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COURSE CATALOG

The University of Texas at TYLER™

2020-2021

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COURSES

COURSES USING OPEN EDUCATIONAL RESOURCES AND/OR LOW-COST ($50 OR LESS) MATERIALS

The following courses and/or sections use Open Educational Resources (OER) or low-cost resources (under $50). By using OER and affordable learning resources, UT Tyler students can access needed information, data, and resources without the pressure of high-priced required course materials and textbooks. UT Tyler faculty remain committed to providing students with excellent learning experiences while keeping expenses as low as possible.

ACCT 2302.001 Principles of Accounting II
ACCT 2302.002 Principles of Accounting II
ACCT 3170.001 Build and Manage a Successful Accounting Career
ACCT 3315.001 Cost Accounting
ALHS 2315 Principles of Nutrition for Allied Health
ALHS 5322 Nutrition, Health, and Disease
ALHS 5325 Nutrition for Healthy Aging
ANTH 4360 Topics in Anthropology
BIOL 1106 General Biology I Laboratory
BIOL 1107 General Biology II Laboratory
BIOL 2101Anatomy and Physiology I Lab
BIOL 2320 Introduction to Microbiology
BIOL 3134 Cell Biology Lab
BIOL 3139 Plant Biology Lab
BIOL 3332 Genetics
BIOL 5133 Landscape Ecology Lab
BIOL 5333 Landscape Ecology
BIOL 5384 Evolutionary Genetics
BIOL 5387 History of Biology
CHEM 1311 General Chemistry I
CHEM 1340 The Chemistry of Luxury
CHEM 3370 Perspectives on Science and Mathematics
COSC 3315 Social and Professional Issues in Computing
COSC 3333.001 - 003 Management Information Systems
COSC 4361 Retail Cyber Security Management
COSC 4375 Information Systems Design Project
COSC 4388 Digital Forensics
COSC 4395 Capstone Project
COSC 5342 Cybersecurity Management
COSC 5388 Digital Forensics
CSCI 4385 Information Technology Capstone
CRIJ 4333 Community Policing
CRIJ 5332 Law Enforcement; Environment and Practice
ECON 3302 Economic and Financial Literacy
EDUC 5315 School Policies and Texas Students
EDCI 5320 Teacher Learning and Professional Development
EDUT 1170 Step 1: Inquiry Approach
EDUT 2170 Step 2: Inquiry-Based Lessons
EDUT 4170 Apprentice Teaching
ENGL 2323 English Literature from the 1780s to the Present
ENGL 4320 The Romantic Period
ENGL 4325 Victorian Literature
ENGL 5320 Shakespeare
ENGL 5323 Studies in Romanticism
FINA 3311.002 Principles of Finance
FINA 3315.061 Personal Finance
FINA 4355.060 Oil, Gas and Energy Finance
FINA 4357 Business Forecasting
HNRS 1351 World, Text, and Image I
HNRS 1352 World, Text, and Image II
HNRS 4368 Honors Field Experience
HRD 3342 Career Development and Human Resource Planning
HRD 4301 Supervision
HRD 4320 Job Analysis and Design
HRD 5307 Measurement and Evaluation in HRD/Technology Education
HRD 5331 Workforce Development
HRD 5344 Conflict Resolution
HRD 5347 Performance Consulting
HRD 5350 Leadership and Ethics in Human Resource Development
HRD 6355 Multivariate Statistics
HRD 6359 Research Seminar in HRD
HRD 6388 Talent Management and Development
HRD 6391 Advanced Topics in Human Resource Development
KINE 5307 Motor Learning
MANA 1300.001 Introduction to Business
MANA 1300.060 Introduction to Business
MANA 3170.001 - 003 Build and Manage a Successful Career
MANA 5320 .001 & .060 Organizational Behavior
MARK 4340.001 Consumer Insights
MARK 5320.702 Advanced Marketing Fundamentals
MARK 5360.702 Advanced Service Marketing
MATH 2325 Functions and Modeling
MATH 3203 Matrix Methods in Science and Engineering
MATH 3305 Ordinary Differential Equations
MATH 3315 Linear Algebra and Matrix Theory
MATH 3336 Abstract Algebra I
MATH 3380 Algorithms in Applied Mathematics
MATH 3425Foundations of Mathematics
MATH 4160Senior Seminar I
MATH 4161 Senior Seminar II
MATH 4350 Theory of Probability

MATH 5311 Advanced Engineering Mathematics
MATH 5390 Selected Topics in Mathematics
MAUP course All Applied Music Courses
MENG 3211 Thermal Fluids Lab
MENG 4330 Process Control
MUSI 1311 Music Theory I
MUSI 1312 Music Theory II
MUSI 2311 Music Theory III
MUSI 2312 Music Theory IV
MUSI 3311 Conducting
MUSI 4342 Form and Analysis
NURS 3605 Fundamentals of Nursing
NURS 5382 Capstone
NURS 5385 Information Systems Life Cycle
NURS 5387 Data Analysis and Healthcare Technology
NURS 5389 Infomatics, Quality, & Safety Capstone
NURS 6303 Healthcare Infomatics
NURS 6310 Philosophy of Science
NURS 6326 Advanced Epidemiology
NURS 6342 Scholarship in Nursing
NURS 6350 Research in Transcultural Nursing
NURS 6358 Population Health within a Context of Culture
NURS 6382 Taiwan Immersion (elective)
PHIL 2303 Introduction to Logic
PHYS 1303 Introduction to Astronomy
POLS 2305 Introductory American Government
POLS 2306 Introductory Texas Politics
PSYC 2331 Research Methods
SOCI 4311 Majority-Minority Relations

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 3170 - Build and Manage a Successful Accounting Career
Develop job search, networking, and career management skills relevant to accounting professionals. Topics will include business etiquette, interviewing, career management, personality assessment, professionalism and professional certifications.
Corequisite: ACCT 3311.

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 and a passing score on the Principles of Accounting Competency Exam. Corequisite: ACCT 3170.

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 - Federal Income Taxation
A study of the federal income taxation of individuals and sole proprietorships. Discussion will cover issues such as gross income, deductions, losses, methods of capital recovery and property transactions.
Prerequisite: ACCT 2301.

ACCT 3326 - Introduction to Entity Income Taxation
An introduction to federal income taxation of corporations and partnerships and introduction to coverage of tax research.
Prerequisite: ACCT 3325.

ACCT 4170 - Special Topics in Accounting
Organized studies of special accounting topics not normally offered as part of the regular course offerings. A combined maximum of six semester hours from ACCT 4170, ACCT 4270 and ACCT 4370 may be applied to a degree. May be repeated for credit when content changes.

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 4270 - Special Topics in Accounting
Organized studies of special accounting topics not normally offered as part of the regular course offerings. A combined maximum of six semester hours from ACCT 4170, 4270 and 4370 may be applied to a degree. May be repeated for credit when content changes.

ACCT 4370 - Special Topics in Accounting
Organized studies of special accounting topics not normally offered as part of the regular course offerings. A combined maximum of six semester hours from ACCT 4170, ACCT 4270 and ACCT 4370 may be applied to a degree. May be repeated once for credit when content changes.
Prerequisite: Consent of Department Chair.

ACCT 4376 - Oil, Gas and Energy Accounting I
This course is the first of two courses that comprise the study of accounting principles related to the oil, gas and energy industries. This course will focus on accounting for upstream operations, exploration, acquisition, drilling and development costs, proved property costs, full cost accounting and accounting for production activities.
Prerequisite: ACCT 3311. Crosslisted as: ACCT 5376.

ACCT 4377 - Oil, Gas and Energy Accounting II
This course is the second of two courses that comprise the study of accounting principles related to the oil, gas and energy industries. This course will focus on accounting for asset retirement, sales revenue, tax accounting, joint interest accounting, conveyances, and oil and gas disclosures.
Prerequisite: ACCT 4376. Crosslisted as: ACCT 5377.

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 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 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 5320 - Accounting for Management Control
Use of accounting data in the decision-making process and in the analysis and control of business operations.

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 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 5368 - Internal Auditing
Study of the International Professional Practices Framework and application of the framework to internal auditing, including evaluating of internal controls and business processes; managing the internal audit function and communicating results of engagements to management.

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 5376 - Oil, Gas and Energy Accounting I
This course is the first of two courses that comprise the study of accounting principles related to the oil, gas and energy industry. This course will focus on accounting for upstream operations, exploration, acquisition, drilling and development, and proved property costs, full cost accounting and accounting for production activities.
Prerequisite: ACCT 3311.

ACCT 5377 - Oil, Gas and Energy Accounting II
This course is the second of two courses that comprise the study of accounting principles related to the oil, gas and energy industries. This course will focus on accounting for asset retirement, sales revenue, tax accounting, joint interest accounting, conveyances, and oil and gas disclosures. Graduate students will also study accounting for international petroleum operations.
Prerequisite: ACCT 5376.

ACCT 5380 - Advanced Auditing and Systems
Advanced study and application of auditing theory and accounting information systems.

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

ACCT 5385 - Advanced Accounting Research and 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.

ACCT 5395 - CPA Review Topics
Review of CPA topics tested within the four sections of the CPA exam: Regulation, Business Environment and Concepts, Financial Accounting and Reporting and Auditing and Attestation. Two of the four topics will be offered in alternating summer semesters. Course may be repeated one time for credit, as needed to complete a review of all four exam sections.
Prerequisite: Permission of Master of Accountancy Director.

ALHS - ALLIED HEALTH SCIENCE

ALHS 1100 - Personal and Community Wellness Lab
Applied and lab-based study of individual, societal and cultural considerations in health and wellness. Emphasis is on assessment of health-related factors that the individual can affect and on individual decision-making.
Corequisite: ALHS 1300.

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 [TCCN: BIOL 1322]
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 2315 - Principles of Nutrition for Allied Health
Principles of Nutrition for Allied Health is a course required for upper division nutrition courses and nursing majors. It is also appropriate for majors in Community Health Sciences and other pre-professional majors. This course will explore nutrient function and basis for nutrient requirements at the cellular level and relate the science of nutrition to health outcomes through the use of case studies
Prerequisite: CHEM 1305. Introduction to general Chemistry is needed before taking Principles of Nutrition for Allied Health.

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 Through the Life-Cycle
Study of basic nutrition and the role of nutrition in health across the life cycle.
Prerequisite: ALHS 1315 or BIOL 1307 or CHEM 1311.

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 3370 - Health & Wellness
This course is designed to assist individuals in identifying essential behaviors necessary for optimal well-being, including a health enhancing lifestyle. Students are presented with evidenced-based strategies for improving and maintaining good health. Topics addressed include physical health; emotional health; social health; mental health; diseases and disorders; alcohol, tobacco, and other drugs; environmental health and consumerism; and healthy aging and end of life preparation.

ALHS 4199 - Independent Study
Independent study.

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 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.
Prerequisite: This is an upper-division course. Students need basic understanding of nutrition as well as basic anatomy to be successful in this course. Prerequisite: ALHS 1315 and BIOL 2301.

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 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 4399 - Independent Study
Independent study.

ALHS 5323 - Global Foodways
A critical evaluation of issues, concepts, and controversies about cultural food relationships. Students will explore the meaning and significance of food in different cultures by exploring the way the ethnicity, gender, socioeconomic status and religion of individuals and countries influence global food choices or preferences.

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 - Program Design and Evaluation
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 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 5325 - Nutrition for Healthy Aging
This course reviews the health issues and nutritional needs of older adults, from an optimal health perspective. Nutritional status of older adults for normal nutrition status, therapeutic nutrition, and metabolic pathways of the nutrients, as well as the sociological and physiological factors that impact nutritional status for the older adult are explored.
Prerequisite: Three credits of undergraduate nutrition are required to before taking Nutrition for Healthy Aging or the Instructor's permission.

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 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 5336 - Exploring Disease and Disability through Literature and Art
In this course, students examine selected literature and art, depicting disease, disability and the related pain and suffering. Through novels, short stories, essays, and visual imagery including paintings, photographs and films, students will explore the ways patients, doctors and other healers, and whole societies grapple with the fear, pain and suffering associated with illness and disease. Students will discover how narratives and art might help us to make sense of our own lives and the lives of others in times of crisis. Many of the learning assignments will question some fundamental assumptions, stimulating students to re-conceptualize their notions of normality/disability, health/disease, and life/death.

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 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 5381 - Healthcare Informatics for the 21st Century
Provides introductory principles to understand conceptual and theoretical basis for information management in healthcare informatics. An interdisciplinary approach will be used to examine the clinical aspects, practice considerations, and application of information technology.
Crosslisted as: This course is identical to NURS 5381, except that it is open to non-nursing students.

ALHS 5385 - Information Systems Life Cycle
This course is focused on preparing the students for all facets of information system procurement and implementation. A primary focus of the course is on the tactical skills and competencies required to implement information systems in various healthcare settings. This course prepares the student to function as a project team member during the implementation of a clinical information system and to participate in system evaluation and maintenance.
Crosslisted as: This course is identical to NURS 5385, except that it is open to non-nursing students.

ALHS 5387 - Data Analysis and Healthcare Technology
Learning to effectively manage and analyze healthcare data is essential to the practice of healthcare informatics. In this course, students examine data standards, management, analysis, application and transformation. The students will have hands-on experience with data analysis from conception of a project to presenting the results. Students will examine other ways technologies are being used in healthcare such as simulation, robotics, wearable devices and communication.
Crosslisted as: This course is identical to NURS 5387, except that it is open to non-nursing students.

ALHS 5389 - Informatics, Quality & Safety Capstone
This course is focused on demonstrating critical thinking, self-direction, and competency in the skills needed by healthcare informatics professions entering the profession. Using students' learning from the prerequisites courses, a series of real-world work products will be created based on unfolding case studies using simulated data sets. Students will work in one or more consulting team(s) however; a portfolio of their individual work will be created as exemplars for the future.
Crosslisted as: This course is identical to NURS 5389, except that it is open to non-nursing students.

ALHS 5399 - Independent Study
Independent study.

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 4320 - Ancient Civilizations of America
This course deals with the pre-Hispanic complex societies of the Americas in Mexico and Central America. The experience of humans in complex societies will be viewed chronologically and developmentally from their beginnings, several thousand years ago at the beginnings of social complexity and civilization. At the same time, we will review explanatory models of causation for why states rise and fall.

