of life. Participants will review issues of aging and health care in both local and national society through the professional literature, recent research, and interaction with guest faculty of older adults. Course projects lead to synthesis and application of research and leadership information related to health care of the older adult in a societal context.

**NURS 5346 - Advanced Medical-Surgical Clinical Practice**

Expands on the concepts of undergraduate medical-surgical coursework with development of advanced knowledge and skills in medical-surgical clinical areas. Emphasis is on the comprehensive use of multi-dimensional assessment and care planning focusing on high-level clinical judgment and decision-making abilities.

Prerequisite: CI.

**NURS 5347 - FNP Practicum I**

Provides intensive clinical application of previous didactic content in the population foci. Refinement of clinical expertise and establishment of role identity as an advanced practitioner of nursing are expected outcomes. May take concurrently with NURS 5349.

Prerequisite: NURS 5351, NURS 5353, NURS 5455; Basic Cardiac Life Support.

**NURS 5348 - Advanced Critical Care Clinical Practice**

Expands on the concepts of advanced medical-surgical coursework with development of advanced knowledge and skills in critical-care clinical areas. Emphasis is on the comprehensive use of multi-dimensional assessment and care planning focusing on high-level clinical judgment and decision-making abilities.

Prerequisite: NURS 5346.

**NURS 5349 - FNP Practicum II**

Provides intensive clinical application of previous didactic content in the population foci. Refinement of clinical expertise and establishment of role identity as an APN. May take concurrently with NURS 5347.

Prerequisite: NURS 5351, NURS 5353, NURS 5455; Basic Cardiac Life Support.

**NURS 5350 - Advanced Pathophysiology**

Regulatory and compensatory mechanisms as they relate to commonly occurring diseases across the lifespan are explored.

**NURS 5351 - FNP Primary Care I**

Application of major concepts and therapies necessary for development, implementation, and provision of primary health care. Emphasis on the pediatric population and genomics knowledge needed for counseling families. Strategies to eliminate health disparities will be explored.

Prerequisite: NURS 5352, Basic Cardiac Life Support.

**NURS 5352 - Advanced Health Assessment**

Application of advanced health assessment principles and skills for comprehensive examination of clients across the lifespan. Focus will be on common deviations from normal.

Prerequisite: NURS 5350.

**NURS 5353 - FNP Primary Care II**

Application of major concepts and therapies necessary for development, implementation, and provision of primary health care with emphasis on the female population and genomics knowledge needed for counseling families. Strategies to eliminate health disparities will be explored.

Prerequisite: NURS 5352, Basic Cardiac Life Support.

**NURS 5354 - Advanced Pharmacotherapeutics**

Knowledge and application of advanced pharmacotherapeutic principles related to the health needs of clients. Focus will be on pharmacotherapeutic modalities utilized by advanced practice nurses while considering legal, ethical, and economic factors.

Prerequisite: Admission to MSN program or CI.

**NURS 5356 - Health Promotion in Individuals and Communities**

Focuses on the health care provider's role in promoting health across the lifespan and at multiple levels. Explores various models of health promotion with emphasis on application of health promotion strategies. Considers challenges to creating a healthy society. Provides the opportunity to apply concepts of health promotion in a clinical/practice setting.

Prerequisite: Admission to the MSN program. (Credit 2:1).

**NURS 5358 - Online Learning Practicum**

Focus is on the development and implementation of online learning experiences for nursing students. Involves application of learning theories, appropriate learning strategies, and development and management of online courses. The lab/practicum includes skills laboratory sessions and in-program practicum placements.

Prerequisite: NURS 5327, NURS 5328. (Credit 1:2).

**NURS 5364 - Family Nurse Practitioner Primary Care I**

Study of major concepts and therapies required in the development, implementation and evaluation of primary healthcare. Clinicals focus on application of nursing theory, pathophysiology and epidemiological concepts and nursing therapies and skills to provide primary health care. (1:2)

**NURS 5366 - Family Nurse Practitioner Primary Care II**

Study of nursing role components critical to primary healthcare. Identification of facilitators for and barriers to the implementation of primary healthcare. Clinical practice involves collaboration and implementation of primary healthcare role in selected healthcare settings. (1:2)

**NURS 5372 - Pediatric Nurse Practitioner Primary Care I**

Designed to develop theoretical and research-based knowledge of child health issues in the context of family and cultures. The course develops advanced practice skills in comprehensive assessment, as well as, management strategies reflecting evidence-based practice. (1:2)

**NURS 5374 - Pediatric Nurse Practitioner Primary Care II**

Designed to further develop knowledge of diagnosis, treatment, and evaluation of pediatric patients with acute and chronic health problems. The course develops advanced practice skills in comprehensive assessment, as well as management strategies reflecting evidence-based practice. (1:2)

**NURS 5376 - Geriatric Nurse Practitioner Primary Care I**

Study of the major concepts essential to the development, implementation and evaluation of quality geriatric care. Clinicals focus on application of nursing theory, pathophysiological concepts, and exploration of nursing therapies, skills and techniques. (1:2)

**NURS 5378 - Geriatric Nurse Practitioner Primary Care II**

Study of the nursing role components basic to collaboration and provision of geriatric care, including family dynamics related to the extended family and identification of families at risk. Clinical practice focuses on provision of care in a variety of settings. (1:2)

**NURS 5380 - Professional Seminar**

Courses with a variety of topic areas: each course will address content areas of current issues important to professional nurses. May be repeated once for credit when content changes.

**NURS 5395 - Thesis**

The research project is designed and implemented and presented for defense.

Prerequisite: NURS 5308, NURS 5312, NURS 5320, NURS 5356 or permission of course instructor.

**NURS 5442 - Acute Care Nurse Practitioner Adult Care I**

This course is designed to develop a beginning theoretical and research based knowledge of diagnosis, treatment, and evaluation of adults with acute/chronic health problems. Emphasis will be placed on applying this knowledge to the management of patients with disorders of selected body systems. (1:3)

**NURS 5455 - FNP Primary Care III**

Application of major concepts and therapies necessary for the development, implementation and evaluation of primary health care with emphasis on the adult and geriatric population. Strategies to eliminate health disparities will be explored.

Prerequisite: NURS 5352, Basic Cardiac Life Support.

**NURS 5542 - Acute Care Nurse Practitioner Adult Care II**

This course is designed to build on major components critical to the knowledge of diagnosis, treatment, and evaluation of adults with acute and chronic health problems. Clinical practice focuses on research-based decision-making process in close collaboration with preceptors. (1:4)

**NURS 5660 - Family Nursing Practitioner Practicum**

A clinically focused practicum for individuals pursuing expectations beyond basic graduate degree requirements. (0:6)

**NURS 5662 - Acute Care Nurse Practitioner Practicum**

Acute Care Nurse Practitioner IV: Role and Practicum (6:1). This course emphasizes clinical practice. Clinical activities allow for immersion in advanced role. Function and responsibility of selected topics of the advanced practice role are addressed. (0:6)

**NURS 5664 - Pediatric Nurse Practitioner Practicum**

A clinically-focused practicum for individuals pursuing expectations beyond basic graduate degree requirements. Variable credit of 3 to 6 hours. (0:6)

**NURS 5666 - Geriatric Nurse Practitioner Practicum**

A clinically-focused practicum for individuals pursuing expectations beyond basic graduate degree requirements. Variable credit of 3 to 6 hours. (0:6)

**NURS 6160-6660 - Dissertation**

Original research contributing to the body of knowledge in nursing is conducted under the direction of a major professor.

Prerequisite: Advancement to candidacy.

**NURS 6199 - 6699 - Independent Study**

Independent study in specific areas of nursing not covered by organized graduate courses. A maximum of six credit hours for independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of Faculty Advisor.

**NURS 6310 - Philosophy of Science**

The origins and development of philosophy and science are explored. Includes analysis of current state of the science, ways of knowing,

models of knowledge generation, criteria for causation, and argumentation.

Prerequisite: Acceptance into the doctoral program.

**NURS 6312 - Theory Construction and Evaluation**

In-depth analyses of theories applicable to nursing science and transcultural health are conducted. Concept analysis and development and critique of conceptual models will lay the foundation to guide programs of nursing research.

Prerequisite: NURS 6310.

**NURS 6320 - Data Management**

Strategies for management of quantitative and qualitative data are analyzed. Data management software packages are utilized for the creation and analysis of data files. Primary and secondary data sets for research are managed.

Prerequisite: CI.

**NURS 6322 - Advanced Statistics**

Students will study advanced statistical techniques in health care research together with discussions on the corresponding research designs. Topics include various types of general linear modeling, multiple regression, as well as non-parametric tests.

Prerequisite: NURS 6320.

**NURS 6324 - Advanced Multivariate Statistics**

Students will study advanced multivariate techniques in health care research and apply aspects of complex research designs, including multivariate model testing, decision theory, and advanced statistical techniques.

Prerequisite: NURS 6322.

**NURS 6330 - Quantitative Research Designs & Methods**

Advanced quantitative research that integrates methodology, design, measurement, analysis, and interpretation.

Prerequisite: NURS 6312; NURS 6322 or concurrent enrollment.

**NURS 6333 - Qualitative Research Designs & Methods**

Advanced qualitative research that integrates classical and developing philosophical traditions, methodology, design, analysis, and interpretation is studied.

Prerequisite: NURS 6310.

**NURS 6337 - Advanced Research Design & Methods**

Theoretical, methodological, and procedural aspects of data generation and measurement are presented. Measurement theory, concept operationalization, and instrument development and testing for both qualitative and quantitative methods are explored.

Prerequisite: NURS 6322, NURS 6330, NURS 6333.

**NURS 6339 - Mixed Methods Research Design**

This course provides an introduction to the emerging field of mixed methods research including research designs, strategies for sampling, data collection, analysis, and integration.

Prerequisite: NURS 6330, NURS 6333.

**NURS 6341 - Scholarship of Writing for the PhD**

Foundational course to strengthen ability to engage in effective scholarly writing for dissemination of nursing knowledge. Philosophical and conceptual analysis of words is included. Progressively complex written products will allow the student to perfect writing skills through feedback/critique.

**NURS 6342 - Scholarship in Nursing**

Elements of professional presentation, writing for publication, and grant writing are examined, including exploration of priorities for funding and publication. Scientific integrity in grantsmanship and dissemination of knowledge is emphasized.

Prerequisite: CI.

**NURS 6343 - Publishing Scholarly Papers**

Outcomes-based course for the purpose of acquiring skill in the development and production of a scholarly scientific article. Progressive written products with feedback/critique will incrementally move the student to actual submission of a completed article to a peer-reviewed scholarly journal.

**NURS 6350 - Research in Transcultural Health**

Research issues within a cultural milieu are explored. Emphasis on culturally relevant scholarship, knowledge, and technology to improve health status of diverse communities.

Prerequisite: acceptance into the doctoral program.

**NURS 6352 - Health Care Policy Development**

The role of nurse leaders in research to shape health care policy is explored. Impact of economic, socio-political, and other forces on policy formulation and access to care are considered.

Prerequisite: acceptance to the doctoral program.

**NURS 6354 - The Nurse as Educator**

Educational principles, learning theories, and pedagogical approaches are utilized to develop culturally sensitive teaching strategies for diverse student and community-based populations. Solutions to educational access and nursing workforce situations will be explored and studied.

Prerequisite: acceptance to the doctoral program.

**NURS 6356 - Research Practicum**

Application of health concepts through immersion in a selected setting provides guided experience in research under supervision of faculty mentor.

Prerequisite: NURS 6337, NURS 6350, NURS 6352, NURS 6354.

**NURS 6380 - Professional Seminar**

Courses will cover a variety of current issues relevant to nursing research and conducted in seminar format. May be repeated for credit when content changes.

Prerequisite: Enrollment in doctoral program or with permission of Doctoral Program Director.

**NURS 6382 - Special Topics**

The study of a variety of current topics, emerging issues, related subjects or specialized content not represented in the main curriculum. May be repeated for credit when content changes.

Prerequisite: Enrollment in doctoral program or with permission of Doctoral Program Director.

## PADM - Public Administration

**PADM 5199-5699 - Independent Study**

Independent study in specific areas of public administration to supplement curriculum.

Prerequisite: Consent of the Program Coordinator and the Department Chair.

**PADM 5330 - Survey of Public Administration**

Focuses on the special challenges facing public agencies and administrators. This course emphasizes issues surrounding agency relations with outside constituencies, responsibility and accountability in public management and administrative ethics. Intended to be taken early in the student's degree program.

**PADM 5331 - Information Systems in Public Administration**

Studies concepts, structures, and applications relevant to information technology and public administration. The focus of the course is on integrating material from the technical and managerial fields to improve the processing of information for decision-making in public administration.

Prerequisite: Social sciences research methods course.

**PADM 5332 - Public Budgeting and Finance**

The processes and policies used to allocate limited public resources; special attention given to contemporary budgetary approaches and to methods of evaluation. The managerial role in providing fiscal accountability and control is emphasized.

**PADM 5335 - Topics in Policy Analysis**

Research in selected aspects of policy analysis including policy formulation, implementation, and evaluation. May be repeated once for credit when content changes with consent of the graduate coordinator.

**PADM 5336 - Administrative Ethics**

A study of ethical issues facing public administrators. Issues include the development of value systems, the nature of public duty, the formulation of value-based decision making strategies, the importance of professional ethical standards, the dangers of public corruption, and the unique problems facing criminal justice managers.

**PADM 5337 - Administrative Law**

Examines the exercise and control of administrative action. The focus of the course is on how administrative power is exercised through rule making and adjudication and controlled by the legislative, executive and judicial branches of government.

**PADM 5338 - Program Evaluation**

Study of the role and methods of program evaluation. Topics include identification of program goals, research design, measurement, data collection, data analysis, and the consequences of program evaluation.

Prerequisite: PADM 5396.

**PADM 5339 - Urban and Regional Planning**

Analysis of planning theories and techniques used in shaping the urban environment. Topics include long-range, comprehensive planning; neighborhood adaptations and the environment; planning for rural development and economically depressed regions; and planning for housing, transportation and community facility programs.

**PADM 5344 - Health Policy and Politics**

How health policy in the United States is initiated, formulated and implemented. The course will provide an understanding of the structure of the political process in the making of health policy and political roles of the President, Congress, and the bureaucracy in shaping health care policy. Major acts in health care development will be discussed along with future demands from the health system. Local health care professionals will be brought in to share their expertise and experience in the local health care industry.

**PADM 5350 - Seminar in Human Resources Management (Same as MANA 5350)**

Advanced study of public and private personnel management with special emphasis on current topics in the field. Focuses on the technical and legal issues confronting human resource management: employee selection, training, appraisal, compensation, and labor-management relations.