ANTH 4330 - Origins of Humanity and Civilization
This course deals with the origins of humanity and civilization in the broadest sense. Human origins are viewed chronologically from their Australopithecine beginnings, 4 million years ago, and traced through the beginnings of social complexity and civilization. We will examine the biological, behavioral, and cultural evolution of humanity. At the same time, we will review explanatory models of causation for each of these topics.

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.

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 2379 - Beginning Ceramics [TCCN: ARTS 2346]
An introduction to various materials, tools, and approaches used in ceramics.

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 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 3343 - Jewelry and Metalsmithing
The study of various materials, tools and approaches used in the creation of jewelry and small metal sculpture.

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 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 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 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 4338 - Art Curatorial Training & Ethics
This course is an in-depth investigation of curatorial practice and the ethics of collecting within a museum context. Theoretical and practical concerns of curating an exhibition, as well as methodological issues and recent theoretical approaches to the discipline of art history will be discussed.
Prerequisite: ART 2303 and ART 2304 or CI. Corequisite: N/A. Crosslisted as: N/A.

ART 4339 - Exhibition Practicum
This course will provide students with a general understanding of all aspects of preparing a fine art exhibition. Students will research art objects; prepare information for labels, catalogs and other didactic exhibition materials; gain a basic knowledge of curatorial methodologies and fine art exhibition design; and apply this knowledge in the creating of an exhibition. The practicum will involve: choosing objects (artworks or cultural artifacts) for an exhibition, researching chosen objects, possibly transporting object(s), installation of exhibition, creation of labels and wall text, gallery opening reception talk and taking down of exhibition.
Prerequisite: ART 2303 and ART 2304 or CI. Corequisite: N/A. Crosslisted as: N/A.

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 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 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 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 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 4357 - Critical Theory & Research Methods in Art History
This course is an inquiry into the theory and practice of art history. Methodological issues, recent theoretical approaches, and research methods specific to the discipline of art history will be discussed.
Prerequisite: ART 2303 and ART 2304 or CI. Corequisite: N/A. Crosslisted as: N/A.

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 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 4394 - Contemporary Issues
Contemporary Issues is a course concerned with art from approximately 1960 until the present. The objective is to acquaint students with key concepts, critical theories and processes related to contemporary art. Students will also learn about the work of contemporary artists and global venues that display contemporary art.
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 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 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 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 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 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 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 5371 - Graduate Internship Practicum
An 8 to 16 week graduate internship practicum provides a learning experience in an off campus setting, such as a museum, gallery or research facility. The internship practicum is where a graduate student participates in practical and general training experiences in the workplace, under the direction of on an external field supervisor in conjunction with the university instructor. It is intended to give the student an opportunity to apply theory, expand knowledge, and gain experience in the museum, gallery or research fields. The internship may be taken for either three or six hours of credit. The student will ordinarily be expected to spend between 10-15 hours per week on location for each three hours of credit.

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 5391 - Graduate Topics in Art History
Graduate 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: None.

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. Course many be repeated once..
Prerequisite: Consent of Advisor.

ASIA - ASIAN

ASIA 4199-4699 - Independent Study
Independent study in specific areas of Asian Studies 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 the department chair.

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 [TCCN: BIOL 1308]
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 [TCCN: BIOL 1309]
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 [TCCN: BIOL 2316]
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 [TCCN: BIOL 2206]
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: 4 hours of Chemistry with laboratory. 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: 8 credit hours of lab science. 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/BIOL 2101.

BIOL 2320 - Introduction to Microbiology [TCCN: BIOL 2320]
Microbial structure, metabolism, and genetics. Microorganisms of medical importance are stressed.
Prerequisite: 4 hours of Chemistry with laboratory. Corequisite: BIOL 2120.

BIOL 3133 - Genetics Laboratory
An introduction to experimental and quantitative laboratory techniques fundamental to genetic analysis.

Prerequisite: BIOL 1306/BIOL 1106, BIOL 1307/BIOL 1107, CHEM 1311/CHEM 1111, CHEM 1312/CHEM 1112. 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 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 3139 - Plant Biology Lab
This course focuses on plants, their unique features, their diversity, and how they profoundly influence all life on Earth. The goals of this course are for students to understand what makes a plant a plant and to appreciate the ways in which plants make life possible for humans and life on Earth in general.
Prerequisite: BIOL 1306/BIOL 1106 and BIOL 1307/BIOL 1107. Corequisite: BIOL 3339.

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/BIOL 1106, BIOL 1307/BIOL 1107, CHEM 1311/CHEM 1111, CHEM 1312/CHEM 1112, CHEM 3342/CHEM 3143. Corequisite: BIOL 3134.

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 3339 - Plant Biology
This course focuses on plants, their unique features, their diversity, and how they profoundly influence all life on Earth. The goals of this course are for students to understand what makes a plant a plant and to appreciate the ways in which plants make life possible for humans and life on Earth in general.
Prerequisite: BIOL 1306/BIOL1106 and BIOL 1307/BIOL 1107. Corequisite: BIOL 3139.

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/CHEM 3143, BIOL 1306/BIOL 1106 and BIOL 1307/BIOL 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 - Molecular Biology for Modifying Organisms Laboratory
This course focuses on the use of experimental techniques in molecular biology for changing cellular behaviors. The goals of this course are for students to gain hands-on experience on laboratory techniques and to design experiments for testing biological properties in living organisms.
Prerequisite: BIOL 3332/BIOL 3133 and BIOL 3334/BIOL 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
Covers principles and methods of analyzing large biological datasets with emphasis on genomes, focuses on technical skills required to answer biological questions using a computer.
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.
Prerequisite: BIOL 4114.

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/BIOL 1106, BIOL 1307/BIOL 1107; BIOL 3332/BIOL 3133; BIOL 3336/BIOL 3137; and BIOL 3334/BIOL 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/BIOL 1106; BIOL 1307/BIOL 1107; BIOL 3332/BIOL 3133; BIOL 3336/BIOL 3137; and BIOL 3334/BIOL 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/BIOL 1106; BIOL 1307/BIOL 1107. 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/BIOL 1106; BIOL 1307/BIOL 1107; BIOL 3332/BIOL 3133; BIOL 3336/BIOL 3137; and BIOL 3334/BIOL 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/CHEM 3145, BIOL 1306/BIOL 1106, BIOL 1307/BIOL 1107. Corequisite: BIOL 4101.

BIOL 4302 - Molecular Biology for Modifying Organisms
This course focuses on biological mechanisms involved in genetic regulation and how these mechanisms control cellular behaviors. The goals of this course are for students to understand biological systems at a molecular level and to learn techniques that are used to modify biological systems to generate desirable functions and behaviors.
Prerequisite: BIOL 3332/BIOL 3133 and BIOL 3334/BIOL 3134. Corequisite: BIOL 4102.

BIOL 4304 - Biogeography
Study of flora and fauna of the world and factors affecting their distribution.
Prerequisite: BIOL 1306/BIOL 1106; BIOL 1307/BIOL 1107.

BIOL 4305 - Aquatic Biology
Ecology and general biology of freshwater ecosystems. Emphasis on the interrelationships of biological, chemical, and physical factors.
Prerequisite: BIOL 1306/BIOL 1106; BIOL 1307/BIOL 1107; BIOL 3332/BIOL 3133; BIOL 3336/BIOL 3137; and BIOL 3334/BIOL 3134.

BIOL 4306 - Bioinformatics
Covers principles and methods of analyzing large biological datasets with emphasis on genomes, including use of a computer to answer questions in biology.
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/BIOL 1106; BIOL 1307/BIOL 1107; BIOL 3332/BIOL 3133; BIOL 3336/BIOL 3137; and BIOL 3334/BIOL 3134. Corequisite: BIOL 4131.

BIOL 4331 - Entomology
Physiology, morphology, life history, and control of insects.
Prerequisite: BIOL 1306/BIOL 1106; BIOL 1307/BIOL 1107; BIOL 3332/BIOL 3133; BIOL 3336/BIOL 3137; and BIOL 3334/BIOL 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/BIOL 1106; BIOL 1307/BIOL 1107. 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/BIOL 1106; BIOL 1307/BIOL 1107; BIOL 3332/BIOL 3133; BIOL 3336/BIOL 3137; and BIOL 3334/BIOL 3134. Corequisite: BIOL 4141.

BIOL 4350 - Immunology
Study of the biology and chemistry of humoral and cell-mediated immunities.
Prerequisite: BIOL 1306/BIOL 1106, BIOL 1307/BIOL 1107, 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/BIOL 1106; BIOL 1307/BIOL 1107; BIOL 3332/BIOL 3133; BIOL 3336/BIOL 3137; BIOL 3334/BIOL 3134; and BIOL 4300/BIOL 4101 and consent of department chair.

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 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 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/BIOL 4136 or consent of instructor.

BIOL 5184 - Evolutionary Genetics Lab
This computer-based laboratory course is a companion to the Evolutionary Genetics lecture course. We will perform analysis of molecular variance (AMOVA), Bayesian clustering analysis (also known as STRUCTURE), haplotype network analysis, and phylogenetic analysis (using both maximum likelihood and Bayesian methods, and actually making trees). We will work with single gene sequences and genome-wide data.
Corequisite: You need to take Evolutionary Genetics (BIOL 5384) concurrently in order to take this lab.

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 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 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 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 5334 - 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 5336 - Environmental Microbiology
Environmental Microbiology is a graduate course, aiming to expand students' knowledge of the prokaryotic and eukaryotic microbes, phylogenetic evolution and microbiome, and microbial interactions with environments and human. Students will be expected to understand and appreciate unique nature of microorganisms and their importance to life in both beneficial and harmful aspects, and be able to use them in theoretic exploration and in the laboratory experiments.
Prerequisite: Prior exposure to General Biology, Genetics, and Biochemistry highly recommended.

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 5342 - Bioinformatics for Research
Focus on essential computational skills for research in contemporary biology, with an emphasis on large scale data and reproducibility.

BIOL 5376 - Evolutionary Ecology
Evolutionary ecology spans the disciplines of ecology and evolutionary biology and incorporates the full range of techniques and approaches from both. The goal of the course is to provide a synthetic overview of the subject, unifying conceptual and empirical advances in the field.

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 5387 - History of Biology
This course provides a broad appreciation for how the field of biology has evolved. By focusing on a historical approach to the field of biology, it will allow us to investigate, in detail, the shifts in thought that have led to our current understanding of biology and the world in which we live.

BIOL 5390 - Behavioral Ecology
This course examines the ecological (proximate) and evolutionary (ultimate) causes of animal 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 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.

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, data analysis, use and interpretation of leveling, measurement of angles/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 (GPS) and geographic information systems (GIS) used to manage data in surveying. Emphasis on the use of surveying reports and data.
Prerequisite: ENGR 1204.

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 idea/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: ENGR 1204 and PHYS 2325.

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.
Corequisite: CENG 3306 or MENG 3306.

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 or SPCM 1311 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, footings, and connections 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 and ENGR 4109.

CENG 4316 - Advanced Steel Design
Advanced design of structural steel systems emphasizing the relationship between design and response of the structural system; theoretical basis of building code provisions; limit state and plastic design; beam-column; built up sections and composite sections; and connections.
Prerequisite: CENG 4412 or department chair approval. Crosslisted as: CENG 5316.

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, CENG 4412, CHEM 1311/CHEM 1111. 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 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 4372 - 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 5372. 3 credit hours.
Prerequisite: CENG 3371. Corequisite: None. Crosslisted as: Co-listed with CENG 5372.

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 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 4412 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 and 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 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 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 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 5359 - Pavement Management Systems
Conducts the project and network-level pavement management processes. Identifies the data to be collected and how to define and predict the conditions of the pavement.
Prerequisite: CENG 3351.

CENG 5360 - Introduction to Pavement Engineering
Evaluation of stresses in flexible and rigid pavements, materials characterization, design of flexible and rigid pavements for highways and airports.
Prerequisite: CENG 3336.

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 4351or 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 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 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.

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 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 health applications of general, organic, and biological chemistry for the nursing or non-science/engineering majors. This course satisfies 3 hours of either the LPS or STEM 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 3 hours per week. Satisfies STEM or LPS core requirement.

CHEM 1321 - Forensic Chemistry II
Continuation of CHEM 1320. Topics include gas chromatography, liquid chromatography, drug chemistry, blood alcohol content, infrared spectrophotometry, and nuclear chemistry. The accompanying lab uses forensic techniques and equipment similar to a crime lab to solve mock crimes. Meets 3 hours per week. Satisfies STEM or LPS core requirement.
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 1380 - Introduction to Fermentation Science
This lecture course focuses on the scientific principles behind the production of beer and wine. Students will learn the biochemical processes behind horticultural and agronomical practices associated with growing barley, hops, and grapes, the historical and modern processes of malting, brewing, and winemaking, the functions of key microorganisms and their impact on the final product, and the basics of human sensory science. All of this information will provide the students with a general base of knowledge of the scientific principles that drive malting, brewing, viticulture, and enology.

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/ CHEM1112. Corequisite: CHEM 3342.

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 3180 - Chemistry of Brewing Laboratory
This laboratory course examines the fundamental principles of brewing. Students will learn essential techniques and standardized methods used throughout the brewing process. An in-depth scientific approach will

be utilized to analyze the four main ingredients, extracted constituents of the ingredients, and water quality. As a group project, students will produce a small batch of beer that will be analyzed using the methods learned and presented to local brewery representatives for evaluation of aroma, color, body, and flavor.

Prerequisite: Must have credit for General Chemistry I and Laboratory (CHEM 1311/CHEM 1111) and General Chemistry and II Laboratory (CHEM 1312/CHEM 1112). Corequisite: Must have credit for or be concurrently enrolled in Chemistry of Brewing (CHEM 3380).

CHEM 3181 - Chemistry of Winemaking Laboratory
In this lab students will produce wine from grapes and/or juice and follow the fermentation process using standard chemical techniques. The final product when then be analyzed for color, flavor and aroma.
Prerequisite: CHEM 3310 and CHEM 3111. Corequisite: CHEM 3381 and credit for or concurrent enrollment in CHEM 3344 and CHEM 3145.

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
Introductory topics in inorganic chemistry including descriptive inorganic chemistry, solid-state chemistry, and coordination chemistry with the latter area consisting of nomenclature, stereochemistry, bonding, and reaction mechanisms.
Prerequisite: CHEM 1312/CHEM 1112. Corequisite: CHEM 3121.

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 3346 - Macromolecular, Supramolecular, and Nanoscale Chemistry
Topics address the fundamental questions regarding the chemistry of macromolecular, supramolecular and nanoscale species and other organized structures. This course covers the basics of the synthesis and characterization of polymeric materials and their importance in supramolecular and nanoscale chemistry and a variety of important applications involving these systems.
Prerequisite: CHEM 3344 or instructor approval. Corequisite: Prerequisite: CHEM 3344 or instructor approval.

CHEM 3352 - Physical Chemistry I
Properties of substances in the gaseous, liquid, and solid states; chemical thermodynamics; chemical equilibria; phase equilibria; and electrochemistry.
Prerequisite: MATH 2414 and CHEM 3344/CHEM 3145 or consent of instructor. Corequisite: Credit for or concurrent enrollment in CHEM 3310/CHEM 3111. .

CHEM 3354 - Physical Chemistry II
Continuation of CHEM 3352. Atomic structure, chemical bonding, chemical kinetics, statistical mechanics, and spectroscopy.
Prerequisite: CHEM 3352.

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 3380 - Chemistry of Brewing
This course examines the fundamental principles of brewing. Students will apply biochemical concepts learned in earlier courses to examine the four main ingredients used in brewing. An in-depth scientific approach will be utilized to study the role of each ingredient, and how chemical composition, chemical reactions, extracted constituents of the ingredients, metabolic pathways of yeast, and water quality affect the flavor, aroma, and quality of beer.
Prerequisite: Must have credit for General Chemistry I and lab (CHEM 1311/CHEM 1111) and General Chemistry II and lab (CHEM 1112/CHEM1312).

CHEM 3381 - Chemistry of Winemaking
This course will cover the chemistry of grapes, must, and wine. Special attention will be paid to calculations involved in winemaking, the chemical aspects of fermentation, the compounds contributing to the aroma and flavor of wine, and the aging and storage of wine.
Prerequisite: CHEM 3310 and CHEM 3111. Corequisite: CHEM 3181 and credit for or concurrent enrollment in CHEM 3344 and CHEM 3145.

CHEM 3382 - Distillation Science & Technology
Distillation Science & Technology will introduce the student to the science and technology behind distillation as a separation science. Course topics will include the distribution of distilled spirits around the world as well as applied chemistry and engineering of operating several types of ethanol stills. Students are expected to have a solid understanding of basic fermentation science topics, chemistry, and mathematical concepts prior to this course.
Prerequisite: Physical Chemistry I (CHEM 3352/CHEM 3153). Corequisite: None.

CHEM 4113 - Instrumental Analysis Laboratory
Experiments utilizing absorption and emission spectroscopy, mass spectrometry, electroanalytical chemistry, and chromatography.
Prerequisite: CHEM 3111 and CHEM 3153. 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 4190 - Chemical Literature
Students will research a current literature topic and present it at a poster session.
Prerequisite: Senior standing.

CHEM 4191 - Seminar
Reports on current literature and research in chemistry.
Prerequisite: CHEM 4190.

CHEM 4195 - Undergraduate Research
Directed chemical or biochemical research involving a problem of mutual interest to the student and a member of the chemistry faculty. A written report of research results by the student are required at the conclusion of the project. A maximum of six credit hours for undergraduate research courses may be applied toward an undergraduate degree.

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 4295 - Undergraduate Research
Directed chemical or biochemical research involving a problem of mutual interest to the student and a member of the chemistry faculty. A written report of research results by the student are required at the conclusion of the project. A maximum of six credit hours for undergraduate research courses may be applied toward an undergraduate degree.

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 3310 and CHEM 3352.

CHEM 4330 - Advanced Inorganic Chemistry
Advanced topics in inorganic chemistry including symmetry and group theory, molecular orbital theory, add-base theories, organometallic chemistry, catalysis, metal cluster compounds, and bioinorganic chemistry.
Prerequisite: CHEM 3320/CHEM 3121 and CHEM 3344/CHEM 3145.

CHEM 4332 - Spectroscopy
Study of modern analytical methods including UV/Vis spectroscopy, vibrational spectroscopy, nuclear magnetic resonance spectroscopy, and mass spectrometry. Spectral interpretation and structural correlation will be emphasized.
Prerequisite: CHEM 3344 and CHEM 3145.

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 4340 - Proteomics
This course introduces students to the field of proteomics, which is the study of the structure and function of proteins. Proteins comprise the functional components of biologic systems and the course will explore their various roles as catalysts, regulators, and structural scaffolds.
Prerequisite: CHEM 4334.

CHEM 4344 - Molecular Basis of Disease
This course introduces students to the molecular basis of human diseases. It builds upon the principles learned in the prerequisite introductory biochemistry course (CHEM 4334) to examine the fundamental causes of disease at the molecular level. The course will examine the genetic foundations of disease, how genetic mutations ultimately lead to specific structural and functional changes to the proteins they encode, why changes in protein structure and function lead to the health conditions observed, and modern methods that look to target the molecular basis of the disease to alleviate or cure the problem. Some diseases that will be discussed include cancer, cystic fibrosis, prion diseases, Alzheimers disease, and infection by viruses.
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 4383 - Chemical Principles of Fermentation
This course is intended to give the student an understanding of the chemical principles at work in industrial fermentation processes. The course will cover a wide range of fermentation process and techniques with a particular emphasis on those used in production of fermented beverages.
Prerequisite: CHEM 4334/CHEM 4135 and BIOL 4300/BIOL 4101.

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. A written report of research results by the student are required at the conclusion of the project. A maximum of six credit hours for undergraduate research courses may be applied toward an undergraduate degree.
Prerequisite: Requires Departmental approval.

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 5299-5399 - 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 5301 - Introduction to Graduate Teaching and Research
This course is designed to introduce new graduate students to faculty research opportunities and what to expect when teaching undergraduate labs. Topics include university policies, safety in the laboratory, first aid techniques, chemical waste management, teaching techniques, ethics, research opportunities within the department, and using the scientific literature.
Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry.

CHEM 5316 - Advanced Analytical Chemistry
A survey of selected principles and techniques of modern analytical chemistry with a focus on major areas including spectroscopy, separations sciences, and electroanalytical chemistry. Includes material on basic statistics and tests of significance, molecular and atomic spectroscopy, mass spectrometry, classical and thermal methods, chromatography, capillary electrophoresis, and electroanalytical chemistry.
Prerequisite: CHEM 3310, CHEM 3111.

CHEM 5321 - Biochemical Foundation and Treatment of Disease
This course takes an in depth look at the molecular basis of human diseases. The course will examine the genetic foundations of disease and how genetic mutations ultimately lead to changes in the functional materials of the cell, namely proteins. Students will learn how molecular modifications to proteins results in structural and functional changes that ultimately lead to pathogenesis of the disease state. Modern methods for targeting and treating disease using molecular strategies will be explored in depth. Some diseases that will be discussed include cancer, cystic fibrosis, prion diseases, Alzheimers disease, and infection by viruses.
Prerequisite: CHEM 4334 or equivalent, or approval of instructor.

CHEM 5331 - Organometallic Chemistry
Synthesis, bonding, and reactivity of transition metal and main group organometallic compounds and their applications in organic synthesis, catalysis, and nature.

Prerequisite: Instructor consent.

CHEM 5339 - Bioinorganic Chemistry
Study of the role metal ions play in the structure and function of nucleic acids, proteins, and metalloenzymes. Topics include bio-coordination chemistry, modeling studies, and experimental techniques, as well as aspects of medicinal inorganic chemistry.
Prerequisite: CHEM 4330, Advanced Inorganic Chemistry or equivalent.

CHEM 5340 - Physical Organic Chemistry
Organic structure and modern models of bonding, strain, and stability; advanced organic acid–base chemistry; advanced stereochemistry; energy surfaces and kinetic analyses; isotope effects; linear free energy relationships; and advanced concepts in electronic structure theory.
Prerequisite: CHEM 3344, CHEM 3354 or equivalent, or instructor approval.

CHEM 5341 - Organic Synthesis
Application of organic reactions to the synthesis of complex organic molecules. Study includes synthesis design and methodology, scope and limitations of reactions, and experimental design. Prerequisite: CHEM 3344 or instructor approval.
Prerequisite: CHEM 3344 or instructor approval.

CHEM 5342 - Nanochemistry and Macromolecules
Organic chemistry of macromolecules and nanomaterials, including structure, properties, and reactivity. A strong focus on the synthesis of nanomaterials from the atom up. Topics include the mechanism of polymerizations; chemical reactions of polymers and biopolymers; synthesis and stabilization of nanoparticles, assemblies involving nanoparticles, and chemical nanoreactors.
Prerequisite: CHEM 3344 or instructor approval.

CHEM 5350 - Quantum Mechanics
A rigorous study of the fundamental principles of quantum mechanics as it applies to molecular structure, dynamics, and spectroscopy. Quantum theory is applied to some simple systems followed by a description of approximation methods that are used to solve real chemical problems. An overview of modern computational methods will also be described.
Prerequisite: CHEM 3354 or equivalent.

CHEM 5351 - Molecular Spectroscopy
Theory and applications of modern spectroscopic methods. Basic concepts of infrared, Raman, visible, ultraviolet, NMR, ESR, Mössbauer and mass spectrometry.
Prerequisite: CHEM 3354 or equivalent.

CHEM 5383 - Advanced Chemical Principles of Fermentation
This course is intended to give students a thorough understanding of the biochemical processes of specific microbes relevant to the production of fermented products. A particular emphasis will be given on fermented foods and beverages, but this course will also touch on more modern, industrial products such as biofuels and biofabricated textiles. In addition, students will be expected to comprehend and critique recent publications in the field of fermentation science and be able to discuss their analyses with their peers.

CHEM 5395 - Thesis I
Preparation of a thesis under the guidance of a faculty advisor. The thesis is the culmination of the research completed toward the M.S. degree. Taken the final year of study toward the M.S degree. **This course is part I of a two-part sequence.** The student will begin writing the thesis is the first semester then complete and defend the thesis in CHEM 5396.
Prerequisite: Departmental approval; Membership in the THES Student Group.

CHEM 5396 - Thesis II
Preparation of a thesis under the guidance of a faculty advisor. The thesis is the culmination of the research completed toward the M.S. degree. Taken the final year of study toward the M.S degree. **This course is part II of a two-part sequence.** The student will begin writing the thesis in CHEM 5395 during is the first semester of the sequence and complete and defend the thesis in CHEM 5396 during the second semester
Prerequisite: CHEM 5395; membership in the THES Student Group.
Corequisite: N/A.

CHEN - CHEMICAL ENGINEERING

CHEN 2310 - Introduction to Chemical Engineering
Industries, careers, and the curriculum are discussed. Basic chemical engineering terms, concepts, and calculations are presented. Mass balance calculations are performed and the application of computers to chemical engineering problems is introduced
Prerequisite: CHEM 1311, CHEM 1111. Corequisite: CHEM 1312, CHEM 1112.

CHEN 2320 - Chemical Engineering Mechanics
Mechanics principles involved with static and dynamic bodies and particles
Prerequisite: PHYS 2325, PHYS 2125.

CHEN 3301 - Chemical Engineering Thermodynamics I
Fundamental thermodynamic principles including the concepts of heat and work, basic thermodynamic processes, and heat engines / heat pumps.
Prerequisite: PHYS 2325, PHYS 2125, MATH 2414, CHEN 2310.

CHEN 3302 - Chemical Engineering Thermodynamics II
Power and refrigeration cycles, chemical reactions, combustion, gas mixtures, psychometrics, availability analysis. Applications of equations of state for fluids. Prerequisite CHEN 3301.
Prerequisite: CHEN 3301.

CHEN 3310 - Chemical Engineering Materials
An introductory course in materials science - fundamental characteristics of various materials including metals, ceramics, polymers, and composite materials. Specific topics covered include bonding and crystal structure of materials; electrical and mechanical properties of materials; phase diagrams and heat treatment, corrosion and environmental effects; and application of metal alloys, ceramics, polymers, composites.
Prerequisite: CHEM 3342, CHEM 3143, CHEN 2310.

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 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 3305 - Applied Construction Management Program Principles and Practices
A course in the application of key fundamental construction management principles and practices necessary for the professional programmatic and design skills needed to be a successful Integrated Project Leader (IPL) in today's CM profession with emphasis in civil construction projects.
Prerequisite: Course prerequisite is successful completion of CMGT 2302.
Corequisite: PHYS 1301, PHYS 1101.

CMGT 3310 - Construction Structural Systems I
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 2312 or 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 Structural Systems II
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, Electrical and Plumbing 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 - Construction Applications for Concrete
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 Applications for Steel
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 and CMGT 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.

CMST - COMMUNICATION STUDIES

CMST 1311 - Introduction to Communication Studies
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, public address, to name a few of the contexts in which communication studies applies. This course will overview and introduce students to the discipline and the theories used within the field.

CMST 1315 - Introduction to Public Speaking
The major aims of this course are to make students more effective professional communicators, analytical thinkers, and critical listeners. Throughout the semester students will study the theories and principles of effective communication, practice applying these principles in a variety of assignments, and critique the performances of other speakers. This course aims to build and improve speaking abilities, organizational and preparation techniques, as well as the capacity to effectively appraise audience and diverse backgrounds and ethically apply communication theory.

CMST 2310 - Introduction to Research Methods
A review of research in the communication studies discipline. Broad application of both quantitative and qualitative investigative methods. Students learn to read and review work within the discipline.

CMST 2313 - Global Health Communication
This course is a survey of and analysis of concepts, perspectives, research, and theories related to global health communication across various contexts. Communicative demands of health, healthcare, and health education and promotion, current issues and problems related to global health, and communication strategies employed to achieve health education, equity, and reduce health disparities will be examined.

CMST 2318 - Interpersonal Communication
A study of human communication process within dyadic relationships. Topics include communication styles, skills, and methods of interpersonal communication competency.