**PADM 5370 - Internship**

Supervised work experience in an approved setting designed to provide career experience to the student. Each internship (3 hours) will require a minimum of 150 hours of joint supervision by the field agency and the university.

Prerequisite: In good standing and with the approval of the Chair.

**PADM 5371 - Internship**

Supervised work experience in an approved setting designed to provide career experience to the student. Each internship (3 hours) will require a minimum of 150 hours of joint supervision by the field agency and the university.

Prerequisite: In good standing and with the approval of the Chair.

**PADM 5380 - Topics in Public Administration**

Studies in selected aspects of public administration. May be repeated once for credit when content changes with consent of graduate coordinator.

**PADM 5396 - Research Methods**

Focuses on research design and methods as they are employed in administrative settings. Included among the topic areas are sampling, hypothesis testing and estimation, quantitative data analysis and measures of association.

Prerequisite: Three hours of upper-level social sciences research methods and consent of the graduate coordinator.

**PADM 5397 - Advanced Social Science Analysis**

Examines common methods of data analysis and presentation with attention to computerized applications. Emphasis on the application of statistics in social science research.

Prerequisite: PADM 5396.

## PHAR - Pharmacy

**PHAR 7141 - Pharmacy Practice Skills Laboratory 1**

This laboratory course focuses on the application of skills and resources needed for pharmacists to guide patients' self-care health and wellness behaviors. Topics include patient interviewing, health screening and education about the appropriate use of vitamins, minerals, and herbal supplements and the use of in-home and point-of-care devices in maintaining optimal health.

Corequisite: PHAR 7701, PHAR 7161.

**PHAR 7142 - Pharmacy Practice Skills Laboratory 2**

This laboratory course focuses on the application of skills and resources needed for pharmacists to guide patients' self-care of pain and inflammation, fever and headache, and cough and cold. Topics include patient assessment, therapeutic plan formulation and counseling; evaluation of the clinical literature; pharmaceutical calculations; and preparation of liquid dosage forms.

Prerequisite: PHAR 7701, PHAR 7141, PHAR 7161. Corequisite: PHAR 7702, PHAR 7162 or PHAR 7163 or PHAR 7164.

**PHAR 7143 - Pharmacy Practice Skills Laboratory 3**

This laboratory course focuses on the application of skills and resources needed for pharmacists to guide patients' self-care of smoking cessation, insomnia, gastrointestinal disorders, contraceptives, vulvovaginal candidiasis, and allergic reactions. Topics include patient assessment, therapeutic plan formulation and counseling; evaluation of the clinical literature; pharmaceutical calculations; and preparation of solid and transdermal dosage forms.

Prerequisite: PHAR 7702, PHAR 7142, PHAR 7161. Corequisite: PHAR 7703, PHAR 7162 or PHAR 7163, or PHAR 7164.

**PHAR 7144 - Pharmacy Practice Skills Laboratory 4**

This laboratory course focuses on the application of skills and resources needed for pharmacists to guide patients' self-care of diseases of the skin, ears, eyes and simple dental conditions commonly seen by an outpatient/community pharmacist. Topics include patient assessment, therapeutic plan formulation and counseling; evaluation of the clinical literature; pharmaceutical calculations; and preparation of solid and dermatological dosage forms.

Prerequisite: PHAR 7703, PHAR 7143, PHAR 7161. Corequisite: PHAR 7704, PHAR 7162 or PHAR 7163 or PHAR 7164.

**PHAR 7161 - Introductory Pharmacy Practice Experience 1**

This course provides students with their first practical experience in pharmacy practice, including administering immunizations; an introduction to the pharmacists' professional obligation to the patient, and the legal basis to practice as a student pharmacist intern in the State of Texas.

Prerequisite: Admission into the College of Pharmacy. Corequisite: PHAR 7701, PHAR 7141.

**PHAR 7162 - Introductory Pharmacy Practice Experience 2**

This course provides students with practical experience in community pharmacy practice, including administering immunizations; accepting and interpreting prescription orders; dispensing prescriptions; patient interviewing; patient medication records; practice regulations concerning the distribution of medications and practice roles; and an introduction to the principles of self-care with over-the-counter medications and non-pharmacologic treatments.

Prerequisite: PHAR 7701, PHAR 7141, PHAR 7161.

**PHAR 7163 - Introductory Pharmacy Practice Experience 3**

This course provides students with practical experience in institutional pharmacy practice, including accepting and interpreting medication orders; medication distribution within the institution; sterile technique; patient interviewing; patient records; understanding of the institution's organizational structure, and pharmacists' practice responsibilities.

Prerequisite: PHAR 7701, PHAR 7141, PHAR 7161.

**PHAR 7164 - Introductory Pharmacy Practice Experience 4**

This course provides students with their first practical experience in providing direct patient care, including patient interviewing and professional communication; patient medication reconciliation, records and adherence; health and wellness screening; continuity of care; and an introduction to the principles of self-care with over-the-counter medications and non-pharmacologic treatments.

Prerequisite: PHAR 7701, PHAR 7141, PHAR 7161.

**PHAR 7701 - Integrated Pharmacy 1**

This course focuses on systems of medical practice including complementary and alternative medicine (CAM); key Federal legislation and laws that guide and define pharmacy practice and the distribution and manufacture of drugs; introduction to the concept of "wellness"; and the pharmacist role in wellness and public health.

Prerequisite: Admission to the College of Pharmacy. Corequisite: PHAR 7141, PHAR 7161.

**PHAR 7702 - Integrated Pharmacy 2**

This course focuses on the basic scientific and clinical concepts related to the self-care treatment of pain and inflammation, fever and headache, and cough and cold. Topics include principles of drug action; drugs' interactions with the body's nervous system; preparation and evaluation of solution, suspension and emulsion dosage forms; and development of self-care plans.

Prerequisite: PHAR 7701, PHAR 7141, PHAR 7161. Corequisite: PHAR 7142, PHAR 7162 or PHAR 7163 or PHAR 7164.

**PHAR 7703 - Integrated Pharmacy 3**

This course introduces basic concepts of pharmacist's role in patient self-care related to smoking cessation, insomnia, gastrointestinal disorders, contraceptives, vulvovaginal candidiasis, and allergic reactions.

Prerequisite: PHAR 7702, PHAR 7142, PHAR 7161. Corequisite: PHAR 7143, PHAR 7162 or PHAR 7163 or PHAR 7164.

**PHAR 7704 - Integrated Pharmacy 4**

This course introduces basic concepts of self-care related to appropriate identification of medications/treatments for diseases of the skin, ears, eyes and simple dental conditions commonly seen by an outpatient/community pharmacist.

Prerequisite: PHAR 7703, PHAR 7143, PHAR 7161. Corequisite: PHAR 7144, PHAR 7162 or PHAR 7163 or PHAR 7164.

## PHIL - Philosophy

**PHIL 1301 - Introduction to Philosophy [TCCN: PHIL 1301]**

A survey of the major areas of traditional and modern philosophy: philosophies of knowledge, ethics, logic, aesthetics, and metaphysics.



**PHIL 2303 - Introduction to Logic**

The development of formal and symbolic systems for the analysis of arguments. The scope of the course will be modern logic, including truth-functional analysis, propositional calculus, and predicate calculus.

**PHIL 2306 - Introduction to Ethics [TCCN: PHIL 2306]**

A survey of the basic principles of human life with critical examination of traditional and current theories of the nature of goodness, happiness, duty, and freedom.

**PHIL 2316 - Technology and Science Ethics**

This course introduces students to a philosophical framework for understanding and assessing social and ethical issues associated with technological and scientific development and production.

**PHIL 3300 - Approaches to Philosophy**

A study of major areas of investigation in traditional and modern philosophy. Included are discussions of philosophies of knowledge, ethics, logic, aesthetics and metaphysics. Recommended for students who wish to take only one semester of philosophy.

**PHIL 3301 - Ancient Philosophy**

The course covers Western philosophy from the pre-Socratics through Plato and Aristotle.

Prerequisite: previous college philosophy course work or CI.

**PHIL 3302 - Medieval to Renaissance Philosophy**

Course covers post-Aristotelians, the early Church Fathers through Aquinas, as well as later Scholastics and early Renaissance philosophers.

Prerequisite: previous college philosophy course work or CI.

**PHIL 3304 - Existentialism**

This course addresses the themes of man's place in the world and his relation to problems of authenticity, anxiety, and forlornness by looking at philosophers like Kierkegaard, Nietzsche, Heidegger, and Sartre.

Prerequisite: upper-division standing or CI.

**PHIL 3331 - Modern Philosophy**

A study of the main issues and movements in philosophy from the seventeenth century through the 20th Century.

**PHIL 3360 - Perspectives on Science and Mathematics**

An overview of the history and philosophy of mathematics and science.

**PHIL 4199-4699 - Independent Study**

Independent study in specific areas of philosophy not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of departmental chair.

**PHIL 4300 - Studies In Philosophy**

A study of such areas of philosophy as aesthetics, logic, metaphysics, and ethics. May be repeated when content changes.

**PHIL 4330 - Comparative Religious Philosophy**

A study of traditional categories of the philosophy of religion with reference to such religions as Buddhism, Hinduism, Islam, Judaism, and Christianity.

**PHIL 5199-5699 - Independent Study**

Independent study in specific areas of philosophy not covered by organized graduate courses. A maximum of six credit hours for independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of department chair.

**PHIL 5320 - Studies In Ancient and Medieval Philosophy**

A study of selected philosophers from the Greeks to the Renaissance philosophers: Plato, Aristotle, St. Augustine, St. Thomas Aquinas, and others. May be repeated once for credit when content changes.

**PHIL 5325 - Studies in Modern Philosophy**

A study of selected philosophers from the Renaissance to the present: Descartes, Hume, Kant, Hegel, Nietzsche, Dewey, and Wittgenstein. May be repeated once for credit when content changes.

**PHIL 5327 - Contemporary Ethical Issues**

A study of some of the most critical ethical issues of the last 100 years such as abortion, euthanasia, and racism and the theoretical foundations on which they rest.

## PHYS - Physics

**PHYS 1101 - College Physics I Laboratory [TCCN: PHYS 1101]**

Basic laboratory experiments involving mechanics and heat are carried out by majors other than chemistry, computer science, and engineering. Students may not receive credit for both PHYS 1101 and PHYS 2125. Satisfies 1 hour of the STEM core requirements.

Corequisite: PHYS 1301.

**PHYS 1102 - College Physics II Laboratory [TCCN: PHYS 1102]**

Basic experiments involving electricity, magnetism, sound, and light are carried out by majors other than chemistry, computer science, and engineering. Students may not receive credit for both PHYS 1102 and PHYS 2126. Satisfies 1 hour of the STEM core requirements.

Corequisite: PHYS 1302.

**PHYS 1301 - College Physics I [TCCN: PHYS 1301]**

A general study of the fundamental principles of mechanics, heat, and sound. Students may not receive credit for both PHYS 1301 and PHYS 2325. Satisfies 3 hours of the STEM or LPS component of the core.

Prerequisite: MATH 1316 or MATH 2312. Physics in high school is strongly recommended.

**PHYS 1302 - College Physics II [TCCN: PHYS 1302]**

Continuation of PHYS 1301. A study of the principles of electricity, magnetism, light, and atomic and nuclear physics. Students may not receive credit for both PHYS 1302 and PHYS 2326. Satisfies 3 hours of the STEM or LPS component of the core.

Prerequisite: PHYS 1301.

**PHYS 1303 - Introduction to Astronomy**

A basic study of the solar system, stars from proto-stars to black holes, cosmology, dark energy and dark matter. Satisfies 3 hrs of the LPS or STEM component of the core.

**PHYS 2125 - University Physics I Laboratory [TCCN: PHYS 2125]**

Basic laboratory experiments involving mechanics and heat are carried out by chemistry, computer science, and engineering majors. Students may not receive credit for both PHYS 1101 and PHYS 2125. Satisfies 1 hour of the STEM core requirements.

Corequisite: PHYS 2325.

**PHYS 2126 - University Physics II Laboratory [TCCN: PHYS 2126]**

Continuation of PHYS 2125. Basic experiments involving electricity, magnetism, sound, and light are carried out. Students may not receive credit for both PHYS 1102 and PHYS 2126. This course satisfies 1 hour of the STEM core requirements.

Prerequisite: PHYS 2125. Corequisite: PHYS 2326.

**PHYS 2325 - University Physics I [TCCN: PHYS 2325]**

A general study of the fundamental principles of physics for science, computer science, and engineering majors. The principles of mechanics and heat are studied using a calculus-based approach. Students may not

receive credit for both PHYS 1301 and PHYS 2325. This course satisfies 3 hours of either the STEM or LPS core requirements.

Prerequisite: MATH 2413. Physics in high school is strongly recommended.

#### **PHYS 2326 - University Physics II [TCCN: PHYS 2326]**

Continuation of PHYS 2325. A calculus-based study of the principles of electricity, magnetism, and light. Students may not receive credit for both PHYS 1302 and PHYS 2326. This course satisfies 3 hours of either the STEM or LPS core requirements.

Prerequisite: PHYS 2325 and MATH 2414.

#### **PHYS 3101 - Contemporary Physics**

A qualitative introduction to contemporary fields of physics research and interest. Oral presentation required.

Prerequisite: PHYS 1302 or PHYS 2326.

#### **PHYS 3310 - Classical Mechanics**

A study of Newton's equations of motion, simple harmonic motion, central forces, systems of particles and collisions, nonlinear dynamics and chaos, and Lagrangian and Hamiltonian formalisms.

Prerequisite: PHYS 2325/2125 and MATH 3404.

#### **PHYS 3320 - Computational Physics**

A study of methods of solving complex physical problems using computer algorithms. It will focus on the techniques as well as examples from physics that lend themselves to numerical calculations.

Prerequisite: PHYS 2326/2126 and MATH 3404 or MATH 3305.

#### **PHYS 3360 - Research Methods**

An overview of using tools to solve scientific problems. This course offers students a broad understanding of the scientific method as a means of obtaining knowledge and provides an introduction to the research enterprise. This course is intended for students seeking teacher certification through the UTeach program.

#### **PHYS 4199-4399 - Independent Study**

Independent study in specific areas of physics not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied to an undergraduate degree.

Prerequisite: Consent of department chair.

#### **PHYS 4330 - Electricity and Magnetism**

A study of electrostatics, magnetostatics, electrodynamics in vacuum, Maxwell's equations and electromagnetic waves.

Prerequisite: PHYS 2326/2126 and MATH 3404 or MATH 3305.