CMST 2320 - Nonverbal Communication
This course will increase awareness, knowledge, and understanding of nonverbal communication. It will enhance skills related to personal nonverbal skills and will focus on how to adjust to the nonverbal communication of other people; such as touch, time, environmental contexts, physical appearance, and social communication cues.

CMST 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.
Crosslisted as: n/a.

CMST 3310 - Quantitative Research Methods
Along with effective communication skills, and a general good working knowledge of business principles, understanding research methods is one of the most important skills in the communication field. Social science research methods across the various contexts within the communication studies discipline. This course covers formalizing research questions, operational definitions, hypotheses and research question testing, measurement, sampling, research design, computer analysis, and scale development.
Prerequisite: CMST 2310 - Introduction to Research Methods.

CMST 3311 - Qualitative Research Methods
This course is an exploration of qualitative research methods in the communication discipline. Evaluating and designing qualitative, communication-centered research will be a primary focus. An array of qualitative research approaches will be reviewed, including a variety of epistemologies (ways of knowing), ontologies (ways of being/reality), methodologies (ways of examining), and non-numerical representations (ways of writing and reporting) of qualitative data.
Prerequisite: CMST 2310.

CMST 3314 - Patient Provider Communication
This course develops a framework for exploring the processes involved in patient-provider communication. This course deepens the understanding of the field of health communication, health communication approaches, and represents ways to make the relationship between patients and providers stronger communicationally speaking.

CMST 3315 - Lying and Deception
Deception occurs in communication behavior across species and lying (i.e., intentional deception) is a pervasive phenomenon in human communication. This course explores the varieties of deceptive communication, their causes, and consequences. As deception occurs across contexts, this course examines lying and deception from many angles as well as the strategies used to detect their occurrence: in the media, politics, the internet, hoaxes and scams, interpersonal relationships, art, family and romantic relationships, etc.

CMST 3321 - Business and Professional Communication
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. Emphasis is on clarity and persuasiveness in communicating with clients, associates, and other decision makers through oral, written, and visual means.

CMST 3322 - Small Group Communication
A study of group process and interaction; including the concepts of leadership and effective participation.

CMST 3324 - Public Health Communication
This class focuses on the role communication plays in health behavior change programs. Students will be able to be aware of the components that go into developing effective health campaigns. Additionally, students will be able to create a foundational skill set to create health campaigns to combat the health issues that plague our society.
Prerequisite: In order to take this course, students must have taken Investigating Communication, CMST 2310.

CMST 3325 - Persuasive Communication
In this course, students will learn about fundamental communicative and psychological processes that are involved in social influence. This class will examine prominent social scientific perspectives on persuasion that inform the understanding of what makes persuasive efforts compelling. This is not a course designed specifically to teach persuasive speaking skills; rather, it is meant to sharpen students' understanding of how persuasion occurs.
Prerequisite: CMST 1315.

CMST 3340 - Speech Activities
Participation in speech tournaments. Open to any student interested in debating.
Prerequisite: Consent of instructor. May be repeated once for credit.

CMST 3345 - Crisis Communication
This course will examine the importance of crisis communication within various crisis contexts as well as examine the relationship among crisis-related theories, research, and practice. Effective crisis communication strategies will be evaluated as related to a variety of different crisis types, such as organizational reputation crises, natural disasters, public health crises, disease outbreaks, chemical spills, environmental disasters, crises associated with workplace violence, among others. Communication processes across pre-crisis, crisis, and post-crisis stages will be examined.
Prerequisite: NA. Corequisite: NA. Crosslisted as: NA.

CMST 3350 - Risk Communication
This course will examine what constitutes "risk," risk communication theories, research, and the practice of risk communication in various settings. Risk communication plans and strategies will be evaluated as related to various target audiences, audience assessment and perception of risks, and the factors that influence whether or not people take action to protect themselves against risks and the role communication plays in these processes.
Prerequisite: CMST 1315. Corequisite: NA. Crosslisted as: NA.

CMST 3355 - Communication and Personal Relationships
This course develops a framework for exploring the processes involved in focused social interaction and communication in the context of personal relationships. This course will increase the knowledge of how appropriate communication processes and competencies can strengthen these relationships.

CMST 4199 - 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.

CMST 4199-4699 (Course Number slot on the form only allows four numbers.)
Prerequisite: CMST 2310 - Introduction to Research Methods.

CMST 4310 - Family Communication
This course will look at the current trends in families, the communication that creates and shapes families, theories to help understand families, and current research. This course critically evaluates and assess the current trends in families throughout the world and family communication research.
Prerequisite: Due to the theoretical nature of this course, ensuring students have a research/lit review/methodological understanding is a must for assignments in this class. Thus, CMST 2310 is required before taking this course.

CMST 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.

CMST 4319 - Interpersonal Health Communication
This course is designed to give students an overview of contemporary scholarship on phenomena within the scope of interpersonal health communication. Ideally, students will learn how communication among friends, family members, and professionals influences people's well-being, and how, in turn, health and illness shape communication and relationship dynamics.
Prerequisite: Students interested in this course must have completed SPCM 2310: Investigating Communication.

CMST 4320 - Communication Theory
This course is a survey of the major theories/methodologies of communication and their application to the analysis of discourse. This course presents a historic range of theories of communication, including interpretive, critical, rhetorical, and scientific.
Prerequisite: SPCM 2310 and junior standing.

CMST 4326 - Advanced Public Speaking
A course in the composition and delivery of speeches for various occasions, in audience analysis, and in speech criticism.
Prerequisite: CMST 1315.

CMST 4327 - Contemporary Rhetoric
Investigation of the shifting rhetorical climate of today's society and the changing modes of communication.
Prerequisite: CMST 2310.

CMST 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.

CMST 4330 - Interviewing
The aim of this course is to introduce students to interviewing theory, prepare them for their roles as interviewers and interviewees, including in the mass communication setting, interpersonal, employment, and probing interviews. This courses aims to instruct students in methods of interview preparation, and to provide students with practice in various types of interviews.

CMST 4331 - Intercultural Communication
An examination of the relationship(s) between and among communication, culture, various cultural groups, and social (in)justice in a global context.

CMST 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 preachment; and 3) Apologetics or Church-State relations. Class attendance at three different religious services (Christian, Jewish, Muslim) may be required.

CMST 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.

CMST 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.

CMST 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 if the content of the course has changed.
Prerequisite: CMST 2310 (Introduction to Research Methods).

CMST 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.

CMST 4370 - Undergraduate Internship Program
This course is designed to provide students with an opportunity to learn and reflect on communication career paths in an off-campus environment. As such, students will examine the ways in which the Communication Studies coursework is applicable to a variety of career paths, work environments, and job titles.
Prerequisite: 12 hours of advanced Communication Studies coursework and consent of the chair.

CNHS - NURSING AND HEALTH SCIENCES

CNHS 1303 - Communicating Across Health Professions
This course is designed to guide students through various career options in the health professions. In addition to exploring the roles of health care team members, students will begin learning the language of health care and be given opportunities to acquire basic communication skills essential for all health care professionals.

COMD - COMMUNICATION DISORDERS

COMD 3306 - Introduction to Communication Disorders
The course provides undergraduate students with an overview of the scientific study of communication, the people who have communication disorders, and the work of professionals in audiology, speech-language pathology, and education of the deaf. Students will learn about the variety of topics that speech, language, and hearing scientists study and about individuals that audiologists, speech-language pathologists, and deaf educators work with to improve communication. We also will discuss basic assessment and intervention practices.

COMD 3311 - Phonetic Description of Speech
This course will introduce the student to the processes of speech production, physiological analysis and provide a description of speech sounds, voice quality, and voice dynamics; notation. Phonetic theory and the applications of phonetics will be covered.

COMD 3313 - Hearing Science
This is an introductory course for hearing science, covering acoustical, physiological, and psychological bases of normal human hearing; theories of audition; and laboratory techniques in hearing science research. This course will explore three general topics related to the hearing process: (1) the physics of sound, (2) anatomy and physiology of the hearing mechanism, and (3) psychology of hearing.

COMD 3318 - Acquisition of Communication Abilities in Children
This course serves as an introduction to assessment procedures and treatment strategies for children with speech and language disorders. It is designed to provide a solid foundation in current research and theories regarding the development of communication abilities in children, as well as communication changes relevant to adolescents. It imparts the ability to discuss and apply the various theoretical perspectives and recognize examples of communication development in the everyday behavior of children, as well as the basic techniques that are used to analyze and understand speech and language performance.
Prerequisite: COMD 3306 with a grade of at least C, and COMD 3311 with a grade of at least C.

COMD 3341 - Principles of Audiology
This course covers the causes of hearing disorders, as well as relevant diagnostic procedures and treatment. Three lecture hours a week for one semester.
Prerequisite: Upper-division standing, and COMD 3313 with a grade of at least C.

COMD 3350 - Language and the Brain
This course covers the fundamentals of human brain structure and function, primarily related to speech/language processing. It provides: an in-depth review of neuroanatomy/neurophysiology; familiarity with current methods used to probe the neural bases of speech and language function; and historical perspective on how current theoretical views and methodological tools developed. Understanding how the brain processes and represents motor, sensory, and linguistic information will provide valuable insights into higher cognitive functions, as well as an understanding of neurological disorders, such as the aphasias, and the processing specializations of the left and right hemispheres of the brain.
Prerequisite: Upper-division standing.

COMD 3358 - Anatomy and Physiology of the Speech and Hearing Mechanism
In-depth study of the anatomy and physiology of structures involved in speech, language, hearing, and swallowing, as well as the neurological components controlling these mechanisms. Includes anatomical and physiological mechanisms of respiration, phonation, articulation, and hearing; additionally, a basic overview of the central nervous system and blood supply to the speech and hearing mechanism will be provided.
Prerequisite: Upper-division standing, and COMD 3311 with a grade of at least C.

COMD 3359 - Fundamentals of Speech Science
This course acquaints one with the fundamentals of speech and hearing function and familiarizes one with the various methods used to study speech sciences. Neurophysiological mechanisms underlying the encoding and decoding of speech are covered. By understanding how typical speech is produced and processed, one should gain insight into clinical disorders that affect speech function.
Prerequisite: Upper-division standing. For Communication Sciences and Disorders majors, COMD 3313 and COMD 3358 with a grade of at least C in each.

COMD 4367 - Introduction to Speech and Language Disorders Assessment and Treatment in Children
Restricted to senior communication sciences and disorders majors. This course provides an Introduction to assessment procedures and treatment strategies for children with speech and language disorders, including a comprehensive overview of: (1) the causes and characteristics of speech and language disorders in children, and (2) assessment and treatment procedures for acquired communication disorders.
Prerequisite: Upper-division standing, and the following coursework with a grade of at least C in each course: COMD 3306, COMD 3311, COMD 3313, COMD 3318, COMD 3358 and COMD 3359.

COMD 4371 - Introduction to Speech and Language Disorders Assessment and Treatment in Adults
Restricted to senior communication sciences and disorders majors. This course provides an Introduction to assessment procedures and treatment strategies for adults with speech and language disorders, including a comprehensive overview of: (1) the causes and characteristics of speech and language disorders in adults, and (2) assessment and treatment procedures for acquired communication disorders. Assessment of learning will be by means of a final examination, take-home assignments, and writing projects.
Prerequisite: Upper-division standing, and the following coursework with a grade of at least C in each course: COMD 3306, COMD 3311, COMD 3313, COMD 3350, COMD 3358 and COMD 3359. .

COMD 4373 - Principles of Aural Rehabilitation
Rationale, methods, materials, procedures, and criteria for aural rehabilitation for hearing-impaired persons. Three lecture hours a week for one semester.
Prerequisite: Upper-division standing; the following coursework with a grade of at least C in each: COMD 3306, COMD 3311, COMD 3313, COMD 3341, COMD 3358, and COMD 3359.

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 5326 - Theories of Student Development and Communication
A study of student development theories and communication theories and related research relevant to student learning, personal development, and communication. Theoretical perspectives that describe students' growth in the areas of intellectual, moral, ego, psychosocial, career, and spiritual development, racial, cultural, and ethnic identity, sexual identity, and learning styles, personal-environmental interaction and campus ecology. Students will consider how communication theories and stages of student development theories are related and inform how students learn and communicate – and how teachers can best incorporate this into the classroom.
Prerequisite: Recommended: COMM 5308 Communication Theory.

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 5333 - Narrative Storytelling Across Media
A study of narrative theories and mediated storytelling techniques and how these concepts work and influence the creation and expression of stories told across various media. Students will apply these concepts in the creation and analysis of mediated narratives.

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 5395 - Thesis I
Selection of research topic and development of thesis plan.

COMM 5396 - Thesis II
Completion and defense of thesis.
Prerequisite: COMM 5395 or concurrent enrollment and consent of advisor.

COMM 5397 - Project I
Selection of Project topic and development of project plan.
Prerequisite: Completion of 30 hours in the Communication MA program and/or approval of the Chair or Faculty Supervisor for the Project.

COMM 5398 - Project II
Completion and defense of Project.
Prerequisite: Completion of COMM 5397 Project I.

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 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 1315 - Programming Fundamentals for Non-CS Majors
Introduction to the fundamental concepts of procedural programming. Topics covered include data types, control structures, functions, arrays, files, and the mechanics of running, testing, and debugging. This course is for non-Computer Science Majors.

COSC 1336 - Programming Fundamentals
Introduction to the fundamental concepts of procedural programming. Topics covered include data types, control structures, functions, arrays, files, and the mechanics of running, testing, and debugging. The course also offers an introduction to the historical and social context of computing and an overview of computer science as a discipline.

COSC 1337 - The Object-Oriented Paradigm
Introduction to 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 issues.
Prerequisite: COSC 1336 or COSC 1315.

COSC 2315 - Computer Organization [TCCN: COSC 2325]
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 1336 or COSC 1315 and any MATH.

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: COSC 1337 and MATH 2413.

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 (COSC 3191 for the first semester, COSC 3192 for the second semester, COSC 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: Permission of the department chair.

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: Permission of the department chair.

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 (COSC 3191 for the first semester, COSC 3192 for the second semester, COSC 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: Permission of the department chair.

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 1337. Corequisite: COSC 3385.

COSC 3315 - Social and Professional Issues in Computing
Introduction to the social and professional issues that arise in the context of computing.
Prerequisite: COSC 1337.

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 and MATH 2330.

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 1337.

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 3345 - Computer Architecture
The function and design of various components necessary to process information digitally. Topics include: Digital logic and digital systems, machine level representation of data, assembly level machine organization,

memory system and organization, multiprocessing and alternative architectures.
Prerequisite: COSC 2315.

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 2315 and COSC 2336.

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 1337.

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 1337.

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 1337.

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 4312 - ERP Architecture Using SAP
Overview of the core processes, business interrelations and integration of the individual business applications within the SAP ERP eco-system. Students will perform various hands on case problems.
Prerequisite: COSC 3333, MANA 3305, and MARK 3311. .

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 1337.

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: Junior or Senior Standing in Computer Information Systems or Information Technology.

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 1315 or COSC 1336.

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 4342 - Sports Data Analytics
Identifying the metrics, types of analyses and making sense of sports-related data from a managerial business perspective. Use of industry tools to gather, learn, make predictions and visualize large sports data sets.
Prerequisite: MATH 1342 and MATH 1343. .

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 4347 - Business Intelligence and Analysis
Creating value from business data by converting it into meaningful and useful information for business decision making by using current industry business intelligence (BI) and business analytics (BA) tools and technologies. Students will use various techniques to analyze data using various software systems including the Cloud environment.
Prerequisite: MATH 1342 and MATH 1343. .

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 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 2315 and COSC 2336.

COSC 4361 - Retail Cyber 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 4325 or COSC 4360.

COSC 4362 - Retail Cyber 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.

COSC 4363 - Contingency Planning
The principles of disaster recovery and business continuity planning, and examines countermeasures that may be used to prevent system failure for an organization. The use of hot sites, warm sites, cold sites, and virtualization technology that allow the organization to continue operations after a disaster will also be covered.

COSC 4364 - Cyber Risk Analysis
Introduction to the basics of information systems assessment, evaluation, and red teaming. Students use the National Security Agency's ISAM Methodology to evaluate vulnerabilities and to develop appropriate responses to mitigate security risks. The students participate in a term long assessment/evaluation project in this course with an actual organization.
Prerequisite: COSC 4325 or COSC 4360 or equivalent. .

COSC 4367 - Cryptography
An overview to cryptography, which includes classical encryption, block ciphers and DES, public key cryptography, hashing, message authentication, key management, digital signatures, user authentication, transport layer security, wireless security, and e-mail security.
Prerequisite: COSC 4325 or COSC 4360 or equivalent. .

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: Consent of the department chair.

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 4385.

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: COSC 3375, COSC 3385, and 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: Enrollment Restricted to Students of Junior or Senior Standing with a Major in Computer Science, Information Technology, 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 3325.

COSC 4388 - Digital Forensics
Prepares students to collect, examine, and preserve digital evidence; and examines techniques used to prepare for, respond to, and investigate cyberspace incidents. Students will use forensic software to investigate computers, mobile devices, and networks.
Prerequisite: COSC 2315 or equivalent. .

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: Consent of Instructor.

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 3315, COSC 3325, COSC 3345, 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 5334 - ERP Architecture Using SAP
The course provides a broad fundamental understanding of the core processes, business interrelations and integration of the individual business applications within the SAP ERP eco-system.

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 - Cybersecurity
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 - Cybersecurity 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.

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 5347 - Business Intelligence and Analysis
Creating value from business data by converting it into meaningful and useful information for business decision making by using current industry business intelligence (BI) and business analytics (BA) tools and technologies.

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 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 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 5363 - Contingency Planning
This course presents the principles of disaster recovery and business continuity planning, and examines countermeasures that may be used to prevent system failure for an organization. This includes the use of hot sites, warm sites, cold sites, and virtualization technology that allow the organization to continue operations after a disaster.

COSC 5364 - Cyber Risk Analysis
This course is designed to teach students the basics of information systems assessment, evaluation, and red teaming. The students use the National Security Agency's ISAM Methodology to evaluate vulnerabilities and to develop appropriate responses to mitigate security risks. The students participate in a term long assessment/evaluation project in this course with an actual organization.

COSC 5366 - 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.

COSC 5367 - Cryptography
This course is designed to teach students the basics related to cryptography. Topics include classical encryption, block ciphers and DES, public key cryptography, hashing, message authentication, key management, digital signatures, user authentication, transport layer security, wireless security, and e-mail security.

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 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 5384 - Mobile Applications
This course will provide a detailed overview of application development for mobile devices. It will use key concepts and basic platform requirements to start down the best path to develop a mobile application. Development in the iOS, Android, and other platforms will occur.

COSC 5388 - Digital Forensics
Prepares students to collect, examine, and preserve digital evidence; and examines techniques used to prepare for, respond to, and investigate cyberspace incidents.

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 - 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 5199-5399 - Independent Study
Independent study in specific areas of counseling not covered by organized graduate courses. A maximum of six credit hours of independent study courses may be applied toward a graduate degree.
Prerequisite: Departmental consent.

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 5314 - Applied School Counseling
Counseling skills development through interactive classroom instruction, group/individual supervision of role-play, taped counseling sessions, and observation/consultation. May include on-site school experience.

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 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 5330 - Counseling Children

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 5348 - Mental Health in Schools
Examines mental health needs for students in early childhood, elementary, middle, and high school settings, including etiology, symptomology, treatment approaches, and crisis intervention strategies.

COUN 5368 - Assessment Techniques in Counseling
Examines the principles of educational, psychological, and vocational assessment in a counseling context, including concepts necessary for the selection, administration, scoring and interpretation of individual and group tests.

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 5384 - Advanced Counseling Theories and Evidence Based Practices
This course is designed to provide students with a greater depth of theoretical understanding about evidence based practices (i.e., Motivational Interviewing, CBT, DBT) and a major counseling theory covered in the COUN 5312 Counseling Theories course.
Prerequisite: COUN 5312 Counseling Theories and Applications and COUN 5392 Helping Relationships and Clinical Interviewing.

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 5387 - SUPERVISED INTERNSHIP IN SCHOOL COUNSELING II
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. Includes comprehensive counseling exam. The semester prior to enrollment, the student must complete the internship application process. CR/NC only. Prerequisites: Grade of CR in COUN 5386; concurrent enrollment or successful completion of COUN 5344; Departmental consent. May be repeated for up to 6 credits.
Prerequisite: Grade of CR in COUN 5386. Corequisite: Concurrent enrollment or successful completion of COUN 5344.

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, PSYC 5308, COUN 5324, 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, PSYC 5345 or COUN 5345, 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 [TCCN: CRIJ 1301]
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 1306 - Court Systems & Practices [TCCN: CRIJ 1306]
This course serves as an introductory examination of the structure of the court system and criminal case processing in the American judicial system, at the local, state and federal levels. There is a strong emphasis on the organizational structure of the courts, and the adjudication, sentencing and appellate processes. Students will be introduced to case law, the development of legal argument, and the process in which the Supreme Court of the United States hears and rules on cases based on constitutional issues. This course serves as a prerequisite to CRIJ 3327, *Advanced Court Systems and Practices.*

CRIJ 1310 - Fundamentals of Criminal Law [TCCN: 1310]
This course serves as an introductory examination of criminal law from a fundamental perspective. While Texas Criminal Law will be partially covered, this course examines the foundations of criminal law as they have evolved from British common law though the development of codified law within American society. Students will be exposes to criminal code, case law and the development of legal arguments from a criminal defense perspective. This course serves as a prerequisite to CRIJ 3326, *Advanced Criminal Law.*

CRIJ 2313 - Correctional Systems & Practices [TCCN: 2313]
This course serves as an introductory examination of the correctional systems within the United States, both at the institutional and community level. Within this course, students will have the opportunity to identify the differences between prisons and jails, probation and parole, indeterminate and determinate sentencing structures, and the arguments surrounding the notion that the correctional system within the U.S. needs a total overhaul. This course serves as a prerequisite to CRIJ 4313, *Advanced Correctional Systems and Practices.*

CRIJ 2328 - Police Systems & Practice [TCCN: CRIJ 2328]
This course serves as an introductory examination the structures, functions, and operations of law enforcement agencies in the United States, with emphasis on municipal police departments. The course surveys police operations, staff functions, personnel policies, and current innovations utilized in delivering police services. It covers such topics as police discretion, ethics, police-community relations, and the future of policing in American society. This course serves as a prerequisite to CRIJ 4333, *Advanced Police Systems and Practices.*

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 3301 - Survey of Forensic Science
This course will provide an overview of forensic scene disciplines, including a discussion of different fields in forensic science and the historical development of forensic science evidence. The course will explore the various types of scientific evidence and the respective fields that analyze each type of evidence.

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 - Advanced 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 3327 - Advanced Court Systems & Practices
The United States court system is an extensive network comprised of many different criminal justice actors including, judges, prosecutors, defense attorneys, clerks, and other individuals. The purpose of this course is to examine salient issues relevant to the court structure like the appeals process, judicial decision making, plea deal arrangements, and the relationship between the prosecutor, defense attorney and judges. This course will serve as an advanced examination of the court system beyond what is provided in an intro-level courts class.
Prerequisite: CRIJ 1301.

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 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 4309 - Family Violence
Family violence occurs among all races, genders, ages, and socio-economic statuses. This course focuses on the examination of family violence through a criminological lens, to identify the causes of family violence and the rationales of the offenders. Special attention will be paid to theoretical explanations including biological, social/structural, and life course theories. Additionally, the course examines the physical and psychological ramifications of family violence for the victims and the criminal consequences of family violence for the offender.
Prerequisite: Students must complete CRIJ 1301 as the prerequisite to this course.

CRIJ 4311 - Race, Class, Gender, & Delinquency
This course is designed to evaluate how race, class, gender, and other diversity issues impact juvenile delinquency and adult criminal patterns, responses to delinquent and criminal activity, and decision making within the criminal justice system. Special attention will be given to questions of racial profiling, mass incarceration, and the question of discrimination in criminal justice. Additionally, the course focuses on these demographic features through a critical criminology lens that examines how the structural factors of the American economic, political, social, and criminal justice systems impact the likelihood of criminality for underprivileged populations.
Prerequisite: CRIJ 1301.

CRIJ 4312 - Legal Issues in Juvenile Justice
Juvenile offenders are different from their adult counterparts in many ways, and are therefore afforded more legal protections than adult offenders. This course is designed to analyzed the most influential United States Supreme Court cases that have shaped and crafted the formation of the juvenile justice system in America. Beginning with *In re Gault*(1967) and ending with the most current federal cases, this course examines a different case each week from all sides including the background of the case, legal arguments from each side, judicial decision-making, and the broader impacts the case has had on the juvenile justice system as a whole. In addition to these landmark cases, state and federal legislation will be examined in conjunction with the cases being discussed.
Prerequisite: Students must complete CRIJ 1301 as the prerequisite to this course.

CRIJ 4313 - Advanced Correctional Systems & Practices
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 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 - Contemporary Policing
This course will describe the historical development of policing within the United States but will extend beyond the community policing era into modern policing actions in a post-9/11 society. Students will be introduced to the theoretical foundations of modern policing practices and emphasis will be placed on describing how advances in policing technologies reconciles with community based efforts in an attempt to ameliorate the problems associated with criminal behavior.
Prerequisite: CRIJ 1301.

CRIJ 4334 - Homeland Security
This course explores the impact of 9/11 on law enforcement organizations and criminal justice agencies in the United States and examines the linked relationship between local, state, and federal law enforcement with the military and homeland security organizations. Students will also focus on terrorism-related issues including the motivations and actions taken by trans-national terrorist groups around the world. There is a strong emphasis on understanding how the broader impacts of homeland security issues at the national level and how they trickle down to the local law enforcement communities. This course serves as a continuation of CRIJ 4333 Contemporary Policing and should be taken second in the sequence.
Prerequisite: CRIJ 1301 and CRIJ 4333.

CRIJ 4335 - Emergency Planning and Risk Management
This course explores the effect of man-made emergencies and natural disasters on the communities in which we live. Students will have the opportunity to explore the roles and duties of emergency management professionals and first responders, including police, fire, EMTs and more. During this course, students will be exposed to emergency planning resources for natural events such as hurricanes, earthquakes and tornadoes, and for unexpected events such as terrorist activities, explosions and fires, and mass casualty events. In addition to reviewing the emergency response to prior events, students will have the opportunity to plan for real-world scenarios that have yet to occur. By the end of the semester, students will work in groups to create an emergency response plan to a fictional wide-scale event of the instructor's choosing.
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 4344 - Crime Scene Processing
This course focuses on the processing of evidence at a crime scene. Topics include searching and identifying evidence at crime scenes, crime scene photography and other evidence documentation methods, evidence collection procedures, and preserving a chain of custody for crime scene evidence. Course includes mock crime scene processing.
Prerequisite: CRIJ 3301.

CRIJ 4345 - Courtroom Testimony
This course will discuss the presentation of evidence in the criminal court system. Course topics include the evolution of the law of evidence and expert testimony admissiblity in the United States, defining the different types of evidence and testimony presented during a trial, and comparing

state and federal rules of evidence and expert testimony. Students will complete a mock testimony exercise at the end of the semester.

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 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 5355 - Criminal Justice Capstone Seminar
This course provides a capstone experience for students to address an important policy and administrative issue within a criminal justice agency. Students will use concepts from their coursework and experiences to develop specific recommendations for design, implementation, and evaluation of this project task.
Prerequisite: All course requirements are expected to be completed prior to enrollment in this course, or during the same semester the course is taken. You are also expected to communicate orally and in writing at a graduate level university student.

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.

CSCI - COMPUTER SCIENCE

CSCI 4320 - Computational Theory
Introduces the foundations of computer science through the study of abstract machines. In this course, computational models of increasing power are analyzed: finite automata; pushdown automata; and Turing Machines.I
Prerequisite: MATH 2330.

CSCI 4332 - Modern Programming
This course provides an introduction to problem modeling, algorithm design and implementation in a modern programming language. The programming language used will vary from semester to semester depending on the needs of students and industry.
Prerequisite: COSC 1315 or COSC 1336.