#### **PHYS 4340 - Modern Physics**

An introduction to relativity and quantum theory. Einstein's theory of special relativity, the historical development of quantum theory leading to the Schrodinger equation, and applications of the Schrodinger equation will be studied.

Prerequisite: PHYS 2326/2126 and MATH 3404 or MATH 3305.

#### **PHYS 4395 - Undergraduate Research**

Directed physics research involving a problem of mutual interest to the student and a member of the physics faculty. An oral presentation and a written report of research results by the student are required at the conclusion of the project. May be repeated once for credit.

Prerequisite: Approval of department chair.

## **POLS - Political Science**

#### **POLS 2199-2699 - Independent Study**

Directed study in specific areas of political science not covered in current courses.

Prerequisite: Consent of instructor and department chair.

#### **POLS 2304 - Introduction to Political Science**

Introductory survey of the discipline of political science focusing on the scope and methods of the field, and the substantive topics in the discipline including the theoretical foundations of politics, political interaction, political institutions and how political systems function. Will not count towards core curriculum.

#### **POLS 2305 - Introductory American Government [TCCN: GOVT 2305]**

An examination of the United States political system, including its intellectual foundations and the design of the Constitution. Includes study of the major institutional factors, the impact of interest groups and the media, and the processes of policy-making. May be taken in fulfillment of statutory requirements for a baccalaureate degree.

#### **POLS 2306 - Introductory Texas Politics [TCCN: GOVT 2306]**

Study of the institutions governing Texas and related policy processes. Includes a focus on the legislative process, the executive branch, and the judicial system. May be taken in fulfillment of statutory requirements for a baccalaureate degree.

#### **POLS 2310 - Contemporary Political Issues**

Detailed study of selected topics in current politics. May include investigation of international issues, recent political trends and movements, and the nature of political science. May be repeated once for credit as topics change.

Prerequisite: POLS 2305 and POLS 2306.

#### **POLS 2320 - The Study of Law**

An examination of the nuances of the study of law, its purposes, and the broader problems and ethical implications of its practice. After an overview of Western legal history, the course introduces the student to the language of the law, forms of legal reasoning and analysis, the education and the work of lawyers and legal scholars.

Prerequisite: POLS 2305 and 2306.

#### **POLS 3300 - United States Constitutional Development**

Emphasis is placed on constitutional principles of federalism, separation of powers, judicial review, republicanism, democracy, and limited government with an analysis of the amendments made to the United States Constitution. Attention is also given to the commerce clause, due process provisions, and equal protection of the law.

Prerequisite: POLS 2305 and 2306.

#### **POLS 3310 - International Relations**

An examination of the nature of the international system, of forces affecting international relations, and of the sources and resolution of conflict in international policies.

Prerequisite: POLS 2305 and 2306.

#### **POLS 3315 - American Foreign Policy**

A study in the formulation and execution of contemporary American foreign policy with attention given to current policy toward major foreign powers.

Prerequisite: POLS 2305 and 2306.

#### **POLS 3321 - Jurisprudence**

An examination of the intellectual and philosophical foundations of jurisprudence from Roman law through English common law to contemporary legal philosophy. The course challenges students to recognize and confront different modes of legal thought.

Prerequisite: POLS 2305 and 2306.

#### **POLS 3330 - American Political Parties**

Studies significant American political parties, including third or minor parties, from the days of the Federalists and anti-Federalists to the present, with attention given to political philosophy, party platforms, and party organizations.

Prerequisite: POLS 2305 and 2306.

**POLS 3335 - American Campaign Politics**

An analysis of the basic components of campaigns in the United States. Topics include: (1) an historical overview of elections; (2) the electoral process; (3) American voting behavior; (4) the role of media, political parties and interest groups in campaigns; (5) the strategy and tactics involved in successful campaigns.

Prerequisite: POLS 2305 and 2306.

**POLS 3340 - Introduction to Public Administration**

An introduction to the study of the administrative branch of the United States government and the principles and processes of public administration, including those affecting state and local government. Topics include organization theory, personnel, budgeting, and bureaucratic decision-making.

Prerequisite: POLS 2305 and 2306.

**POLS 3345 - Urban and Municipal Government**

A study of the functions and problems of urban and municipal political units. Topics include small towns and cities, taxation, home rule, minority relations, suburban politics, personnel recruitment, and intergovernmental relations.

Prerequisite: POLS 2305 and 2306.

**POLS 3360 - Classical Foundations of Western Political Theory**

Examines the foundations of Western political theory from ancient Greece through the Roman Empire. The course will trace the development of Western political ideas and the accompanying vocabulary through Greek theater, the Pre-Socratics, Thucydides, Plato, Aristotle, the Graeco-Roman philosophers, and Cicero.

Prerequisite: POLS 2305 and 2306.

**POLS 3361 - Western Political Theory from the Middle Ages to the Renaissance**

Examines the development of political theory from the end of the Roman empire through the Renaissance. Particular attention is paid to attempts to reconcile Christianity with its emerging political influence in Christian thinkers from Augustine to Aquinas and the "new" political course charted by thinkers like Christine de Pizan and Machiavelli.

Prerequisite: POLS 2305 and 2306.

**POLS 3362 - Western Political Theory From the Enlightenment**

Examines the major contributions to Western political thought of Hobbes, Locke, Rousseau, the English Utilitarians, Marx, Nietzsche, their critics and their contemporaries with an emphasis on their continuing influence on the way we frame and discuss political questions.

Prerequisite: POLS 2305 and 2306.

**POLS 3370 - Comparative Politics**

Analysis of institutions, processes, and issues in various political systems. Focus on industrialized and developing states, liberal and authoritarian regimes, and capitalist and command economies. Investigation of techniques of comparative analysis.

Prerequisite: POLS 2305 and 2306.

**POLS 3372 - The Politics of Russia and the CIS**

An analysis of the evolution, structure, and functioning of the Russian government and its relationship with the Commonwealth of Independent States.

Prerequisite: POLS 2305 and 2306.

**POLS 3375 - European Political Systems**

Description and analysis of the major political systems in Europe. Emphasis is placed on the political systems of Great Britain, France, and Germany.

Prerequisite: POLS 2305 and 2306.

**POLS 3380 - The Politics of Latin America**

Description and analysis of Latin American political systems. Emphasis on the structure and function of authoritarian, democratic and revolutionary regimes.

Prerequisite: POLS 2305 and 2306.

**POLS 3385 - Politics of Eastern Europe**

Description and analysis of the newly created democracies in Central and Eastern Europe. Emphasis is placed on the process of democratization and the transition to a market economy in Central and Eastern Europe.

Prerequisite: POLS 2305 and 2306.

**POLS 3388 - Politics of Asia**

This course is an introduction to the comparative politics of Asia. We will analyze the cultures, governments, and politics of Asian countries, including India, China, Japan, Cambodia and Vietnam, individually and in a comparative framework.

Prerequisite: POLS 2305 and POLS 2306.

**POLS 3390 - International Political Economy**

Focuses on basic international economic activities in their political context. Emphasizes current political economic issues such as international debt, American economic competitiveness, and trade restrictions.

Prerequisite: POLS 2305 and 2306.

**POLS 3395 - Middle Eastern Politics**

An examination of contemporary conflicts and policies among nations in the Middle East. Emphasis is on religion, nationalism, political sovereignty, and economic modernization affecting regional realities. The role of the United States will also be discussed.

Prerequisite: POLS 2305 and POLS 2306.

**POLS 4199-4699 - Independent Study**

Independent study in specific areas of political science not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: POLS 2305 and 2306 and consent of instructor and department chair.

**POLS 4305 - International Terrorism**

The course examines terrorism as a special type of political action involving the use of extreme violence against civilians for political purposes. Topics covered include modern rebel terrorism, the historical and ideological origins of terrorism, state terrorism, and state-sponsored terrorism.

Prerequisite: POLS 2305 and POLS 2306.

**POLS 4310 - International Conflict**

Study of the tools nations use to wield influence in international affairs. Reviews peaceful means such as economic and political sanctions, through tools of extreme violence such as war.

Prerequisite: POLS 2305 and 2306.

**POLS 4315 - Model United Nations**

This course provides students with knowledge of the historical development of international organizations and offers basic information on the structure and purpose of the United Nations as well as an understanding of its inner workings. The top students from the course will travel to New York City to represent UT Tyler at the National Model United Nations.

Prerequisite: POLS 2305 and POLS 2306.

**POLS 4316 - Model United Nations II**

This course is the second part of the sequence for the Model United Nations program. Students will conduct research about the background and positions of the school's assigned country as they prepare to serve as delegates at the Model United Nations Conference in New York.

Prerequisite: POLS 4315.

**POLS 4320 - The Judicial System and Process**

A study of the American judicial system and process at the local, state, and national levels. Topics include judicial selection, judicial behavior, and judicial policy-making.

Prerequisite: POLS 2305 and 2306.

**POLS 4321 - American Constitutional Law**

An examination of the development of American constitutional law through Supreme Court interpretation. Emphasis is given to the Court's role in determining how the government functions under the Constitution, i.e., judicial review, the powers of congress and the presidency, federalism, the taxing power, and the commerce power.

Prerequisite: POLS 2305 and 2306.

**POLS 4322 - The Law of Civil Liberties**

An examination of how the Supreme Court has interpreted the Bill of Rights and subsequent amendments. The course explores the development of due process and the Court's various approaches to conflicts over the constitutional guarantees of freedom of press, expression, religion, equal protection, civil rights and privacy.

Prerequisite: POLS 2305 and 2306.

**POLS 4325 - Politics of Africa**

An examination of colonialism, the era of decolonization and national liberation, and the present post-colonial moment in Africa.

Prerequisite: POLS 2305 and POLS 2306.

**POLS 4330 - The American Presidency**

An examination of the Presidency and its development in the American political system.

Prerequisite: POLS 2305 and 2306.

**POLS 4335 - Comparative Health Systems**

This course offers an overview of selected health insurance systems. Students will learn to identify the characteristics of a social health insurance system, how success is measured and how these systems are responding to current fiscal pressures.

Prerequisite: POLS 2305 and POLS 2306.

**POLS 4340 - Congress and Legislation**

An examination of Congress and its development in the American political system, the legislative process and the influence of pressure groups.

Prerequisite: POLS 2305 and 2306.

**POLS 4345 - Public Policy Analysis**

An analysis of the role federal, state and local administrative agencies play in policy formulation and implementation. Topics include policy development, mobilization and allocation of resources. Individual policy areas will be examined.

Prerequisite: POLS 2305 and 2306.

**POLS 4349 - Planning for the Urban Future**

Covers the background and development of modern urban planning practices and techniques. The course examines the development and implementation of the comprehensive plan with attention to such elements as land use, housing, zoning, aesthetics, and transportation. Additional attention is given to current topics including economic development, growth management, and geographic informative systems.

Prerequisite: POLS 2305 and 2306.

**POLS 4350 - International Diplomacy, Law, and Organization**

A detailed study of non-violent methods of international conduct. Traces the history and development of the subjects from antiquity to the modern era. Particular emphasis on post-1945 innovations in international law and institutions, and the future of global affairs as developing states gain influence.

Prerequisite: POLS 2305 and 2306.

**POLS 4353 - Contemporary Political Theory**

A survey and analysis of trends in political theory since Nietzsche. The course considers the ongoing critique of the prevailing assumptions of western political theory. In addition to developments in liberal, conservative, and socialist political thought, the course assesses the impact of post-modern, post-colonial, and feminist approaches to political theory.

Prerequisite: POLS 2305 and 2306.

**POLS 4355 - American Mass Politics**

Examines politics at the mass public level, with emphasis on behavior, organization, and influence. Topics include political behavior, political organizations, such as political parties and interest groups, and political communication, especially in relation to the mass media.

Prerequisite: POLS 2305 and 2306.

**POLS 4360 - American Political Thought**

Analyzes a number of traditions in American political life, including ideas in the colonial and constitutional periods, nineteenth century individualism, arguments over sectionalism and slavery, progressivism, pragmatism, and contemporary debates over the state and the economy.

Prerequisite: POLS 2305 and 2306.

**POLS 4361 - Theories of Nonviolence**

Analysis of competing theories and approaches regarding violence, nonviolence, nonviolent resistance and civil disobedience.

Prerequisite: POLS 2305 and POLS 2306.

**POLS 4365 - Topics In Political Science**

Studies in political science to include such topics as global and regional politics, American political processes, or political and social philosophy. Up to six semester hours may be applied to a degree. No topics may be repeated.

Prerequisite: POLS 2305 and 2306.

**POLS 4370 - Internship Program**

An 8 to 16 week program offering a learning experience in an off-campus environment. Students may be asked to share experiences and discuss common problems. CR/NC option.

Prerequisite: POLS 2305 and 2306. Consent of department chair. No more than three semester hours of internship program credit may apply to fulfillment of the major or teaching field requirements in political science.

**POLS 4371 - Internship Program**

An 8 to 16 week program offering a learning experience in an off-campus environment. Students may be asked to share experiences and discuss common problems. CR/NC option.

Prerequisite: POLS 2305 and 2306. Consent of department chair. No more than three semester hours of internship program credit may apply to fulfillment of the major or teaching field requirements in political science.

**POLS 4380 - Policy Making Process**

Focuses on the central role of Congress in shaping public policy. The Constitution created three co-equal branches of government, but the power of the purse, the power to make laws and the power to conduct oversight into the actions of the Executive all lie with the Congress. Enrollment limited to Archer Center Fellows.

**POLS 4390 - Beyond Congress and the White House**

This course covers the power structure in Washington, D.C. - especially what lies beyond Congress and the White House, where power can be the most difficult to perceive and understand. Enrollment limited to Archer Center Fellows.

**POLS 4396 - Political Research and Methodology**

Studies literature review, research design and technique, and application of statistical concepts to problems of current interest in political science.

Required of all political science majors and students seeking a secondary teaching specialization in political science.  
Prerequisite: POLS 2305 and 2306.

**POLS 4685 - Archer Program Government Internship**

This course consists of an approved internship in a governmental or non-governmental organization in Washington, D.C. Enrollment limited to Archer Center Fellows.

**POLS 5199-5699 - Independent Study**

Independent study in specific areas of political science not covered by organized graduate courses. A maximum of six credit hours may be applied toward a graduate degree.

Prerequisite: Consent of instructor and department chair.

**POLS 5300 - Seminar in Scope and Methods**

Detailed review of historical development of the discipline, philosophical and methodological foundations of the profession, and techniques of research and analysis.

**POLS 5311 - Seminar in American Government**

Study of American political institutions and processes, major political trends, and literatures.

**POLS 5320 - Topics in American Government**

Research in selected aspects of American government and politics. May be repeated once for credit when content changes.

**POLS 5321 - Seminar in Political Theory**

Review of major trends in political, economic, and social thought with an emphasis on Western and other select formative traditions.

**POLS 5325 - Topics in Texas Government**

Research in selected aspects of Texas government and politics. May be repeated once for credit when content changes.

**POLS 5330 - Topics in Comparative Politics**

Research in selected areas of comparative politics, including area studies and comparative political theories. May be repeated once for credit when content changes.

**POLS 5331 - Seminar in Comparative Politics**

Study of techniques of comparative analysis. Focus on state, class, societal, and systemic forces in domestic politics. Analysis of both developed and undeveloped nation-states, regions, and populations.

**POLS 5341 - Seminar in International Relations**

Review of major theoretical literatures analyzing global events, trends, and influences. Focus on foreign policy, political economy, defense issues, and economic exchange.

**POLS 5345 - Topics in International Relations**

Research in selected aspects of international politics, law, and organization. May be repeated once for credit when content changes.

**POLS 5350 - Topics in Political Theory**

Research in selected aspects of political theory. May be repeated once for credit when content changes.

**POLS 5381 - Federal Policymaking**

In this experiential course, students will meet with officials from all phases of policy making and then discuss and analyze what is heard and seen based on a sampling of the literature on policymaking. Enrollment limited to Archer Center Graduate Fellows.

**POLS 5385 - Directed Reading**

Choice of reading topics, under faculty supervision, in preparation for comprehensive written examination.

Prerequisite: Consent of advisor.

**POLS 5386 - Directed Reading**

Completion of directed reading, under faculty supervision, in preparation for comprehensive written examination.

Prerequisite: POLS 5385 or concurrent enrollment and consent of advisor.

**POLS 5395 - Thesis**

Selection of research topic and development of a thesis plan.

Prerequisite: Consent of advisor.

**POLS 5396 - Thesis**

Completion and approval of thesis.

Prerequisite: POLS 5395 or concurrent enrollment and consent of advisor.

**POLS 5680 - Archer Center Washington Internship**

This course consists of an approved internship in a governmental or non-governmental organization in Washington, D.C. Enrollment limited to Archer Center Graduate Fellows.

## PSYC - Psychology

**PSYC 1301 - Introduction to Psychology**

A survey of empirically based knowledge of behavior and mentation of individuals.

**PSYC 2320 - Lifespan Developmental Psychology [TCCN: PSYC 2314]**

Physiological, perceptual, cognitive, social and affective change from conception to death, with an emphasis on transitions and developmental challenges throughout the lifespan.

**PSYC 2331 - Research Methods**

Designed to extend the student's ability to recognize and use typical behavioral research methods and controls. Emphasis will be given to experimental design techniques, evaluation of research articles, writing of journal reports, and statistical procedures used in psychological experiments.

Prerequisite: PSYC 2354 or equivalent.

**PSYC 2354 - Statistics and Laboratory**

An introduction to descriptive and inferential statistical methods used in psychological research. Emphasis will be on hypothesis testing with t-tests, analysis of variance, correlation, and selected nonparametric techniques. Application of computers and statistical software to psychological research.

**PSYC 3306 - Social Psychology**

Theories, methods, and applications of social psychology. Effects of social or group influences on perception, learning, motivation, and the development of attitudes and opinions. Emphasis on conformity, prejudice, aggression, and persuasion techniques.

**PSYC 3310 - Health Psychology**

A focus on health care systems and patient-physician relations, and how psychological research informs the understanding, prevention and treatment of a variety of health concerns, including stress, traumatic injury, pain management, addictions, and chronic illness.

Prerequisite: PSYC 1301 or equivalent.

**PSYC 3311 - Psychology of Gender**

An examination of gender from a psychological, sociological, and cultural perspective. How and why social expectations, standards, and opportunities tend to be systematically related to gender, and the effects on male and female experience.

**PSYC 3325 - Learning and Conditioning**

A survey of historical and contemporary associative and cognitive learning theories, and related conditioning principles, as applied to human and non-human animals. Laboratory exercises and

demonstrations illustrating learning and conditioning in animals and humans.

**PSYC 3335 - Diversity & Social Justice**

An exploration of various forms of oppression, including racism, sexism, ageism, heterosexism, ableism, classism and religious oppression, and the effects of these on both society and individuals. Models for change at various levels will be addressed.

**PSYC 3340 - Legal Psychology**

A focus on the use of psychological research to inform professionals in the legal and criminal justice systems about topics like eyewitness testimony, jury decision making, interrogation techniques, and the determination of insanity.

**PSYC 3342 - Drugs and Behavior**

A survey course that examines human drug use from historical, societal, and biological perspectives. Emphasis will be on the general factors behind drug tolerance, dependence, and abuse, and the psychological and behavioral effects of psychoactive drugs.

**PSYC 3344 - Industrial/Organizational Psychology**

Consists of a survey of the applications and the factors that affect employee performance and morale in commercial and industrial settings.

**PSYC 3345 - Mental Health Services**

A survey of the applications of psychology to mental health, human relations, and social services.

**PSYC 3350 - Introduction to Clinical and Counseling Psychology**

Examination of psychological principles as a basis for effective intervention in human problems. Introduction to the roles and functions of professional psychologists in mental health, medical, education, and community settings; theories and techniques of psychological interviewing and evaluation; and development of change programs for child and adult behavior problems.

**PSYC 3356 - Sensation and Perception**

An introduction to vision, audition, olfaction, gustation, somatosensation, pain, signal detection, attention, psychophysical scales, and perceptual processes.

**PSYC 3360 - Psychology of Parenting**

An examination of parents' roles and effects on the growth and life span development of their children. Emphasizes specific parenting styles and practices and their effects on the cognitive and social/emotional development and functioning of children at each stage of life. NOTE: May be used as a general elective but does not count as a core or elective psychology course.

**PSYC 3370 - Psychology of Love Relationships**

This course provides students with knowledge and understanding of intimate human love relationships. The focus is on learning about different theories of love relationships, studying the results of research on love relationships, and learning skills that promote healthy, successful and satisfying love relationships. Students will also study cultural and gender differences in love relationships.

**PSYC 4199-4399 - Independent Study**

Independent study in specific areas of psychology not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**PSYC 4301 - Tests and Measurement**

A survey course in psychological measurement with special emphasis given to the issues of test development and psychometric theory. The application of various tests in different settings is also addressed.

Prerequisite: Prior completion of PSYC 1301. Recommended: Prior completion of PSYC 2354 or equivalent.

**PSYC 4311 - Abnormal Psychology**

A review of abnormal psychology including clinical syndromes of deviancies, etiologies, and treatment tactics.

**PSYC 4315 - Cognitive Psychology**

An examination of the cognitive processes involved in human mentation. Includes the study of attention, perceptual processes, memory, knowledge representation, language, decision making and problem solving. Recommended: Prior completion of PSYC 1301 or equivalent.

**PSYC 4318 - Physiological Psychology**

Examines research techniques in physiological psychology, and the neurological basis of behavior; special emphasis given to the neurological basis of learning, memory, and abnormal behavior. Recommended: Introductory biology or equivalent.

**PSYC 4319 - Psychopharmacology**

To acquaint students with the neurotransmitter systems of the central nervous system and to discuss therapeutic agents which influence these transmitter systems. Recommended: PSYC 4318.

**PSYC 4321 - The History of Psychology**

Historical developments in psychology with special consideration given to diverse systems or schools of psychology; the rationale and assumptions of divergent systems will be covered.

Prerequisite: PSYC 1301.

**PSYC 4331 - Advanced Research Methods**

A capstone course in which the student develops a research literature review, empirical study, evaluation project or grant proposal culminating in a journal article manuscript and research poster for presentation at a scientific meeting.

Prerequisite: PSYC 2331 Research Methods or equivalent.

**PSYC 4341 - Personality Theory**

A survey of analytic, phenomenological, field, psychometric, biophysical and behavioristic theories of personality.

**PSYC 4353 - Developmental Psychology**

The study of theory and current research on developmental psychology across the lifespan, with an emphasis on the growth of personality and cognitive abilities, the interaction of heredity and environment, including the influence of family, peers, and social and cultural context, and transitions.

**PSYC 4360 - Topics in Psychology**

Thorough explorations of topics of substantial scholarly interest in psychology.

Prerequisite: Senior standing in psychology or consent of instructor.

**PSYC 4370 - Field Experience in Psychology**

An 8 to 16 week program offering a learning experience in a laboratory, clinic or other setting. 150 hours of supervised field experience is for each course. CR/NC only.

Prerequisite: Consent of advisor.

**PSYC 4371 - Field Experience in Psychology**

An 8 to 16 week program offering a learning experience in a laboratory, clinic or other setting. 150 hours of supervised field experience is for each course. CR/NC only.

Prerequisite: Consent of advisor.

**PSYC 5199-5399 - Independent Study**

Independent study in specific areas of psychology not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of advisor.

**PSYC 5301 - Tests and Measurement**

Instruction in assessment and evaluation in a multicultural society, including: introduction and history of assessment; standardized and non-standardized testing and other assessment techniques; statistical and psychometric concepts (e.g., scales of measurement, reliability, validity, and test theory); social and cultural factors related to assessment; and ethical issues related to assessment.

**PSYC 5308 - Advanced Psychopathology and Diagnosis**

Examines psychopathologies. Attention given to the causes of abnormal behavioral patterns, the diagnostic manual and its use, and treatment planning procedures for evidence based practice. Rationales for models for conceptualizing disorders will be presented: analytic, behavioral, phenomenological, and biological.

**PSYC 5312 - Counseling Theories**

Overview of theoretical approaches to counseling and psychotherapy, including fundamental concepts, assessment, client and counselor roles, cultural relevance, and intervention strategies/techniques. Includes role-play practice of fundamental counseling response skills.

**PSYC 5320 - Advanced Human Growth and Development**

An advanced study of human development, including theories and research regarding biological, social, cognitive, and identity development across the lifespan. Prevention, intervention, and treatment techniques are discussed in the context of differing developmental needs and multicultural contexts.

**PSYC 5325 - School Psychology**

Examination of the profession of school psychology; problems of psychological evaluation and remediation, referral and liaison with community mental health agencies and other service centers; psychological reports and ethics of psychologists.

**PSYC 5326 - Psychological Consultation**

Designed to familiarize students with the theory and processes of psychological consultation using a combination of didactic instruction and laboratory skills training. Emphasis is on consulting in educational settings and, secondarily, in other settings (e.g., hospitals, industrial). Prerequisite: Consent of instructor.

**PSYC 5328 - Issues and Professional Ethics**

Survey of issues in the practice of psychology and counseling from an ethical and professional viewpoint. Consideration of such things as the rules of the psychology and counseling boards, ethical case studies and professional practices.

**PSYC 5330 - Counseling Children and Adolescents**

Examines the relevant counseling theories and techniques as they apply to children and adolescents. Includes interventions with emotionally disturbed and behaviorally disordered children.

**PSYC 5340 - Advanced Psychological Statistics and Design**

Includes aspects of complex experimental designs, statistical hypothesis testing, decision theory, multiple regression analysis, ANOVA, distribution-free techniques, and factor analysis.

**PSYC 5345 - Group Counseling and Therapy**

An introduction to social and interpersonal influences on behavior, group dynamics, developmental stages of a group, and an overview of theoretical approaches to group counseling. Emphasis is on developing group leadership skills. Includes a 10-hour group experience.

**PSYC 5350 - Clinical Neuropsychology**

Introduction to historical background of brain-behavior relationship. Focus upon brain pathologies and underlying brain structures: aphasia, alexia, agraphia, body schema disturbances, apraxia, agnosia, neglect syndromes, late and early onset dementias, frontal lobe syndrome, seizure disorders, and related brain syndromes.

**PSYC 5352 - Behavioral Neuroscience**

A survey of the basic anatomy and neurochemistry of the brain as it relates to both normal and abnormal behavior. Includes every major neurotransmitter of the brain and abnormalities of these systems as they relate to human behavior.

**PSYC 5354 - Psychopharmacology**

A survey of physiological and behavioral effects of the major classes of psychoactive drugs, specifically, therapeutic agents and drugs of abuse with respect to their mechanisms of action and side effects. Students are expected to have successfully completed a course in physiological psychology.

**PSYC 5356 - Neuropsychological Assessment of Memory**

The basic skills and theory of memory assessment in diverse patients including geriatric individuals. Emphasis will be on the administration, scoring, and interpretation of current instruments for memory assessment.

Prerequisite: PSYC 5366; Neuropsychology Specialization or consent of instructor.

**PSYC 5358 - Neuropsychological Assessment: Fixed Battery**

Instruction in basic skills in neuropsychological assessment and brain functioning with emphasis on administration, scoring, and interpretation of current fixed-battery instruments.

Prerequisite: PSYC 5366.

**PSYC 5359 - Flexible Neuropsychological Battery**

Intended to develop entry-level testing skills for specific cognitive domains, including attention and concentration, verbal and nonverbal memory, language, motor performance, abstract thinking, reasoning, visual/spatial ability, and executive function.

Prerequisite: PSYC 5366.

**PSYC 5361 - Behavior Modification**

An exploration of behavioral learning principles and application of these learning principles for children and adults. Both research and effective intervention/treatment planning is emphasized.

**PSYC 5366 - Assessment of Individual Mental Ability I**

Examines the historical background of selected individual scales of intellectual functioning. Special emphasis will be given to supervised practice in the administration, scoring, interpretation, and psychological report writing of the Wechsler measures of intelligence. Students are expected to have successfully completed an undergraduate or graduate course in tests and measures.

**PSYC 5367 - Assessment of Individual Mental Ability II**

A course emphasizing the Intelligence and other appropriate school testing instruments. Special emphasis on supervised practice in the administration, scoring, interpretation, and psychological report writing. Students are expected to have successfully completed an undergraduate or graduate course in tests and measures.

**PSYC 5368 - Clinical Mental Health Assessment**

An examination of clinical/personality assessment instruments that are employed in a variety of settings; administration, scoring, interpretations and psychological report writing for selected instruments will be covered.

Prerequisite: Major in psychology and consent of instructor.

**PSYC 5369 - Psychological Assessment of Children and Adolescents**

A survey course in the psychological assessment of children and adolescents. Includes a review of basic psychometrics and classification systems for child psychopathology. Focuses on different types of assessment procedures used with children and adolescents as well as the assessment/diagnostic process. Attention given to specific psychological disorders of children and adolescents.