CSCI 4333 - Assembly Language Programming
This course provides an introduction to programming in Assembly Language. Topics include data transfer, controlling execution flow, conditional branches and looping, arithmetic operations, string operations, defining functions, and using system calls. This course focuses on the Intel x86 instruction set and includes discussion of programming on both 32-bit and 64-bit architectures.
Prerequisite: COSC 2315.

CSCI 4350 - Machine Learning
Machine learning techniques are introduced including algorithms for implementing various stages of a machine learning system. Various stages include preprocessing, classification, clustering, regression analysis, and post processing. These stages can be implemented using statistical methods, non-parametric methods, neural networks, fuzzy inference systems, fuzzy neural systems.
Prerequisite: COSC 1336.

CSCI 4362 - Ethical Hacking
This course covers the fundamentals of ethical hacking and penetration testing. Specifically, we will study many of the hacking approaches, methods and techniques used to gain information and/or access to computer systems. The skills learned within this course are intended to provide a network administrator or security professional with knowledge and skills to assess the vulnerability of systems and networks to illicit entry by simulating attack techniques used by the adversary.
Prerequisite: Junior or Senior Standing in Computer Science, Computer Information Systems, or Information Technology.

CSCI 4363 - Reverse Engineering and Malware Analysis
This course provides an introduction to reverse engineering and malware analysis. Tools and techniques for safely examining a suspected malware executable in order to determine its capabilities will be used.
Prerequisite: Junior or Senior Standing in Computer Science, Computer Information Systems, or Information Technology.

CSCI 4385 - Information Technology Capstone
An integrated perspective of the problems in today's information systems software development environment, concentration on contemporary design, methodologies, and considerations unique to users of computers and information systems.
Prerequisite: COSC 3315 and COSC 3385.

CSCI 5320 - Computational Theory
Introduces the foundations of computer science through the study of abstract machines. In this course, computational models of increasing power are analyzed: finite automata; pushdown automata; and Turing Machines.

CSCI 5332 - Modern Programming
This course provides an introduction to problem modeling, algorithm design and implementation in a modern programming language. The programming language used will vary from semester to semester depending on the needs of students and industry.

CSCI 5333 - Assembly Language Programming
This course provides an introduction to programming in Assembly Language. Topics include data transfer, controlling execution flow, conditional branches and looping, arithmetic operations, string operations, defining functions, and using system calls. This course focuses on the Intel x86 instruction set and includes discussion of programming on both 32-bit and 64-bit architectures.

CSCI 5342 - Sports Data Analytics
This is an advanced course in analyzing sports data for decision making. Identifying the metrics, types of analyses and making sense of sports-related data from a managerial business perspective. Use of industry tools to gather, learn, make predictions and visualize large sports data sets.

CSCI 5350 - Machine Learning
Machine learning techniques are introduced including algorithms for implementing various stages of a machine learning system. Various stages include preprocessing, classification, clustering, regression analysis, and post processing. These stages can be implemented using statistical methods, non-parametric methods, neural networks, fuzzy inference systems, fuzzy neural systems.

CSCI 5362 - Ethical Hacking
This course covers the fundamentals of ethical hacking and penetration testing. Specifically, we will study many of the hacking approaches, methods and techniques used to gain information and/or access to computer systems. The skills learned within this course are intended to provide a network administrator or security professional with knowledge and skills to assess the vulnerability of systems and networks to illicit entry by simulating attack techniques used by the adversary.
Prerequisite: Enrollment within the MSCS program.

CSCI 5363 - Reverse Engineering and Malware Analysis
This course provides an introduction to reverse engineering and malware analysis. Tools and techniques for safely examining a suspected malware executable in order to determine its capabilities will be used.

ECON - ECONOMICS

ECON 1301 - Introduction to Economics [TCCN: ECON 1301]
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.

ECON 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 3302 - Economic and Financial Literacy
Economic and Financial Literacy is a course for students of all majors who want to deepen their understanding of the economic way of thinking and personal finance as it affects the individual and family, firms and industries and societies around the globe. The course is divided into four parts: foundational economics, foundational personal finance, capital markets and international implications. Taught in an online format designed for working students, the course makes extensive use of online simulations, gamification and interactive faculty/student and student/student virtual asynchronous communication

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 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 4355 - Econometrics
This course provides an introduction to econometric methods, including basic tools of regression analysis and hypothesis testing in economics. Students learn computer software for regression analysis and use it to conduct their own empirical research.
Prerequisite: Scope and methodology of microeconomics. Economic principles to describe consumer and business behavior and the processes of price determination and resource allocation. Application of economic tools to select problems in competition, international trade and taxation.

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 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.

EDCI - CURRICULUM AND INSTRUCTION

EDCI 5320 - Teacher Learning and Professional Development
This course examines teacher learning within professional development, the essential elements of high quality professional development, how to measure the impact of professional development, and how professional development is played out in district and state contexts.

EDCI 5321 - Instructional Coaching
This course provides an introduction to instructional coaching, a form of job-embedded professional development focused on improving teaching practice in order to improve student learning. In addition, culturally proficient coaching will be examined as a way to shift thinking in support of all students achieving at higher levels.

EDCI 5322 - Tools Used in Instructional Coaching
This course provides and overview of tools used in academic coaching to facilitate successful coaching cycles. Students will use these tools in simulated coaching environments to develop proficiency in engaging in coaching activities.

EDCI 5329 - Instructional Coaching Practicum
This course allows students to put into practice their understanding of teacher learning, professional development, and academic coaching through a coaching practicum.
Prerequisite: EDCI 5321 and EDCI 5322.

EDCI 5332 - Instructional Design for Effective Learning Environments
This course focuses on strategies for designing and facilitating effective classroom instruction. Students will examine theory as well as explore resources to gain knowledge and understanding of how to design and implement instructional strategies in a variety of classroom settings. Topics include assessment, e-learning, emerging technologies, information and visual literacies, and product evaluation.

EDCI 5333 - Innovation, Science, and Technology Applications
This course is designed to introduce students to the essentials of creativity, design and engineering through the use of innovative applications and technologies such as computer coding, modeling, introductory robotics, and 3D printing. Students will be able to write basic computer code, develop simple games, and incorporate robotics into instruction. Furthermore, students will examine how emerging technologies such as 3D modeling and printing can be integrated into the K-12 classroom.

EDCI 5334 - Learning Technologies and Disabilities
This course highlights how technology can differentiate instruction and assistive technology may support the needs of all students, including students with disabilities.

EDCI 5335 - Current Trends in Educational Technology
This course is designed to introduce students to current trends and issues in educational technology. Students will take a constructivist approach to develop a leadership vision for implications of past, current, and future developments in educational technology.

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.

EDIN - EDUCATIONAL INTERNSHIP

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 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 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.

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.
Corequisite: To better prepare students for the new Texas principal certification exam, the sequence of Ed Leadership courses has been modified. Students will no longer be required to concurrently take EDLR 5320, 5333 and 5271.

EDLR 5272 - Practicum in the 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.
Corequisite: To better prepare students for the new Texas principal certification exam, the sequence of Ed Leadership courses has been modified. Students will no longer be required to concurrently take EDLR 5330, 5337 and 5272.

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.

EDLR 5311 - Instructional Leadership and Supervision
Aspiring school principals examine instructional leadership, professional development, and methods of supervision. The course includes the study of the observation and coaching cycle to promote teacher growth, and research-based instructional practices to expand the aspiring principals' instructional leadership skills.
Corequisite: The sequence of courses will change. EDLR 5349 and EDLR 5270 will no longer be co-requisites.

EDLR 5313 - Strategic School Improvement
This course will engage aspiring leaders in a systematic exploration and research on the school improvement process through the analysis of principal actions and school actions that impact student achievement outcomes.
Corequisite: EDLR 5310 is no longer a co-requisite for this course.

EDLR 5320 - School Law
An overview of school law for educators addressing legal issues that impact the operation of public schools.
Corequisite: To better prepare students for the new Texas principal certification exam, the sequence of Ed Leadership courses has been modified. Students will no longer be required to concurrently take EDLR 5320, 5333 and 5271.

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.
Corequisite: To better prepare students for the new Texas principal certification exam, the sequence of Ed Leadership courses has been modified. Students will no longer be required to concurrently take EDLR 5330, 5337 and 5272.

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.
Corequisite: To better prepare students for the new Texas principal certification exam, the sequence of Ed Leadership courses has been modified. Students will no longer be required to concurrently take EDLR 5320, 5333 and 5271.

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.
Corequisite: To better prepare students for the new Texas principal certification exam, the sequence of Ed Leadership courses has been modified. Students will no longer be required to concurrently take EDLR 5330, 5337 and 5272.

EDLR 5349 - Curriculum and Instruction for School Improvement
This course offers a framework intended to help educational leaders (principals) recognize quality instructional and curricular practices that lead to school improvement and student success. The course will provide research-based teaching methods, explains how to implement them in the classroom, and shows what exemplary instruction looks like. Students will observe examples of state-of-the-art teaching methods in action.
Corequisite: EDLR 5311 and EDLR 5270 are no longer co-requisites for this course.

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 5370 - Practicum in the Principalship I
This course is extension of prior coursework and specifically work completed in EDLR 5313 Strategic School Improvement. The practicum requires 120 clock hours of practitioner residency experiences as a school administrator. Students must complete the first block of courses to register for the practicum. They may not enroll in this course until they have completed EDLR 5313.

Prerequisite: Students must complete the first block of courses (EDLR 5311 & EDLR 5313) to register for the Practicum. They may not enroll in this course until they have completed EDLR 5313. Corequisite: Remove any co-requisites currently associated with this course.

EDLR 5371 - Practicum in the Principalship II
A field experience requiring one hundred twenty hours (120) of activities as a school administrator in a Texas school setting. Practicum activities are aligned to the SBEC Principal Domains, Competencies, and supporting standards.
Prerequisite: Students must complete the first block of courses to register for the practicum. They may not enroll in this course until they have completed EDLR 5311 & 5313. Corequisite: There are no co-requisites for this course.

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.

EDRM - EDUCATION RESEARCH METHODS

EDRM 6350 - Program Evaluation in the Education Setting
This course will focus on theory and practice of evaluation including research methods and design strategies to measure program outcomes and skills to evaluate personnel and projects as it relates to school improvement. The course will include components of evaluation models and skills in preparing and communicating evaluation findings.
Prerequisite: N/A. Corequisite: N/A. Crosslisted as: N/A.

EDRM 6351 - Design-Based Implementation Research
A course designed to introduce design-based implementation research as a method to design, sustain and evaluate programs in education. The course will focus on the use of the approach to ground systematic inquiry and build capacity to engage in continuous improvement while adhering to the four principles of design-based implementation research.
Prerequisite: N/A. Corequisite: N/A. Crosslisted as: N/A.

EDRM 6352 - Quantitative Research Methods in the Education Setting
This course focuses on the field of quantitative research and statistics. It focuses on the stages of quantitative research including the development of educational research questions, research designs, conceptual frameworks, methodological stances, data collection and analysis, statistics, and instrument design, and implementation in education settings. The course will focus on the interpretation and use of quantitative data with emphasis on the implications for school improvement, educational policy and research design.
Prerequisite: N/A. Corequisite: N/A. Crosslisted as: N/A.

EDSI - EDUCATION SCHOOL IMPROVEMENT

EDSI 6160 - Dissertation I
The course is intended to guide Ed.D. students through the dissertation process, including the identification of a problem related to school improvement, the preparation of a proposal for approval by dissertation committee, a protocol for review and approval by Institutional Review Board and writing of the dissertation.
Students must enroll in this course starting in their second semester of the program and continue to register in a dissertation course until completion of the dissertation.
Prerequisite: N/A. Corequisite: N/A. Crosslisted as: N/A.

EDSI 6161 - Dissertation II
The course is intended to guide Ed.D. students through the dissertation process, including the identification of a problem related to school improvement, the preparation of a proposal for approval by dissertation committee, a protocol for review and approval by Institutional Review Board and writing of the dissertation.
Students must enroll in this course during their second year of study and continue to register in a dissertation course until completion of the dissertation.
Pre-Requisite: 2 SCHs in EDSI 6160 – Dissertation I
Prerequisite: Students must complete 2 credits in EDSI 6160 - Dissertation I prior to enrolling in EDSI 6161. Given that all EDSI courses are in the approval process, EDSI 6160 is not available in the drop down menu and I wasn't able to select the course in the field below. Corequisite: N/A.

EDSI 6170 - Dissertation in Practice I
The course is intended to guide Ed.D. students through the dissertation in practice process, including the identification of a problem of practice related to school improvement, the preparation of a proposal for approval by dissertation committee, a protocol for review and approval by Institutional Review Board and writing of the dissertation in practice, including the publication of multiple articles in educational journals. The focus of the dissertation in practice is on problems of practice with the goal of yielding generative impact on school improvement by developing and producing scholarly articles to contribute to the evidence base of the education profession.
Students must enroll in this course starting in their second semester of the program and continue to register in a dissertation in practice course until completion of the dissertation.

EDSI 6171 - Dissertation in Practice II
The course is intended to guide Ed.D. students through the dissertation in practice process, including the identification of a problem of practice related to school improvement, the preparation of a proposal for approval by dissertation committee, a protocol for review and approval by Institutional Review Board and writing of the dissertation in practice, including the publication of multiple articles in educational journals. The focus of the dissertation in practice is on problems of practice with the goal of yielding generative impact on school improvement by developing and producing scholarly articles to contribute to the evidence base of the education profession.
Students must enroll in this course during their second year of study and continue to register in a dissertation in practice course until completion of the dissertation.
Prerequisite: Students must complete 2 credits in EDSI 6170 - Dissertation in Practice I prior to enrolling in EDSI 6171. .

EDSI 6311 - Data Driven Planning for School Improvement
This course employs an interdisciplinary approach to examine how educational leaders can determine, promote, support, and achieve successful, systematic school improvement through the use data and meaningful feedback, and the implementation of systems to monitor the teaching and student learning.
Prerequisite: N/A. Corequisite: N/A. Crosslisted as: N/A.