Prerequisite: Consent of instructor.

**PSYC 5373 - Diagnosis and Treatment of Trauma/Abuse**

An intensive study of the appropriate procedures for the diagnosis, assessment, and various treatment strategies for trauma/abuse in children and adults.

**PSYC 5380 - Seminar in Psychology**

Seminars of topical interest in specialized areas of psychology.  
Prerequisite: Consent of instructor.

**PSYC 5384 - Cognitive Behavioral Therapy and Applications**

An in-depth exploration of the theoretical assumptions underlying cognitive-behavioral therapy and its application to a wide variety of problems, issues, and psychopathologies. This course includes a role-play component.

Prerequisite: COUN 5312 or PSYC 5312.

**PSYC 5388 - Supervised Internship in School Psychology**

A minimum of 600-clock hours of supervised experiences in an appropriate setting. Experiences include assessment, intervention, behavior management, and consultation for children representing a range of ages, populations, and needs. The internships must meet the criteria for a school psychology internship established by the Texas State Board of Examiners of Psychologists. CR/NC only.

Prerequisite: Departmental consent.

**PSYC 5389 - Supervised Internship in School Psychology**

A minimum of 600-clock hours of supervised experiences in an appropriate setting. Experiences include assessment, intervention, behavior management, and consultation for children representing a range of ages, populations, and needs. The internships must meet the criteria for a school psychology internship established by the Texas State Board of Examiners of Psychologists. CR/NC only.

Prerequisite: Departmental consent.

**PSYC 5390 - Psychology of Aging**

Examines various aspects of aging, with a major focus on the psychosocial stresses and adaptive processes associated with changes in cognitive function, sensory processes, personality, social and work roles, and physiology in the aged.

**PSYC 5391 - Social and Biological Gerontology**

Examines various social and biological theories of aging, with a major focus on mental health issues. Includes diagnostic evaluation, adjustment efforts, and treatment processes. Recommended: PSYC 5390 or equivalent.

**PSYC 5392 - Applied Counseling Practice**

A clinical skills course emphasizing the acquisition of practical therapeutic techniques through role playing and modeling. Direct supervision using audio/video recordings will be provided. CR/NC only.  
Prerequisite: Grade of "B" or better in PSYC 5308, PSYC 5312, PSYC 5328, and departmental consent.

**PSYC 5393 - Applied Therapy**

The application of practical therapeutic techniques with clients. Video feedback and direct supervision. Requires minimum of 25 direct client contact hours. CR/NC only.

Prerequisite: Grade of "B" or better in COUN 5324, credit in PSYC 5392, and departmental consent.

**PSYC 5394 - Thesis**

Selection of a research topic and development of a thesis plan. CR/NC only.

Prerequisite: Consent of advisor.

**PSYC 5395 - Thesis**

Completion and committee defense of independent thesis project. CR/NC only.

Prerequisite: Consent of advisor.

**PSYC 5396 - Supervised Practicum in Psychology**

At least 300 clock hours of supervised experiences in a setting that provides psychological services. On-site supervision and on-campus small group supervision required. CR/NC only.

Prerequisite: Credit in PSYC 5393; Good academic standing and departmental consent.

**PSYC 5397 - Supervised Practicum in Psychology**

At least 300 clock hours of supervised experiences in a setting that provides psychological services. On-site supervision and on-campus small group supervision required. CR/NC only.

Prerequisite: Good academic standing and departmental consent.

**PSYC 5398 - Research Seminar**

This course is a capstone experience in which the student identifies a research topic, conducts comprehensive literature reviews, and then develops a substantial written Research Seminar Paper, which may be a critical literature review, an original small empirical research project, an original applied evaluation project, or an original grant proposal. The Research Seminar Paper will be in the form of a professional journal article manuscript.

## PYED - Physical Education

**PYED 3355 - Developmental Games and Activities**

Study of the use of play, games, dance and sport in facilitating motor development.

**PYED 4156 - Topics in Motor Performance**

In-depth study of specific motor skills, including such aspects as underlying physiological and mechanical principles, training procedures, skill-development techniques, and instructional methods. May be repeated as topic varies, with up to six hours credited towards degree requirements. PYED 4356

**PYED 4256 - Topics in Motor Performance**

In-depth study of specific motor skills, including such aspects as underlying physiological and mechanical principles, training procedures, skill-development techniques, and instructional methods. May be repeated as topic varies, with up to six hours credited towards degree requirements. PYED 4356

**PYED 4340 - Teaching Methods in Physical Education**

Study and application of theory and development of skills related to effective instruction in physical education.

**PYED 4356 - Topics in Motor Performance**

In-depth study of specific motor skills, including such aspects as underlying physiological and mechanical principles, training procedures, skill-development techniques, and instructional methods. May be repeated as topic varies, with up to six hours credited towards degree requirements. PYED 4356

**PYED 5352 - Topics in Instructional Styles**

In-depth study of selected topics related to styles of teaching in health or physical education (e.g., theoretical limits, cognition, individual instruction, and decision-making). May be repeated once for credit when content changes.

**PYED 5354 - Topics in Curriculum**

In-depth study of selected topics related to curriculum in health or physical education. May be repeated once for credit when content changes.

## READ - Reading Education

**READ 3330 - Children's Literature**

History and analysis of children's literature. Designed primarily for pre-school and elementary education majors.



**READ 3332 - Adolescent Literature**

Overview of adolescent literature. Designed primarily for students working toward Grades 4-8 and secondary certification.

**READ 4337 - Reading in the Intermediate and Middle School (Grades 4-8)**

A study of learner/teacher strategies used within a reading/writing workshop approach to the teaching of literacy.

**READ 4350 - Pre-kindergarten and Elementary Literacy (Grades PK-4)**

A study of the specific reading needs of children in the pre-school and primary grades. Areas to be stressed include the interactive reading model, emerging literacy, essential knowledge and skills, lesson planning, literature-based and basal reading materials.

**READ 4360 - Literacy in the Classroom**

An examination of literacy methods and materials and the framework for organization and implementation in the classroom.

Prerequisite: Admission to the School of Education and approval for Phase III.

**READ 4366 - Corrective Reading Practicum**

A course designed to afford the student opportunity to implement the skills of assessment, instruction, and evaluation in a tutorial setting that utilizes a peer coaching model.

Prerequisite: Admission to the School of Education. Must have completed the EC-6 Core Curriculum.

**READ 5100 - Inservice Workshop**

Designed to provide opportunities for groups of teachers who wish to study specific educational problems in the reading area. Up to three semester hours of credit of inservice workshops may be used for degree requirements with the prior approval of the student's advisor.

**READ 5199-5399 - Independent Study**

Independent study in specific areas of reading not covered by organized graduate courses. A maximum of six credit hours of independent study course may be applied toward a graduate degree.

Prerequisite: Consent of department chair.

**READ 5200 - Inservice Workshop**

Designed to provide opportunities for groups of teachers who wish to study specific educational problems in the reading area. Up to three semester hours of credit of inservice workshops may be used for degree requirements with the prior approval of the student's advisor.

**READ 5300 - Inservice Workshop**

Designed to provide opportunities for groups of teachers who wish to study specific educational problems in the reading area. Up to three semester hours of credit of inservice workshops may be used for degree requirements with the prior approval of the student's advisor.

**READ 5301 - Language, Literacy, and Culture**

Examination of the critical roles of language and culture on the literacy development of all students, including English learners.

**READ 5302 - Teaching Children's Literature**

Critical examination of current educational issues relating to the selection and use of children's and adolescent literature when teaching literacy in the PreK-12 classroom.

**READ 5303 - New & Emerging Media Literacies**

Exploration of new and emerging media technologies as powerful tools for enhancing K-12 students' literacy development and learning, with an emphasis on how to integrate new media literacies such as the Internet into the curriculum and enhance literacy learning in the classroom.

**READ 5304 - Reading & Writing Workshop**

Exploration of writing as a process and product, with particular emphasis on how to teach writing effectively and creatively in the PreK-12 classroom.

**READ 5305 - Teaching Disciplinary Literacy to Adolescents**

Examination of the research, policy, and effective practices aimed at preparing adolescents for the reading, writing, and thinking required by advanced disciplinary coursework.

**READ 5306 - Literacy Assessment Practicum**

Field experience focused on addressing the literacy assessment needs of struggling readers and writers in PreK-12 clinical and/or classroom settings.

**READ 5307 - Literacy Instruction Practicum**

Field experience focused on addressing the literacy instruction needs of struggling readers and writers in PreK-12 clinical and/or classroom settings.

**READ 5308 - Action Research for Literacy Educators**

Exploration and application of action research approaches and methods for examining and enhancing classroom instruction practices and increasing students' literacy achievement outcomes in PreK-12 clinical and/or school settings.

**READ 5309 - Literacy Coaching**

Field experience focused on expanding literacy coaching knowledge, skills, and dispositions by studying and engaging in literacy coaching work in authentic PreK-12 clinical and/or school settings.

**READ 5360 - Advanced Developmental Reading Seminar**

A study of the elementary reading program, including emergent literacy and the developmental reading areas, using literature-based and basal reading materials. Focus is on teacher/learner strategies that emphasize the reading/writing connection.

**READ 5362 - Reading Diagnosis**

A study of individual and group diagnostic reading procedures for grades one through college. Experience in testing and reporting of results included.

**READ 5363 - Remedial and Corrective Reading: K-Adult**

Provides the graduate student with experiences in process assessment, including theoretical foundations, purposes and procedures. Students will supervise instruction to struggling readers in a tutorial setting.

**READ 5364 - Reading Research Seminar**

A study of current research and relevant issues. The student will have the opportunity to design and complete a graduate research project under the direction of the instructor.

**READ 5365 - Literacy and Cognitive Coaching Practicum**

A study of the organization, maintenance, and evaluation of remedial reading programs. Practicum experiences in supervising preservice teachers within a cognitive coaching model.

**READ 5367 - Reading and Writing Workshop II - Secondary**

A study of techniques for implementing a reading/writing workshop in an elementary or secondary classroom. Students will be immersed in both reading and writing, and will experience first-hand conferencing, mini lessons, read alouds, grouping, revising, editing, and publishing.

**READ 5368 - Organization and Supervision of Reading Programs**

Designed to investigate the role of the supervisor and to provide the student with the opportunity to develop, organize, and administer reading programs.

**READ 5369 - Reading and Writing Workshop I - Elementary**

A study of techniques for implementing a reading/writing workshop in an elementary classroom.

**READ 5380 - Topics in Reading**

Focuses on current topics related to literacy. Three hours credit may be applied to a degree plan with consent of advisor. This course may be repeated for credit as topics change.

**READ 5381 - Reading Recovery I**

An introduction to Reading Recovery techniques including theoretical foundation, purposes, and procedures. Classroom instruction is coordinated with an integrated field experience.

Prerequisite: Consent of department chair.

**READ 5382 - Reading Recovery II**

A continuation of Reading Recovery techniques including theoretical foundations, purposes, and procedures. Classroom instruction is coordinated with an integrated field experience.

Prerequisite: Consent of department chair and READ 5381.

**READ 5388 - Content Literacy in the Secondary School**

A study of the assessment of textbooks, content area reading-study skills, teacher/learner strategies via a content reading lesson, assessment procedures, and development of secondary reading programs.

**READ 5395 - Thesis**

Selection of a research topic and development of a thesis plan. CR/NC only.

Prerequisite: Fifteen graduate hours.

**READ 5396 - Thesis**

Completion and approval of thesis. CR/NC only.

Prerequisite: READ 5395 or concurrent enrollment.

**RELI - Religion Studies****RELI 1301 - Introduction to Religion and Society**

Religion has been a powerful phenomenon throughout human history. This course will present the phenomenon of religion through the last 150 years of academic study. The student will consider psychological, sociological, economic, phenomenological, and anthropological theories of religion.

**RELI 2350 - Major Religious Thinkers**

The thought, historical setting, and influence of classical religious thinkers from the Eastern and Western religious traditions.

**RELI 3310 - Introduction to Judaism**

A focus on Jewish literature and Jewish thought, comprising a general introduction to Biblical, rabbinic, philosophic and literary Jewish texts from its ancient beginning to the present with emphasis on hermeneutics (interpretation).

**RELI 3320 - Introduction to Islam**

Introductory course that studies the origins, content, and meaning of the religion of Islam by looking at the primary literature of Islam which includes the Koran (Qur'an) and the Hadith (a record of the sayings and actions of Muhammad) and secondary texts to explain their meaning.

**RELI 3330 - Introduction to Christianity**

An introductory course that studies the origins, content, and meaning of Christianity by looking at the New Testament, (both the Gospels and letters of Paul), the people and ideas that led to the major tenets of Christianity, and secondary texts to explain their meaning.

**RELI 3340 - Asian Religions**

This course introduces students to the essential ideas, beliefs, and practices of the religious traditions of South and East Asia. The emphasis will be on Hinduism in South Asia, Buddhism, Confucianism and Taoism in East Asia, and Zen and Shintoism in Japan.

**RELI 3343 - Introduction to Buddhism**

This course introduces students to the essential tenets of Buddhism in its three most popular forms: Theravada, Mahayana, and the Vajrayana and in what ways these forms of Buddhism transformed the cultures in which they arose.

**RELI 3350 - Topics in Religion and Politics**

This course explores the conflicting role religion plays in politics and its implication for civil life. Some possible topics include conflicts arising within Islam in the Middle East and SE Asia, Evangelism in Latin America and Africa, Hindu nationalism and conservative Christians in the U.S.

**RELI 4199-4699 - Independent Study**

Independent Study in the specific areas of Religion Studies not covered by organized undergraduate courses. A maximum of six credit hours may be applied toward an undergraduate degree.

Prerequisite: Consent of the program director.

**RELI 4353 - Religious Texts**

Introduction to the scriptural literature of one of the major world religions. This course may be repeated when topics change.

**RETL - Retail****RETL 4175-4775 - Internship/Work Experience (Up to 7 hours of work experience may be granted for retail management experience.)**

A program providing a learning experience in an off campus environment in a retail setting.

Prerequisite: Consent of Department Chair.

**SOCI - Sociology****SOCI 1301 - Introduction to Sociology [TCCN: SOCI 1301]**

An introductory course including the study of the relationship of individuals to culture, groups, and major social institutions. Representative topics may include family, religion, politics, population, education, crime, environment, and others.

**SOCI 1306 - Contemporary Social Problems [TCCN: SOCI 1306]**

An analysis of current problems that influence the well-being of individuals, institutions, and societies. A goal is to provide students with a perspective to evaluate conflicts in values, individual deviance, family instability, aging, environment, terrorism, drug abuse, and other contemporary issues. Possible solutions based on sociological theory are explored.

**SOCI 2326 - Social Psychology**

Theories, methods, and applications in social psychology; the nature and type of social variables and methods used to study them.

**SOCI 2330 - Social Change and Development**

Global and historical patterns of change are examined as societies progress from agricultural, to industrial, and post industrial economies. Consequences of modernization of economy to the individual and to cultures are explored. The role of sociology in anticipating and planning for change is studied.

**SOCI 3302 - Deviant Behavior (Same as CRJ 3302)**

Study of various definitions, probable sources, and major effects of social deviance. Emphasis on evaluating strategies for reducing such deviance.

**SOCI 3315 - Social Stratification**

Study of systems of social inequality with emphasis on modern western societies.

**SOCI 3320 - Introduction to Social Work**

Study of applied social work in contemporary society.

**SOCI 3321 - Multi-Cultural Studies**

Studies relations among cultural groups.

**SOCI 3328 - White-Collar Crime (Same as CRIJ 3328)**

Study of the causes, consequences, and control of white-collar crime.

**SOCI 3341 - Marriage and Family Life**

Examines the structure, function, and major changes in the family as a basic social institution. Emphasis on the family in the United States.

**SOCI 3345 - Medical Sociology**

Studies health practices and practitioners and their relation to patients, health problems, and society.

**SOCI 3370 - Sociological Theory**

Studies the development of sociological theory with emphasis on contemporary ideas and trends.

**SOCI 3380 - Population Problems**

Examines world population trends, with emphasis on the contemporary United States. Focus is on social and economic problems resulting from population growth and imbalances as well as on solutions to these problems.

**SOCI 3396 - Social Research Methods**

Designed to provide the student with the opportunity to become familiar with statistical concepts, research design, and techniques of research as applied to research problems of current interest in sociology.

**SOCI 4199-4699 - Independent Study**

Independent study in specific areas of sociology not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**SOCI 4305 - Juvenile Delinquency (Same as CRIJ 4305)**

Analysis of the extent, distribution, and varieties of juvenile delinquency. Emphasis on using sociological theories and research to examine delinquency causation and prevention.

**SOCI 4307 - Urban Sociology**

Deals with problems of urban society, approaches to urban planning and contemporary problems, economic and physical concerns, and the social impact of urban life on institutions.

**SOCI 4308 - The American Community**

Study of the development and structure of the American community with emphasis on the community as a complex of human relations through which a population meets its needs.

**SOCI 4311 - Majority-Minority Relations**

Examines the policies and practices of dominant social groups and the responses of racial and ethnic minorities. Focus is upon the United States. Recommended: SOCI 3315 or SOCI 3321.

**SOCI 4321 - Methods of Social Work**

Introduces basic approaches to social work, in view of current theory, utilizing a problem-solving approach.

**SOCI 4330 - Social Services**

Surveys the extent and nature of social services available by agencies and institutions, public and private.

**SOCI 4340 - Sex Roles and the Life Cycle**

Examines the changes and problems which males and females experience as their roles and stages in the life cycle change.

**SOCI 4360 - Topics in the Sociology of Institutions**

Research and theory in selected social institutions. May be repeated for credit when the content changes.

**SOCI 4370 - Internship Program**

An 8 to 16 week program offering an opportunity for a learning experience in an off-campus environment. Students may be asked to share experiences and discuss common problems. CR/NC option.

Prerequisite: Consent of department chair.

**SOCI 4397 - Senior Research Seminar**

Students are expected to design and to conduct field research, and to produce a professional-quality paper. Skills learned in previous courses are augmented and applied. This is a capstone course where students demonstrate their capacity for abstract thought, effective written and oral communication, and the full use of computer technology.

Prerequisite: SOCI 3396.

**SOCI 5199-5699 - Independent Study**

Independent study in specific areas of sociology not covered by organized graduate courses. A maximum of six credit hours may be applied toward a graduate degree.

Prerequisite: Consent of instructor.

**SOCI 5302 - Seminar in Deviance**

Presents and evaluates functionalist, conflict, labeling, and other social theories of deviance.

**SOCI 5307 - Seminar In Metropolitan Problems**

In-depth study of the conditions underlying major social problems in big cities. Also an examination of many current metropolitan problems such as transportation and housing.

**SOCI 5310 - Internet Communities**

The Internet's influence on intimate and family relations, its contribution to building a global society, and the internet communities in education, commerce, crime, professions, and social and individual services are analyzed and evaluated.

**SOCI 5321 - Intercultural Studies**

A cross-cultural analysis of dominant-minority relations. Ethnic relations in both the United States and other countries will be examined.

**SOCI 5325 - Topics In Social Problems**

Studies in social problems. Up to six semester hours may be applied to a degree. No topics may be repeated.

**SOCI 5341 - Seminar in Marriage and the Family**

Mate selection, marriage, family types and alternate life styles are related to sex ratios, ethnicity and social class. Living arrangements and child bearing patterns are related to child well-being. Various mate selection methods are described.

**SOCI 5380 - Seminar in Sociological Theory**

In-depth analysis of selected sociological theories.

**SOCI 5385 - Studies In Demography**

Examines demographic theory and methods in the context of historical and current population problems. The major focus is on the United States, especially local and regional population issues. Students are guided in a practical study using the census and other demographic sources.

**SOCI 5388 - Applied Research I**

Independent research under the tutelage of the major professors.

Prerequisite: Admission into the graduate program in sociology; completion of core courses in program.

**SOCI 5389 - Applied Research II**

Completion of research paper under tutelage of major professor. May be repeated.

Prerequisite: SOCI 5388.

**SOCI 5394 - Thesis**

Selection of research topic and development of thesis plan.

Prerequisite: Admission into the graduate program in sociology; completion of core courses in program.

**SOCI 5395 - Thesis**

Completion and defense of the thesis. May be repeated with permission of major professor.

Prerequisite: SOCI 5395.

**SOCI 5396 - Seminar in Social Science Research**

Focuses on research design and methods as they are employed in social sciences. Topics include sampling, hypothesis testing, quantitative data analysis, and measures of association.

**SOCI 5397 - Studies in Applied Sociology**

Focuses on the practical application of sociological theories, methods, and research relevant to social planning, community organization/development, and patterns of adjustment to social change.

**SPAN - Spanish****SPAN 1413 - Introduction to Spanish I [TCCN: SPAN 1411]**

Designed for the student having little or no previous exposure to the Spanish language, this course concentrates on developing the ability to understand, speak, read, and write in Spanish. Grammatical topics such as the present and preterite verb tenses are presented along with an introduction to Hispanic culture. Class conversation is a key element in the instruction.

**SPAN 1414 - Introduction to Spanish II [TCCN: SPAN 1412]**

Building upon the fundamental concepts developed in SPAN 1413, this course emphasizes further practice in conversation, expanded writing assignments, and the presentation of grammatical topics such as the future and conditional tenses.

Prerequisite: SPAN 1413 or CI.

**SPAN 1611 - Accelerated Spanish I**

Designed for students having little or no exposure to Spanish, this course offers 6 credit hours a semester to accelerate student learning. It emphasizes speaking, listening and reading skills along with a focus on basic grammar, cultural awareness, and development of vocabulary.

**SPAN 2311 - Intermediate Spanish I [TCCN: SPAN 2311]**

Review and continuation of fundamental concepts studied in Spanish 1313 and 1314. Cultural readings, expansion of conversational and compositional skills, and continued grammar study.

Prerequisite: SPAN 1414 or CI.

**SPAN 2312 - Intermediate Spanish II [TCCN: SPAN 2312]**

A continuation of Spanish 2311. Grammar review and expansion, cultural readings, and continuing study of conversational and compositional skills.

Prerequisite: SPAN 2311 or CI.

**SPAN 2611 - Accelerated Spanish II**

Designed for students who have completed at least 6 hours of Spanish or the equivalent, this accelerated 6 credit hour course emphasizes speaking, listening, and reading skills along with continued grammar and vocabulary development and study of Hispanic culture.

**SPAN 3335 - Writing Proficiency in Spanish**

This course offers content-based instruction for the acquisition of measured levels of proficiency in writing Spanish. Taught in Spanish.

Prerequisite: CI.

**SPAN 3345 - Introduction to Hispanic Literature**

A course designed to familiarize the students with the analysis of Hispanic literary texts and to provide them with the opportunity to

improve their mastery of the Spanish language through commentary on and careful reading of representative literary texts. Taught in Spanish.

**SPAN 3350 - Survey of Spanish Literature to 1700**

A study of Peninsular literature, beginning with El Poema de Mio Cid and extending through the Baroque period, emphasizing works that give representative expression to the thought and cultural patterns of their times. Taught in Spanish.

**SPAN 3355 - Survey of Spanish Literature Since 1700**

A study of Peninsular works that manifest the major literary and cultural movements of their times, such as romanticism, realism, and modernism. Taught in Spanish.

**SPAN 4199-4699 - Independent Study**

Independent study in specific areas of Spanish language or literature not covered by organized undergraduate courses. A maximum of six credit hours may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

**SPAN 4310 - Advanced Grammar**

In depth analysis of topics of the Spanish language that are usually problematic for English speakers of Spanish, such as the subjunctive mood and placing the preterite and imperfect in context.

Prerequisite: Consent of instructor.

**SPAN 4331 - Hispanic Culture and Civilization**

An exploration of Hispanic culture and civilization, emphasizing its influence on western civilization. Valuable as a support course in the humanities, fine arts, and social sciences. Taught in Spanish.

Prerequisite: Consent of instructor.

**SPAN 4352 - Cervantes**

Study and analysis of the Exemplary Novels and Don Quixote. The course also includes a consideration of Cervantes' life and times and the views of modern literary critics. Taught in Spanish.

Prerequisite: SPAN 2312 or consent of instructor.

**SPAN 4360 - Special Studies in Spanish Literature and Language**

Selected readings from various authors, genres, periods, and themes. Concentrated study of language problems. Taught in Spanish. May be repeated for credit when content changes.

**SPAN 4364 - Colonial Latin-American Literature**

A survey course dedicated to the reading and analysis of representative Latin-American authors from the discovery of the New World to the 1820's. Taught in Spanish. .

**SPAN 4365 - Modern Latin-American Literature**

Reading and analysis of representative Latin-American authors from the 1820's to the present. Taught in Spanish.

**SPAN 4368 - Field Study in Spanish**

This course provides students with the opportunity for total immersion in the language and the culture by studying in a Spanish-speaking country. Students will have the opportunity to study historical sites and museums, to conduct field research on a given topic which includes some travel, and to live with a Hispanic family.

**SPAN 4370 - The Spanish American Short Story**

A study of this genre from the 19th century to the present with attention given to themes, narrative techniques and literary movements. The writers studied will include: Echeverria, Palma, Quiroga, Borges, Garcia Marquez, Fuentes, Castellanos and others. Taught in Spanish.

Prerequisite: CI.

**SPAN 4380 - Topics in Spanish**

This course will explore the basic vocabulary, idioms, expressions, and customs common to the Spanish-speaking professional world. The course will provide practice in the Spanish language formulas used in,

for example, commercial correspondence, legal terminology, health-related professions, and marketing.

#### **SPAN 4385 - Spanish for Oral Proficiency**

This course offers content-based instruction in small groups for acquisition of measured levels of proficiency in speaking Spanish.

#### **SPAN 4390 - The Contemporary Spanish American Novel**

Study and analysis of works by major Spanish American novelists from the period of the Mexican Revolution to the present. Emphasis placed on themes and narrative technique in novels by writers such as Azuela, Bombal, Rulfo, Fuentes, Garcia Marquez, Vargas Llosa, Poniatowska and others. Taught in Spanish.

Prerequisite: CI.

#### **SPAN 4397 - Senior Seminar**

Required of all Spanish majors. The topic will vary each time the course is taught and will be announced in advance of each offering. Readings will vary accordingly. In addition to the particular topic being taught, and as a requirement of the course, the student will be expected to complete a senior paper or project related to the course topic and designed in consultation with the instructor. Papers/projects will be presented by the students in a colloquium to be held at the end of the term.

#### **SPAN 4668 - Field Study in Spanish**

This course provides students with the opportunity for total immersion in the language and the culture by studying in a Spanish-speaking country. Students will have the opportunity to study historical sites and museums, to conduct field research on a given topic which includes some travel, and to live with a Hispanic family.

#### **SPAN 5368 - Field Study in Spanish**

Provides the students with the opportunity for total immersion in the language and the culture by studying in a Spanish speaking country. Students will have the opportunity to study historical sites and museums, conduct field research on a given topic which includes some travel and to live with a Hispanic family.

#### **SPAN 5668 - Field Study in Spanish**

Provides the students with the opportunity for total immersion in the language and the culture by studying in a Spanish speaking country. Students will have the opportunity to study historical sites and museums, conduct field research on a given topic which includes some travel and to live with a Hispanic family.

## **SPCM - Speech Communication**

#### **SPCM 1311 - Introduction to Communication Studies [TCCN: SPCH 1311]**

Theory and practice related to the dynamics of human communication. An examination of the process of attributing and sharing meaning, and the factors influencing intrapersonal, interpersonal, small group, organizational, rhetoric and public address, and mass communication.

#### **SPCM 1315 - Fundamentals of Speech Communication [TCCN: SPCH 1315]**

Theory and practice in oral communication. Practice in and discussion of the factors influencing message creation and construction, the role of research and evidence in public discourse, adaptation to the communication situation and audience, ethical issues in public communication, argumentation and persuasion, delivery, and emphasis upon creating assignments which help students who experience excessive communication apprehension.

#### **SPCM 2310 - Investigating Communication**

A review of research in the speech communication discipline. Broad application of both quantitative and qualitative investigative methods. Students learn to read and review work within the discipline.

#### **SPCM 2315 - Sports Communication**

An exploration into the theory and practice of communication across specialized contexts sports professionals face and the development of strategic communication skills needed to succeed in them, including areas such as the press conference, the ceremonial speech, and the recruiting process.

#### **SPCM 2318 - Interpersonal Communication [TCCN: SPCH 1318]**

A study of human communication process within dyadic relationships. Topics include communication styles, skills, and methods of interpersonal communication competency.

#### **SPCM 2335 - Argumentation and Debate**

This class focuses on the theory and practice of argument in the academic debate setting. A secondary focus is on the application of debate theory to the practice of argument in general. Emphasis is placed upon research, analysis, case construction, and actual debating.

#### **SPCM 3321 - Business and Professional Speaking**

Principles of speech communication are applied to the communication needs of the professional. Public communication, small group communication and interviewing are explored as they relate to the business/professional arena. A practical/applied orientation is taken with an emphasis on selection interviews, problem solving, the oral presentation and advocacy of ideas.