EDSI 6312 - The Study and Application of Improvement Science
This course employs an interdisciplinary approach to examine Improvement Science and how leaders, teachers, and researchers collaborate to solve educational problems of practice.
Prerequisite: N/A. Corequisite: N/A. Crosslisted as: N/A.

EDSI 6313 - School Improvement and Accountability Models
This course is designed to examine Texas, national and international educational change models; analyze the sustainability and effectiveness of the models; and the survey the impact of these models on school improvement efforts. Additionally, the course explores current school accountability models, systems, and strategies at the national, state, and local levels, including the Texas and locally developed school accountability systems.
Prerequisite: None. Corequisite: None. Crosslisted as: None.

EDSI 6314 - Research-Based Pedagogies for School Improvement
This course examines the analysis and use of research-based pedagogies by critically reviewing previous and current learning theories and instructional practices that have proven to support school improvement.

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: No prerequisite required. Corequisite: No corequisites required.

EDSP 3354 - Instructional Programming for Students with Mild and Moderate Disabilities
Study of instructional techniques for use with learners with mild/moderate disabilities. Addresses assessment and instructional methods, accommodations, adaptations, strategies, materials and behavior management techniques appropriate for teaching individuals with exceptionalities in a variety of educational settings.
Prerequisite: EDUC 2301.

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 21with emphasis on federal and state regulations affecting special education. Addresses educational, medical, psychological, and social factors specific to individuals with disabilities.

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 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. Crosslisted as: NA.

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 5371 - 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 1360 - Special Topics
Thorough exploration of topics of substantial interest in education. Special topics courses may be repeated up to 6 semester credit hours if topics vary.

EDUC 1389 - Contemporary World Issues
Students will explore interconnected global issues of public education, climate change, and corporate social responsibility and how to craft and write effective arguments about these issues using the tools of classical and modern rhetoric. Students will critically think about these issues, quantitatively explore data, and communicate results through written and oral products. This course will engage students in reading, writing, critical thinking, communication, and collaboration as they address contemporary discoveries, practices, and related issues from around the world. This course will address the Core Objectives of Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Social Responsibility, and Personal Responsibility within UT Tyler's Core Component Area Option of Human Expression and the foundational Component Area of Language, Philosophy and Culture.
Prerequisite: Students will be identified by UT Tyler Academic Success as being eligible to take this course. (These students will be those who have not taken the Bridge's program or who were not successful in the Bridge's Program.).

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 3020 - Field Experience II
Field Experience II is designed for students in Phase II/Block 2. This course provides pre-service educators the opportunity to observe and assist mentor teachers in the classroom by assisting with a variety of tasks (i.e. tutoring students, providing small group instruction, teaching a lesson, assisting with whole class activities, preparing instructional materials, grading student work, and other duties typically assigned to teachers.)
Prerequisite: Admitted to School of Education and Departmental Permission.

EDUC 3030 - Field Experience III
Field Experience III is designed for students in Phase III/Block 3. This course provides pre-service educators the opportunity to observe and assist mentor teachers in the classroom by assisting with a variety of tasks (i.e. tutoring students, providing small group instruction, teaching a lesson, assisting with whole class activities, preparing instructional materials, grading student work, and other duties typically assigned to teachers.)
Prerequisite: Admitted to the School of Education and Department Consent.

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 3315 - Texas Schools and Students
This course provides a foundation of Texas schools and students. Students will explore the Texas Education Code, national policies that Texas schools must follow, and the Texas accountability system for students, teachers, and schools. Students will also examine the different characteristics of special populations and the issues associated with those students. Students will participate in 12 hours of field experience.

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 - Clinical 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 certification examinations. (Previously known as Student Teaching Seminar). 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 tops 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 4373 - Social Studies Curriculum in the Elementary Classroom
This course provides a foundation for the teaching of social studies as it relates to the EC-6 standards as set by the state of Texas.

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 4383 - Science Curriculum in the Elementary Classroom
This course provides a foundation for the teaching of science as it relates to the EC-6 standards as set by the state of Texas.

EDUC 4640 - Clinical Teaching
This one semester experience will provide 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. CR/NC only.
Prerequisite: Successful completion of all Phase III or Block 3 courses.
Corequisite: EDUC 4057.

EDUC 5047 - Clinical Teaching/Internship
Demonstration of synthesis of the preservice teacher's knowledge and skills through reflective activities, review of learner-centered proficiencies, review of certification competencies, study skills, and test-taking skills. A culminating experience that prepares students for the required State exams. CR/NC only.

EDUC 5048 - Teaching Internship Companion Seminar II
Demonstration of synthesis of the preservice teacher's knowledge and skills through reflective activities, review of learner-centered proficiencies, review of certification competencies, study skills, and test-taking skills. A culminating experience that prepares students for the required State exams. CR/NC only.
Prerequisite: Students must successfully complete the first semester of the internship (EDUC 5047) prior to enrolling in this course.

EDUC 5049 - Teaching Internship Companion Seminar III
Demonstration of synthesis of the preservice teacher's knowledge and skills through reflective activities, review of learner-centered proficiencies, review of certification competencies, study skills, and test-taking skills. A culminating experience that prepares students for the required State exams. CR/NC only.
PreRequisite: Students must complete a year-long internship (EDUC 5047 and EDUC 5048) prior to enrolling in this course. This course is only for students that have successfully completed the internship year, but will continue to teach under the supervision of the School of Education until they complete their M.Ed.
Prerequisite: Students must successfully complete a year long internship (EDUC 5047 & EDUC 5048) prior to enrolling in this course. .

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 5301 - Statistics & Research Methods for the Learning Sciences
This course is designed to help students learn the basis of data analysis, including the descriptive and inferential statistical procedures that are commonly used in learning sciences research. Students will gain competence in the evaluation of research reports and the development and planning of research proposals.

EDUC 5302 - Developing an Educational Research Proposal
This course is a continuation of EDUC 5301. Students will develop competency in the skills needed to conduct educational research through the systematic review of responsible research practices. Students will be expected to produce and present a well-developed research proposal at the conclusion of the semester.
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 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 5315 - School Policies and Texas Students
Students will explore the national and state policies, including the Texas Education Code, the Code of Ethics, and the Texas school accountability system, to understand the implications state and national policies have on students, teachers and schools. Students will also examine the different student populations and the critical issues associated with diverse students. Students must conduct 30 hours of observations in schools. Students are required to complete a school district background check in order to conduct school observations.

EDUC 5316 - Best Practices for Curriculum and Instruction
This course addresses instructional methods and best practices across core content areas. The course will explore research-based teaching methods and equip students with skills needed to implement research-based teaching methods in the classroom. Students will be provided with exemplar examples of teaching methods in core content areas.

EDUC 5335 - Approaches to Classroom Management and Discipline
Designed to provide teachers with the opportunity to acquire advanced skills for effective planning, implementing, and evaluating instruction. It will also present strategies available for management, communication, and discipline at the introductory level.

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 - Diversity in Educational Settings
This course provides an overview of the important concepts, principles, theories, and practices of multicultural education, including effective leadership, instruction, and management strategies for work in diverse educational settings. Designed to provide insight into issues of diversity such as culture, ethnicity, exceptionality, gender, language, and socioeconomic status. Demographic issues along with urban, suburban, and rural educational settings are also addressed.

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 and Assessment
Teaching methodology for secondary teaching disciplines, curriculum, materials, instructional models and asessment.
Prerequisite: Admission to the Graduate School or Post Baccalaureate Teacher Certification.

EDUC 5386 - History of STEM Education
This course addresses the historical underpinnings of the teaching and learning of Science, Technology, Engineering, and Mathematics (STEM) content and pedagogical practices both individually and collectively since 1800AD.

EDUC 5389 - Interdisciplinary Methods
Science Technology Engineering and Mathematics (STEM) Education is by definition interdisciplinary. This course will explore how K-12 teachers can best integrate multiple disciplinary concepts within their STEM and Non-STEM classrooms. Interdisciplinary methods related to STEM and Fine Arts; STEM and Language Arts; STEM and Social Studies; and STEM alone will be addressed in this 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.

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 2201 - Programming for Engineers
Introduction to C programming; structure program development in C, program control, C functions, arrays. Pointers, characters and strings, formatted input/output; C structures, unions, bit manipulations and enumerations; file processing,; data structures; preprocessor. Introduction to object-oriented programming in C++ and JAVA. Engineering application examples. Two hours of lecture with integrated lab.
Prerequisite: MATH 2413.

EENG 2301 - Programming Languages for Design
A hands-on course designed to teach students programming languages and tools for design projects. Introduction to high-level programming languages and modern engineering tools for systems modeling, analysis and design: MATLAB; Python; NI Labvview; basic project implementation using a microcontroller development environment. Three hours of lecture per week.

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 3301 - Electrical Engineering Circuits, Systems, and Applications
The fundamentals of electrical and electronic components and circuits, circuit analysis, electric motors and generators, fundamentals of electric power systems. Three hours of lecture per week. (Not for electrical engineering majors)
Prerequisite: PHYS 2326.

EENG 3302 - Digital Systems Design
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.
Prerequisite: MATH 2413 Calculus I.

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 1336.

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 and Embedded Systems
Microprocessor architecture, programming and interfacing. Introduction to assembly language programming; microcomputers, microcontrollers, instruction set, chip interfacing, addressing modes, interrupts, input/output, communication. Hardware/software interfacing and embedded systems applications. Three hours of lecture per week with integrated laboratory sessions.
Prerequisite: EENG 3302 and COSC 1336.

EENG 3308 - Programming Languages for Design
A hands-on course designed to teach students programming languages and tools for design projects. Introduction to high-level programming languages and modern engineering tools for systems modeling, analysis and design: Matlab; Python; NI Labview; basic project implementation using a microcontroller development environment. Three hours of lecture per week.

EENG 3314 - Design Methodology in Electrical Engineering
Introduction to analysis and design of electrical engineering systems. Modeling, simulation and characterization of subsystems and systems with modem engineering tools. Comparison and evaluation of alternative system designs with electrical engineering examples.
Prerequisite: EENG 3305. Corequisite: EENG 4308 and EENG 4311.

EENG 4105 - Undergraduate Research Seminar
This course focuses on preparation of students for engineering research: literature survey, generation of hypothesis, experiment design, research methodology, analysis and interpretation of data using a set of published scientific research papers. One hour of lecture per week.
Prerequisite: Senior standing in BSEE program.

EENG 4109 - Electronic Circuits 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: Prerequistes EENG 3307, EENG 2301, EENG 4309, and EENG 4109. Corequisite: Pre-requisites or co-requisites SPCM 1315 or SPCM 1311.

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 4307 - Microprocessors and Embedded Systems
Microprocessor architecture, programming and interfacing. Introduction to assembly language programming; Microcomputers, microcontrollers, instruction set, chip interfacing, addressing modes, interrupts, input/output, communication. Hardware/software interfacing and embedded systems applications. Three hours of lecture per week with integrated laboratory sessions.
Prerequisite: EENG 3302, COSC 1336.

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 1336.

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 5302 - Instrumentation and Measurement Systems
An introduction to instrumentation and measurement systems. Generalized instrument characteristics, signal conditioning, and sensors for measurement of various physical quantities.
Prerequisite: EENG 4309 Electronic Circuits II.

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 5317 - Power Electronics
AC-DC converters; Inverters, AC voltage controllers; DC-DC Converters; Speed torque characteristics of motors and loads; Adjustable speed drives; Introduction to HVDC.
Prerequisite: EENG 4310 Electric Power Systems.

EENG 5318 - Biosensors and Biosignal Processing
Basic physiology, Bioelectric signals, basic biosensors, wearable sensors, bio-amplifiers, time-frequency analysis, ARMA models, Principal Component Analysis, Introduction to nonlinear systems and signals. Analysis of Electrocardiogram, electroencephalogram, activity, heart rate, galvanic skin response and temperature signals.
Prerequisite: EENG 4311 and MATH 3203 or equivalent.

EENG 5319 - Neural Networks
Introduction to nonlinear networks for regression/approximation, classification, and clustering. Statistical learning theory and support vector machines. First and second order training algorithms and their properties. Methods for evaluating network performance. Applications in classification, estimation and forecasting.
Prerequisite: COSC 1336 – Programming Fundamentals and MATH 3203 – Matrix Methods and EENG 4311 – Signals and Systems.

EENG 5320 - Computer Architecture
Introduction to computer architecture, RISC/CISC, processors, data path, control, ALU; pipelining, memory, cache, I/O, digital logic; micro architecture, instruction sets, addressing modes; operating systems, virtual memory, processes, assembly language.
Prerequisite: EENG 3302 - Digital Systems and EENG 3307 - Microprocessors.

EENG 5322 - Image Processing
Digital Image Processing Fundamentals: acquisition, representation, storage and processing of binary, gray scale and color images; Image enhancement in the spatial domain and frequency domain; Image transforms, filtering, compression, morphological operations and wavelets; Color image processing; Image analysis and segmentation techniques.
Prerequisite: COSC 1336 – Programming Fundamentals and MATH 3203 – Matrix Methods and EENG 4311 – Signals and Systems.

EENG 5323 - Reliability
Basic concepts of probability and reliability, time dependent reliability models, reliability growth predictions, strength based reliability; weakest link and fail-safe systems; Monte Carlo Methods, maintainability, availability, fault tree analysis, reliability data bases.
Prerequisite: MATH 3351 Probability and Statistics and EENG 2101 Matlab for Engineers or COSC 1336 Programming Fundamentals.

EENG 5326 - Power Transmission and Distribution
Distribution system planning and automation; load characteristics; design of substations; design considerations of primary systems; design considerations of secondary systems; voltage drop and power loss calculation; application of capacitors to distribution systems; EHV-UHV transmission systems; electrical characteristics of EHV-UHV transmission circuits and conductors; corona performance on AC transmission lines; design of sub-transmission lines.
Prerequisite: EENG 4310 Electric Power Systems.

EENG 5327 - Optimal Control
Design of optimal control systems: optimization under constraints, linear quadratic regulators, Riccati equation, suboptimal control, dynamic programming, calculus of variations, Pontryagin's minimum principle, and reinforcement learning.
Prerequisite: EENG 4308 – Automatic Control Systems.