#### **SPCM 3322 - Small Group Communication**

A study of group process and interaction; including the concepts of leadership and effective participation.

#### **SPCM 3325 - Persuasive Communication**

Theories of communication and psychology applied to the study of persuasion as a motivating force in human conduct. Focuses on persuasion in advertising, sales speaking, and prominent persuasive speakers including political figures.

Prerequisite: SPCM 1315.

#### **SPCM 3330 - Improving Listening Abilities**

In-depth study of the roles, processes, needs, and types of listening encountered in the classroom, workplace, and other common areas. Standardized listening tests administered.

#### **SPCM 3340 - Speech Activities**

Participation in speech tournaments. Open to any student interested in debating.

Prerequisite: Consent of instructor. May be repeated once for credit.

#### **SPCM 4199-4699 - Independent Study**

Independent study in specific areas of speech not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of department chair.

#### **SPCM 4301 - Group Interpretation of Literature**

Activity course aimed at developing the student's expressiveness and interpretative abilities in presenting literature orally in multiple reading situations and at developing a deeper understanding and appreciation of literature. Emphasis on creativity in Reader's Theatre design and production.

#### **SPCM 4315 - Organizational Communication**

An analysis of the flow of communication within formal organizations with emphasis on the interrelationship between interpersonal, small group and mass communication.

#### **SPCM 4320 - Communication Theory**

Interdisciplinary overview of communication theories from the perspective of the anthropologist, sociologist, educator, psychiatrist, philosopher, and scientist, including theoretical models, symbolic transformation, and attitude formation change.

Prerequisite: SPCM 2310 and junior standing.

#### **SPCM 4326 - Public Speaking**

A course in the composition and delivery of speeches for various occasions, in audience analysis, and in speech criticism.

Prerequisite: SPCM 1315.

#### **SPCM 4327 - Contemporary Rhetoric**

Investigation of the shifting rhetorical climate of today's society and the changing modes of communication.

Prerequisite: SPCM 2310.

#### **SPCM 4328 - Corporate and Legal Advocacy**

An applied rhetorical theory course investigating the theory and practice of communication strategies in corporate and legal advocacy processes.

Prerequisite: SPCM 1315 or Consent of instructor.

#### **SPCM 4329 - Advocacy and Politics**

This course is an introduction to the issues individuals face when placed in the role of being advocates for an issue, idea, or even for themselves. Enrollment limited to Archer Center Fellows.

#### **SPCM 4330 - Interviewing**

Places interviewing in a communication perspective and explores various kinds of interviewing, such as informational, persuasive, employment, counseling, and journalistic.

#### **SPCM 4331 - Intercultural Communication**

An examination of the relationship between communication and culture. The general concepts of intercultural communication, intercommunity communication, and relevant contrast-cultural and ethnic groups are examined. Designed to satisfy the multicultural requirements for elementary and secondary teachers.

#### **SPCM 4333 - Religious Communication**

Explores how religious belief and action are motivated by different communication practices. Topics include 1) philosophy and theory of communication; 2) Christian, Jewish, and Muslim preaching; and 3) Apologetics or Church-State relations. Class attendance at three different religious services (Christian, Jewish, Muslim) may be required.

#### **SPCM 4334 - Political Communication**

This course examines the communication strategies used by U.S. political candidates and U.S. presidents. The course explores political communication forms such as campaign speeches, television campaign advertisements, political debates, political websites, inaugural addresses, State of the Union addresses, and other political communication genres.

#### **SPCM 4344 - Media Ecology**

Examines the interplay of communications media, technology, processes, environment and culture with human feeling, thought, value, and behavior. Special consideration of how changes in media shape changes in human consciousness.

#### **SPCM 4360 - Topics in Communication**

A study of the application of communication in both professional and personal life. Such areas as teaching, business, listening, parliamentary procedure, and other studies more specialized than those currently offered in other courses may be included. May be repeated once for credit when content changes.

#### **SPCM 4368 - Field Experience in Communication**

Provides the student with the opportunity to conduct field research in communication on a given topic which includes some travel. Classroom experiences employing lecture and seminar methods supplement the field experience.

Prerequisite: Consent of instructor.

#### **SPCM 4370 - Undergraduate Internship Program**

An 8- to 16-week program offering a learning experience in an off-campus environment. CR/NC option.

Prerequisite: 12 semester credit hours of advanced speech communication and consent of chair.

#### **SPCM 4371 - Undergraduate Internship Program**

An 8- to 16-week program offering a learning experience in an off-campus environment. CR/NC option.

Prerequisite: 12 semester credit hours of advanced speech communication and consent of chair.

#### **SPCM 4385 - Archer Program Government Internship**

This course consists of an approved internship in a governmental or non-governmental organization in Washington, D.C. Enrollment limited to Archer Center Fellows.

#### **SPCM 4668 - Field Experience in Communication**

Provides the student with the opportunity to conduct field research in communication on a given topic which includes some travel. Classroom experiences employing lecture and seminar methods supplement the field experience.

Prerequisite: Consent of instructor.

## **TECH - Technology**

#### **TECH 1301 - Technology and Society**

An introduction to technology systems as applied to manufacturing, distribution, communication, energy/power, etc. The course includes history, system design, operation, service, resources, products, emerging technological applications, and societal impact.

#### **TECH 1303 - Engineering Graphics**

An introduction to engineering graphics techniques using computer aided drafting software. This course will cover specialized CAD techniques in lines, arcs, editing, and dimensioning. Also included will be geometric constructions, three-view drawing, sectioning, and basic 3-D drawing.

#### **TECH 1320 - Industrial Materials**

An introduction to the basic characteristics of industrial materials. This survey course provides students with an insight into the nature of materials and how material attributes can be tested and altered for processing.

#### **TECH 1330 - Fundamentals of Electronics**

An introduction to the basic fundamentals of electronics. Students are provided with an orientation to basic AC and DC concepts, resistance, capacitance, inductance, impedance, power, digital gating circuits, etc. Laboratory demonstrations reinforce conceptual discussions.

#### **TECH 2311 - Electrical and Fluid Systems**

An introduction to the fundamentals of mechanical and fluid power systems. The students are provided with lecture and laboratory experiences.

#### **TECH 2319 - Programmable Logic Controllers**

Introduction to programmable logic controller logic circuits, inputs and outputs, power supplies, data sheets, safety programming, types of processors and memory organization, PLC architecture, ladder logic, and task oriented programming methods.

#### **TECH 2323 - Introduction to Computer Applications**

A study of personal computer applications in the business environment with emphasis on specifying, installing, and using business applications and ERP systems such as SAP.

#### **TECH 2330 - Information Technology and Communications**

An investigation of the concepts behind modern telecommunications systems. Students will explore the means by which systems are interconnected. Information will be provided regarding emerging developments in telecommunications hardware and software.

**TECH 3303 - Introduction to Nanotechnology**

Overview of the history, manufacture, and applications of nanomaterials. An emphasis will be placed on the ethics, societal impacts, and the future of nanotechnology.

**TECH 3304 - Introduction to Nanotechnology Safety**

This course introduces students to the safety practices and implications of nanomaterials in the workplace.

**TECH 3310 - Total Quality Management**

An analysis and application of total quality management principles to include statistical process control, graphical problem solving techniques, acceptance sampling standards, and six sigma quality. This is an applied computer course.

Prerequisite: TECH 2323 or equivalent.

**TECH 3311 - Manufacturing Processes**

Study of manufacturing related to materials processing. Students will be required to use various manufacturing processes in laboratory assignments.

**TECH 3312 - Facilities Operations & Maintenance**

Study of procedures basic to the maintenance and operation of industrial facilities.

**TECH 3313 - Construction Technology**

Designed to acquaint the student with construction systems, materials, equipment, municipal inspections, building codes, related service industries, and problems related to financing construction.

**TECH 3315 - Visual Communication Technology**

An overview of blueprint reading, computer aided design, and solid modeling with an emphasis in managing visual and graphics communications within an industrial facility.

**TECH 3324 - Plant Layout and Facilities Planning**

An introductory course in facilities planning including a wide range of topics such as: real estate, financing, insurance, ergonomics, site selection, architecture, management and plant layout.

Prerequisite: TECH 2323 or equivalent.

**TECH 3333 - Polymer Processing**

A study of processing methods for polymer-based materials. Processing methods include: injection molding, blow molding, thermoforming, compression molding, extrusion, filament winding, lay-up methods, and vacuum bag molding and poltrusion.

**TECH 3341 - Public Domain - Texas**

Disposition of the Public Lands of the State of Texas. This course investigates the basis of all land mineral development in the State of Texas.

**TECH 3342 - Applications of Photogrammetry**

Elements of map, photograph, and image interpretation in land use and site mitigation. Topics include: botany, wetlands, flood land hazard and waste sites.

**TECH 3343 - Advanced Technologies for Surveyors**

This course covers High Definition Surveying (HDS) which is becoming the industry standard for surveying projects and any additional new surveying topics. Students will gain experience in using a pulsed laser which moves across a target recording an unprecedented number of measurements in minutes. In addition, students will learn how to manipulate these scanned measurements with application software that will allow them to create three dimensional maps of the land to be surveyed.

**TECH 3344 - Industrial Safety**

Study of environmental health and safety management as it relates to business and industry. Emphasis is placed on accident theory, hazard

identification, safety organizations, environmental stressors, loss control and risk analysis.

**TECH 3348 - Construction Safety**

Examines the application of OSHA 29CFR 1926 for the construction industry along with applicable state and federal construction safety laws pertaining to construction, altercations, or repair work at construction site.

**TECH 3350 - Risk Management for Safety and Health**

A discussion, review, analysis, and application of risk management concepts employed for eliminating accidents, injuries, and total cost associated with workplace hazards while developing a zero accident culture.

**TECH 3355 - Supply Chain Management**

An overview of supply chain operations covering logistics, outsourcing, distribution, warehousing, site location, and globalization.

Prerequisite: TECH 2323 or equivalent.

**TECH 4173 - E-Portfolio**

Students will compile an electronic portfolio of acquired managerial and technical concepts. Prerequisite or

Corequisite: TECH 4372.

**TECH 4199-4699 - Independent Study**

Prerequisite: Consent of academic advisor.

**TECH 4301 - Supervision**

Designed to provide supervisors the opportunity to acquire knowledge with respect to their relationship to management, employees, unions, and special personnel. Emphasizes activities associated with production, quality control, personnel training, materials, equipment, records and reports.

**TECH 4302 - Multiple Technology Systems**

An orientation to organizing multiple activities through study of such areas as production technology, communication technology, and energy technology. Fifteen hours of field experience is included in this course.

**TECH 4303 - Fire Safety Systems**

Study of techniques in fire prevention through regulations, inflammable materials storage, inspection of premises, fire fighting equipment, maintenance procedures, fire detection systems, and local ordinances relating to fire control.

**TECH 4304 - Systems Safety Analysis**

Study of accidents as systematic occurrences. Topics include probability, fault-free analysis and loss controls.

**TECH 4313 - Risk Management of Nanomaterials**

The study of assessing the safety of nanoscale materials which can impact public health and the environment. As nanomaterials become more prevalent in our consumer products, the potential risk must be evaluated. The course will encompass the use of peer-review articles, books, and web sources.

**TECH 4317 - Computer Integrated Manufacturing**

Study of the application of computer-aided-design, computer-aided-manufacturing, computer numeric control, robotics, programmable electronic controllers, and communication networks to achieve automated manufacturing.

Prerequisite: TECH 2323 or equivalent.

**TECH 4320 - Job Analysis and Design**

Provides a systematic procedure for identifying and analyzing tasks related to specific jobs.

**TECH 4323 - Lean Production**

Applications of metal materials processing with an emphasis on lean manufacturing tools for reducing waste and streamlining production.

**TECH 4325 - Purchasing in Distribution and Manufacturing**

A study of purchasing systems in the distribution enterprises. Emphasis is placed on supplier relations, planning for purchasing, strategic partnerships, cost analysis, value analysis, and performance analysis.

**TECH 4327 - Electronic Data Communications**

A study of the application-to-application transfer of documentation in industrial distribution, customer service, and manufacturing. Traditional and Internet applications of electronic data interchange (EDI) and other forms of electronic commerce are investigated.

**TECH 4330 - Occupational Safety and Health**

Study of standards, requirements, guidelines, forms, inspection kits, and corrective actions that are described within the Williams-Steiger Occupational Safety and Health Act of 1970.

**TECH 4340 - Behavioral Safety Concepts**

This course is directed toward the understanding of how safety-related and at-risk work behaviors and attitudes in the work place can be improved. Areas of concern will include behavioral safety management concepts, barriers to behavioral safety management, and behavior based interventions in the work place.

**TECH 4341 - Legal Principles in Surveying and Mapping**

Boundary law including topics on conflict and litigation, courtroom presentation, determination of boundaries, evidence and procedures and special boundaries such as gradient and riparian.

**TECH 4342 - Applied Geodesy**

Application of precise surveying technology in boundary location and surveying. Topics covered are: photogrammetry, GPS, GIS, remote sensing, coordinate systems, and map projections.

**TECH 4343 - Advanced Manufacturing Processes**

A survey of the latest manufacturing processes that are used in order to produce products that cannot be produced with conventional manufacturing processes. Processes covered will include non-traditional machining methods, abrasive machining, advanced casting methods, specialized welding methods, and other high-end processes used in manufacturing industries.

Prerequisite: TECH 3311 or equivalent.

**TECH 4350 - Topics in Industrial Studies**

Instruction and guidance by trained resource persons in selected topics related to technology. A maximum of six credit hours may be applied toward an undergraduate degree.

**TECH 4356 - Ergonomics in the Workplace**

The study of laws of work in industrial ergonomics. The course examines design of work environment, work equipment, and tools associated with work tasks. Other areas of study will include anthropometrics data and ergonomic programs.

**TECH 4358 - Environmental Regulations**

Explores and analyzes U.S. environmental developments from a historical, ethical, economical, and regulatory perspective. The environmental management of solid waste, air quality, and water quality will be studied as related to the safety professional.

**TECH 4370 - Internship in Technology**

An 8- to 16-week program offering learning experiences in an off-campus industrial, business or manufacturing environment.

Prerequisite: Consent of Department Chair and 3.0 minimum GPA.

**TECH 4371 - Internship in Technology**

An 8- to 16-week program offering learning experiences in an off-campus industrial, business or manufacturing environment.

Prerequisite: Consent of Department Chair and 3.0 minimum GPA.

**TECH 4372 - Capstone Experience**

An end-of-program review of technical and managerial concepts. Students complete an electronic portfolio of acquired competencies.

**TECH 5199-5699 - Independent Study**

Independent study in specific areas of technology not covered by organized graduate courses. A maximum of six hours for independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of department chair.

**TECH 5301 - History and Philosophy of HRD/Technology**

A study of the social, political, industrial, and educational factors which have influenced technology. Emphasis is placed on readings and discussion for the purpose of developing a sound philosophy of technology.

**TECH 5303 - Research Techniques in HRD/Technology**

An orientation in types of research, literature, and proposal development. An advisor-approved project is required.

**TECH 5305 - Seminar in Technology**

A discussion and analysis of current trends and problems in technology. Up to six semester hours may be applied to a degree. No topics may be repeated.

**TECH 5306 - Advanced Logistics Management**

A study of industrial distribution with emphasis on logistics management of materials, communications and financial processes involved in getting a product from the point of manufacture to the point of use, including service after the sale.

**TECH 5308 - Strategic Sourcing**

A study of purchasing systems in the distribution enterprises. Emphasis is placed on supplier relations, planning for purchasing, strategic partnerships, cost analysis, value analysis, and performance analysis.

**TECH 5309 - Industrial Processes and Materials**

Involves updating skills, knowledge, and experience in industrial processes and materials.

**TECH 5310 - Six Sigma Quality**

A discussion, analysis and application of quality control concepts to include both attribute and variable quality control techniques. Advanced graphical problem solving techniques in Six Sigma will be studied. Attribute analysis will be emphasized as it applies to MIL-STD-105D and variable analysis as it applies to MIL-STD-414. Effective utilization of microcomputers will be used to develop spreadsheets, graphs, charts, and run statistical quality control microcomputer programs.

**TECH 5312 - Total Productive Maintenance**

A study of philosophy and methods for improving equipment efficiency in industrial settings.

**TECH 5317 - Computer Integrated Manufacturing**

A study of the application of computer-aided-design, computer-aided-manufacturing, computer numerical control, robotics, programmable electronic controllers, and communication networks to achieve automated manufacturing.

**TECH 5320 - Total Quality Management**

A study of the principles and practices of TQM to include leadership in quality, customer satisfaction, employee involvement, and continuous process improvement. Such TQM tools and techniques as quality function deployment and experimental design are studied.

**TECH 5325 - Administration and Supervision of Human Resource Development**

Study of the fundamentals, principles, and techniques of supervision and administration.



**TECH 5328 - Topics in Technical Programs**

Studies in technical programs. Up to nine semester hours may be applied to a degree. Topics may be repeated if content changes.

**TECH 5329 - Trends in Industry**

The study and research of new and developing industrial techniques. A mini research project is required and presented at the end of the course.

**TECH 5330 - Safety and Health Developments**

An analysis of concerns in the work environment such as changes in laws, new research findings, and attitudes of management and labor toward safety and health.

**TECH 5331 - Project Management**

Planning and scheduling to interface human resources with modern industry.

**TECH 5335 - Lean Management**

Overview of how the lean production system can be implemented into an organization or company to improve profitability by reducing waste. Key concepts such as visual management, Five S, TPM, Kaizen, kanban, jidoka, hoshin planning, and PDCA will be covered.

**TECH 5341 - Planning, Developing and Implementing Safety Programs**

Explores the expertise needed to plan, develop and implement safety programs.

**TECH 5345 - Professional Development**

Provides an opportunity to investigate and discuss ways to upgrade knowledge and skills relating to professional responsibilities.

**TECH 5346 - Environmental Management**

Federal and state environmental regulations; techniques for environmental control; risk assessment and management strategies; characterization, measurement and control of air contaminants; hazardous materials characterization, spill control strategies, and cleanup techniques.

**TECH 5366 - Value Stream Management**

A study of how information and materials flow through a workplace through visual mapping techniques. Students will be required to develop value stream maps for manufacturing and healthcare organizations as well as developing plans to create a lean office environment.

**TECH 5370 - Internship in Technology**

An 8-16 week program providing a learning experience in an off-campus environment. A minimum of 125 clock hours of learning experiences in the approved internship activity is required for 3 hours of credit. Prerequisite: Consent of department chair and 3.0 minimum GPA. May be repeated once.

**TECH 5371 - Internship in Technology**

A 5-16 week program providing a learning research experience in an off-campus environment. A minimum of 125 clock hours of learning experiences in the approved internship activity is required for 3 hours of credit. Course is credit/no-credit. Students must complete a research paper based upon new and innovative work performed during their internship.

Prerequisite: Consent of department chair and 3.0 minimum GPA. .

**TECH 5380 - Management of Nanomaterials**

The course covers legal implications, regulations, patenting, transporting/logistics of manufacturing nanomaterials.

**TECH 5390 - Advanced Lean Six Sigma Black Belt Techniques**

An in-depth analysis of lean and statistical tools used to reduce costs and improve process or transactional flow through an organization. The DMAIC approach will be discussed as well as most topics currently covered on lean six sigma certification exams.

Prerequisite: TECH 5310 Six Sigma Quality.

**THTR - Theatre****THTR 1301 - The Theatre: Plays in Performance [TCCN: DRAM 1310]**

This course studies the theatre as an art form, examining its history, and the play production process with emphasis on those elements retained in modern theatre practice. The reading of varied styles of dramatic literature and attendance at theatre productions is required.

**THTR 1320 - Rehearsal, Crew, Production**

Practicum and laboratory experience in theatre performance and production. The course is offered in conjunction with theatrical productions, and a journal report of the student's participation is required. Course may be repeated one time for credit as content varies with changing theatre productions each semester.

**THTR 1351 - Acting: An Introduction [TCCN: DRAM 1351]**

Scene study and the history of acting including basic techniques of performance for experience in preparation and presentation. Intended for the non-major with an interest in obtaining acting skills. Open to all students.

**THTR 1352 - Acting: Basic Skills [TCCN: 1352]**

Scene study and practical experience in the theories and techniques of creating a character for the stage. Investigation of the acting methods of Stanislavski, Method acting, Hagen exercises, and Improvisation.

**THTR 1356 - The Cinema: Films and Performers**

The cinema arts, history, and cinema production process with emphasis on those elements retained in contemporary film practice. Screening of films in the classroom and attendance at film presentations is required.

**THTR 2315 - Design for the Theatre**

Practical exercises in the methods, materials, and design elements for utilization in theatre design disciplines. Prerequisite to advanced stage, costume or lighting design courses.

**THTR 2336 - Voice and Diction**

Vocal development for presentation and performance including the history of vocal studies and knowledge of the vocal anatomy. Intended for all students with an interest in obtaining vocal skills and minimizing regional speech patterns.

**THTR 2340 - Audition and Portfolio**

Development of audition and portfolio techniques. A public performance recital of audition selections and portfolios developed during the course is required. Open to all students, required of theatre majors in performance and design. May be repeated three times for credit.

**THTR 2366 - Development of the Cinema: Early Years to WW II**

Study of the development and growth of the motion pictures from 1895 to the end of the Second World War. Viewing of representative films and written reaction papers are required.

**THTR 2367 - Development of the Cinema: WWII to the Present**

Study of the development and growth of the motion pictures from 1945 to the present. Viewing of representative films and written reaction papers are required.

**THTR 3320 - Children's Theatre**

Experiences in various types of dramatic performances, especially for children.

**THTR 3329 - Theatre History: Aeschylus to Shakespeare**

A study of the development of theatre and dramatic literature from the Greeks to the Elizabethans.

**THTR 3330 - Theatre History: Moliere to the Present**

A study of the development of theatre and dramatic literature from the Elizabethans to the present.

**THTR 3340 - Acting: Avocational**

Scene study including basic techniques of performance with experience in preparation and presentation. Intended for the non-major with an interest in avocational acting and open to all students.

**THTR 3350 - Acting: Applied Techniques**

Scene study and practical experience in the theories and techniques of creating a character for the stage. Investigation of the acting methods of Stanislavski, Method acting, Hagen exercises, and Improvisation.

Prerequisite: THTR 3340.

**THTR 3351 - Theatre Activities**

A laboratory experience in play production in which each student will be involved in activities such as: acting, dancing, directing, lighting, set design and construction, make-up, costuming, and theatre management. Course may be repeated once for credit when course content changes.

**THTR 4199-4699 - Independent Study**

Independent study in specific areas of theatre not covered by organized undergraduate courses. A maximum of six credit hours for independent study courses may be applied toward an undergraduate degree.

Prerequisite: Consent of SPA Director.

**THTR 4321 - Creative Dramatics**

Study and experience in principles of creative leadership with children and in the methods of teaching improvised drama, story dramatization, and rhythmic movement.

**THTR 4329 - Topics in Drama**

A study of selected drama topics with emphasis on current ideas and literature. May be repeated once for credit when content changes.

**THTR 4356 - Film History**

Study of the development and growth of the motion pictures from 1895 to the present. Film viewing will be required.

**THTR 4360 - Directing the Theatre I**

Study and practice in the techniques of play directing, including play selection, casting, staging and polishing.

**THTR 4361 - Directing the Theatre II**

A continuation of THTR 4360 with the added experience of directing and producing a play for an audience.

Prerequisite: THTR 4360.

**THTR 4365 - Theory and Practice of Playwriting**

A lecture-laboratory course in the elements of playwriting. Exercises in writing exposition, traditional scene structure, rising action, crisis, falling action, resolution, and denouncement. Development of narrative line, characterization and dialogue with practice in writing an original dramatic text. May be repeated once for undergraduate credit with consent of advisor and the director of theatre.

**THTR 5142 - Modern Acting Styles and Theories**

Advanced lecture and performance course to develop the process of analysis, creation and performance of dramatic characters by theatre, film, and television.

Prerequisite: THTR 1352.

**THTR 5199-5699 - Independent Study**

Independent study in specific areas of drama not covered by organized graduate courses. A maximum of six credit hours for independent study courses may be applied toward a graduate degree.

Prerequisite: Consent of SPA Director.

**THTR 5310 - Theatre History: The Greeks to Ibsen**

A study of the development of dramatic literature from the classical foundations to the beginning of Realism.

**THTR 5311 - Theatre History: Ibsen to Beckett**

A study of the development of dramatic literature in the theatre from the beginning of Realism to the present.

**THTR 5320 - Theories of Drama: Comedy and Tragedy**

An examination of the major dramatic theories concerning comedy and tragedy with examples taken from selected plays and playwrights.

**THTR 5321 - Creative Dramatics: An Art for Children**

Theory and practice in creative dramatics techniques for parents, teachers, and leaders of children in any capacity to aid them in developing character and personality of children through the dramatic experience in creative group activity.

**THTR 5329 - Topics in Drama**

A study of selected drama topics with emphasis on current ideas and literature. May be repeated once for credit when content changes.

**UNIV - University-Wide****UNIV 1000 - Freshman Success Seminar**

Freshman Success Seminar is intended for freshmen who are grouped as cohorts in the Student Learning Communities Program with other students of the same major or areas of interest and provides instruction in successful academic skills. Topics include career exploration, learning style inventories, time management strategies and effective study skills.

**UNIV 1001 - PASSages Success Seminar**

Designed to provide instruction in successful academic study skills. Topics include note-taking techniques, learning style inventories, time management strategies; theory and practical applications will be stressed. NOTE: Required of 1st semester freshmen who fall below published admission criteria.

**UNIV 1002 - MAPS Success Seminar**

Provides instruction in successful academic study skills. Topics include grade preparation plans, note-taking techniques, time management strategies; theory and practical applications will be stressed. NOTE: Required for students placed on academic probation following their 1st semester of enrollment.

**UNIV 1300 - Freshman Seminar**

Introduction to scholarly thinking, writing and ways of thinking through theme-based interdisciplinary topics. Students will understand the complexity and multidimensional nature of contemporary issues; appreciate the importance of critical questions and writing; and be engaged as scholars.

**UNIV 1301 - Pathways to Success**

Pathways to Success is a course designed to help students create greater success in college and in life. Students will explore and learn proven strategies to study more effectively, think more critically, communicate more expressively and to motivate themselves continuously toward their goals.

**UNIV 1310 - Personal Leadership and Value**

An introductory course in the area of personal decision making and leadership. This course will prepare you to practice your leadership skills throughout your college career, simultaneously developing your strengths and positioning you for success. The foundational ability to reflect on decisions within the context of social responsibility and personal goals is critical to short term academic success in addition to both long term personal and professional success. By the end of this course, you will have applied leadership principles and made decisions on how you will lead yourself and others in the coming years.

**UNIV 3331 - Foundations in Creativity and Innovation**

An introductory course focusing on the theoretical and practical aspects of both creativity and innovation. The class will center around the study

of creative and innovative leaders throughout history, their impact on their workplace and the world. Additionally, students will be expected to demonstrate both creative and innovative thinking throughout the class by participating in "hands on" application of the material.

**UNIV 3332 - Workplace Applications**

The development of effective workplace practices through the application and study of interpersonal communication, business writing, resume building, and web based media. With an emphasis on the use of Microsoft Office applications within the workplace.

**UNIV 3333 - Foundations in Cultural Competence**

Students will gain the knowledge and develop the skills necessary to prepare for interactions with those in an environment of globalization. Cultural competence encompasses a broad understanding of the customs and values of those across the globe and informs key interactions that can create successful partnerships. This course considers communication knowledge, skills, awareness, and strives to instill a desire in students to succeed in situations with those that are from diverse backgrounds.

**UNIV 3334 - Professional Ethics**

This course examines moral problems relating to professional practices and the workplace. By reading and discussing a diverse selection of ethical works, cases, and practical scenarios, students will develop skills in critical analysis and logical argumentation of professional conduct

related to moral problems, such as those relating to: the employer-employee and professional-client relationship, business management, criminal justice, education, engineering, health care, and the law.

**UNIV 3335 - Leadership Principles**

An introductory course investigating effective leadership. Leadership will be studied by first examining the theoretical underpinnings of leadership, more specifically, how is leadership defined, and what general principals do effective leaders share. Additionally, students will examine practical examples of leadership throughout history, and will be able to define and categorize their leadership styles based on present day theory.

**UNIV 3336 - Professional Portfolio**

This course provides a structured process for the development of a professional portfolio that highlights the individual's academic, workplace, personal, and professional accomplishments. Both an e-portfolio and traditional portfolio will be created.

**UNIV 4368 - Interdisciplinary Travel Study**

An interdisciplinary course designed to provide undergraduate students travel-study to complement regular class instruction. Course may be repeated for a total of 6 hours when course content and travel location change.

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