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 5331 - Digital Communications
Transmission, reception and reliability for digital communication systems in the presence of noise. Topics covered include: information theory: Shannon's theorems; Digital line codes: inter symbol interference. Both baseband and quadrature multiplexed band pass digital modulations schemes will be treated.
Prerequisite: EENG 4312 Communication Theory.

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 5339 - CMOS Analog Design
CMOS device characteristics, fabrication, and modeling; CMOS analog subsystems (switches, current sources, and voltage references), amplifiers, and voltage comparators.
Prerequisite: EENG 4309 Electronic Circuits II, EENG 4109 – Electronic Circuits II Lab.

EENG 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 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 5393 - Graduate Electrical Engineering Project
Faculty directed independent study that culminates in a professional quality Engineering Report on a significant design or analysis project. CR/NC only.
Prerequisite: 9 hours of MSEE graduate coursework and CI.

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 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.

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.

EMBA - EXECUTIVE MBA

EMBA 5361 - Issues in the American Healthcare System
This course is a review of contemporary policy issues in healthcare financing and delivery. The impact of these issues on all aspects of the healthcare system including physicians, hospitals, employers, employees, uninsured, payors, and federal and state governments would be covered.
Prerequisite: Prerequisite: Admission to EMBA-HCM program. Crosslisted as: Cross listed with MANA 5361: Introduction to the American Healthcare System.

EMBA 5362 - Healthcare Information Technology and Informatics
This course is an in-depth review of the clinical and administrative information, applications, technologies, and infrastructure required to effectively manage complex healthcare organizations. It also covers the IT-related challenges and strategy considerations healthcare executives face in this rapidly changing care delivery and financing environment.
Prerequisite: Prerequisite: Admission to EMBA-HCM program.

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 1200 - College Composition I Lab
This class is a lab that supports the learning for ENGL 1301. Students must be simultaneously enrolled in ENGL 1301. To register for the class, see your advisor.
Prerequisite: Reading/writing assessment scores. Corequisite: ENGL 1301.

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 2311 - Technical and Business Writing [TCCN: ENGL 2311]
Intensive study of and practice in professional settings. Focus on the types of documents necessary to make decisions and take actions on the job, such as proposals, reports, instructions, policies and procedures, e-mail messages, letters, and descriptions of products and services. Practice individual and collaborative processes involved in the creation of ethical and efficient documents.

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 2370 - Readings in American Leadership
This course will study classic writings on American leadership. The readings in the course will draw from a range of perspectives and contexts in order to create a working definition of the characteristics of an exemplary leader and to consider the application of those traits in current academic and professional settings. The course will include speeches or essays by a variety of pre-1865 American leaders.

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 3361 - Word and Digital Technology
This course enables students to navigate web-based publishing platforms, including Wikis, blogging platforms, and audio-based podcasting software, in order to adapt different genres of writing to virtual environments. Completion of a research-based digital project is required.
Prerequisite: Prerequisite: ENGL 1301 and ENGL 1302.

ENGL 3362 - Reading and Writing about Data
A course designed to enable students to transfer skills of critiquing texts to skills of analyzing and writing about data with R, free software that compiles data in source code form and/or with other industry-standard software.
Prerequisite: Prerequisite: ENGL 1301 and ENGL 1302.

ENGL 3375 - Grammar and Professional Editing
This course teaches students how to navigate and, when appropriate, manipulate grammar concepts in academic and professional writing. Students will become theorists and practitioners of modern grammar as they investigate the relationship between more abstract grammar concepts and their real-world deployments in professional editing within digital spaces.

ENGL 3376 - Contrastive Linguistics
Course compares phonemic, morphological and syntactical differences between English and a sampling of other languages.

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 4371 - Special Topics in Rhetoric and Writing
Select topics in rhetoric and writing. The course may focus on rhetorical theory, history of rhetoric, rhetoric and technology, or writing for specific purposes. May be repeated once for credit when content changes.
Prerequisite: ENGL 3308, or permission of the instructor.

ENGL 4372 - Professional and Technical Writing
Study in the application of rhetorical theory to professional and technical writing. Students will analyze, plan, and write, evaluate, and revise a variety of texts for professional and general audiences. May be repeated once when course focus and content change.
Prerequisite: ENGL 1302 or the equivalent. Corequisite: None.

ENGL 4373 - Public Writing with Technology
A seminar in experiential learning requiring a digital project for a local organization or business. Topics include, but are not limited to, public writing, writing for non-profit organization, cooperate writing, citizenship and literacy, economy and writing technology, and media and community. End projects may be displayed on a public domain owned by the University.
Prerequisite: ENGL 3361 or instructor's consent.

ENGL 4374 - Texts, Tech, and Humanities
Historical survey of reading and writing technologies that create, transmit, and consume knowledge and information from orality to script, to printing, and to digital production.
Prerequisite: Prerequisite: ENGL 1301 and ENGL 1302.

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 4378 - Methodology of ESL
Theoretical foundations of second language instruction and techniques for possible approaches to teaching pronunciation, grammar, reading and writing to TESL students will be studied. Construction and use of appropriate tests for TESL situations will be emphasized. Students are required to tutor a limited English-proficient student for a minimum of 15 hours.

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 4394 - Undergraduate Internship
An 8 to 14 week program offering a learning experience in an off-campus environment.
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 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 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 5382 - Contrastive Linguistics
Advanced comparative study of phonemic, morphological and syntactical differences between English and a sampling of other languages.

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 5391 - Studies in Technical and Scientific Writing
Survey of the field of technical and scientific writing. The course will entail readings in the history, theory and major issues in the field; document analysis; and technical writing projects. This course prepares students to teach undergraduate classes on technical and scientific writing.

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 I
Selection of a research topic, development of a thesis plan, and the initiation and completion of directed research.
Prerequisite: Consent of advisor.

ENGL 5396 - Thesis II
Completion and approval of thesis.
Prerequisite: ENGL 5395 Thesis I or ENGL 5397 GIS.

ENGL 5397 - Guided Integrative Study
Required capstone course for English MA students qualified for graduation, including the exit 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 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 [TCCN: ENGR 1201]
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 [TCCN: ENGR 1204]
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 1304 - 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 [TCCN: ENGR 2301]
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 [TCCN: ENGR 2302]
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, minimum C grade is required.

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 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.

ENGR 4199-4399 - Independent Study
Independent study in a specific area of engineering not covered by an organized undergraduate course. A maximum of three credit hours may be applied toward the undergraduate degree.
Prerequisite: Consent of the chair of the student's department.

ENGR 4310 - Simulation and Optimization
System modeling; construction of computer simulations of complex systems; optimization techniques; linear programming. Three hours of lecture per week.
Prerequisite: MATH 3404, MATH 3305, successful completion of a structured programming language course.

ENGR 4312 - Transducer Design
Theory and design of sensors, transducers and signal conditioners for force, strain, temperature, displacement, flow, acceleration, optical and chemical phenomena measurements. Three hours of lecture per week with limited integrated laboratory sessions and a required student design project.
Prerequisite: EENG 3304.

ENGR 4326 - Numerical Methods in Engineering
A basic exploration of the numerical methods used in the solution and analysis of engineering problems. Focus will be given to linear systems, ordinary differential equations, and partial differential equations. Three hours of lecture per week.
Prerequisite: MATH 3305, MATH 3203 or MATH 3315 and COSC 1336/1136.

ENGR 4398 - Directed Engineering Practice Project
Directed design and development project emanates from industry and is carried out under the mentorship of a faculty member having industrial experience. The project must have a strong design or engineering evaluation component that requires engineering decisions relevant to the project. A technical report of the results of the project is required at the conclusion of the course. May be repeated for credit. A maximum of 6 credit hours may be applied to an undergraduate engineering degree with the consent of the student's department.
Prerequisite: Consent of the Instructor and Dean of Engineering.

ENGR 5382 - Advanced Topics in Engineering Education
Structured studies in engineering education topics not covered in other ENGR courses. May be repeated for up to six credit hours if different topics are covered. Department Chair Approval.

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.
Not open to students who have credit in EPSY 3340

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.
Not open to students who have credit in EPSY 3330

FINA - FINANCE

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 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 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 4355 - Oil, Gas and Energy Finance
A study of the current energy outlook, financial statement analysis, capital budgeting and risk analysis, corporate financial strategy and decision making, and value creation in the energy and oil and gas industry.
Prerequisite: FINA 3311.

FINA 4356 - Energy Risk Management
This course covers topics on how firms related to energy production/use manage the risks associated with business operations. Topics include: (1) the concept of risk and its relationship to uncertainty in energy (primary oil and natural gas) industry, (2) the severity and consequences of a given risk in the energy industry and appropriate risk measurement techniques, and (3) managing risk faced by energy firms, especially associated with fluctuating oil/natural gas prices.
Prerequisite: FINA 3330.

FINA 4357 - Business Forecasting
This course is dedicated to teaching students tools in econometrics that are especially useful in forecasting energy time series, such as future energy prices and quantities in the U.S. and predicting demand for a gas or electricity supplier.

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 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 5320 - Advanced Financial Management
Financial management of the firm with special emphasis on financial planning, capital concepts.

FINA 5355 - Oil, Gas and Energy Finance
A study of the current energy outlook, financial statement analysis, capital budgeting and risk analysis, corporate financial strategy and decision making, and value creation in the energy and oil and gas industry. Graduate students will complete an in-depth case study.
Prerequisite: FINA 3311.

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 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.

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 4340 - Human-Environment Interaction
Study of the dynamic relationships between human cultures and their environments. This course will examine the strategies employed by humans to cope with challenges and take advantage of opportunities within their ecological environment.

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.

GEOL - GEOLOGY

GEOL 3310 - Physical Geology and Astronomy
Study of processes that take place in the solid earth and the role of the earth in space.

GEOL 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.

GENB - GENERAL BUSINESS

GENB 2300 - Business Statistics [TCCN: BUSI 2305]
Descriptive and inferential statistical techniques for business and economic decision making. Topics include the collection, description, analysis, and summarization of data; probability; discrete and continuous random variables; the binomial and normal distributions; sampling distributions; tests of hypotheses; estimation and confidence intervals; linear regression; and correlation analysis. Statistical software is used to analyze data throughout the course.
Prerequisite: MATH 1324 Mathematics for Business & Social Science Majors or MATH 1314 College Algebra, MATH 1342 Statistics and COSC 1307 or TECH 2323.

HECC - HEALTH AND EXERCISE CORE

HECC 4155 - Certified Health Education Specialist (CHES) Prep
This course is required for the Health Studies degree; must be taken before the Certified Health Education Specialist exam. It is meant to coach and prepare the student for the Certified Health Education Specialist exam.

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 - Introduction to Biostatistics
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 4390 - Senior Seminar
A broad overview of current issues and research in Health and Kinesiology, along with topics of professional interest. Students must have senior status and approval from Departmental advisor.

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 5317 - Biostatistics
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 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 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 3397 - Topics in European History
Topics in European History.

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 4326 - Modern American Social and Intellectual History
Traces the principal social and intellectual movements in America from the end of the Civil War to the present.

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 4335 - The Long Sixties
This course focuses on the rise of liberalism in the United States of America from the early-1950s to the mid-1970s. Through this course, we will trace the roots of the African American civil rights movement, the fight for equality among immigrants and migrant workers, and the rise of feminism in the mid-twentieth century. The course will also illustrate the decline of liberal ideas and the rise of the modern conservative movement.

HIST 4350 - American Environmental History
This course examines the relationship between people and nature in America from the pre-colonial era to the present. It explores how the natural and built environment shaped American history with an emphasis on the relationships between environmental, social, and cultural change.

HIST 4355 - The Vietnam War
This course examines the complex political, military, diplomatic, economic, and ideological undercurrents that led to and perpetuated the Vietnam War. A majority of the course will focus on the American role in Vietnam and how such involvement impacted domestic, cultural, and political issues within the United States.

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 4365 - The Cold War
This course traces the history of the global Cold War from the 1940s up to the end of the Cold War in the early 1990s. This course will provide a global framework that explores the ideological, geopolitical, cultural, social, economic, and military experiences of the Cold War.

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 4369 - Social Movements in World History
This course explores social movements from a comparative perspective in order to consider the historical role of popular, grassroots, and other types of social actors and movements and their impact on historical processes.

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 the native peoples, cultures, and societies of North and South America from comparative local and global perspectives.

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 4378 - Latin American-US Relations
This course is designed to examine Latin American-US relations from the 1800's forward. This course will attempt to provide a truly "inter-American" framework, looking at how Latin American nations have responded to and shaped US policy, society, and culture.

HIST 4379 - Antebellum America
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 4383 - REACTIVATED OLD COURSE - ADD TITLE
NEED COURSE DESCRIPTION

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 4390 - Recent American History, 1929-Present
Study of American political, social and economic development since the Great Depression. Foreign relations and the role of America as a world power are stressed.

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 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 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 5351 - The Vietnam War
This course explores--through intensive reading, research, writing, and discussion--the complex political, military, diplomatic, economic, and ideological undercurrents that led to and perpetuated the Vietnam War. In so doing, we will carefully evaluate Vietnamese history, French imperialism, communist ideology, and the causes, course, and consequences of the Cold War. A majority of the course will focus on America's involvement in Vietnam and how such involvement impacted domestic, cultural, and political issues within the United States.

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 5362 - Pre-Colonial African History
This course introduces students to the history and historiography of Africa before 1885. The reading course will critically analyze African pre-colonial issues, opportunities, and perspectives.

HIST 5374 - African American History
This course examines African American historiography, history, culture and society. Key themes include: identity, gender, race, class, slavery, Civil War, emancipation, reconstruction, freedom, resistance, the Great Depression, WWII, Pan Africanism, Civil Rights, and Black Power. Students will read and analyze primary source documents to form historical interpretations of the past and research and write a historical paper or historiographical essay based on primary and/or secondary documents.

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 5378 - Latin American-US Relations
This course is designed to examine the historiography on Latin American-US relations from a variety of scholarly and thematic perspectives. This course will attempt to provide a truly "inter-American" framework, while simultaneously providing an understanding of how the nations of the Americas have responded to and shaped each other's policies, societies, cultures, and economies.

HIST 5379 - Antebellum America
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 5393 - History and Professional Development
This course is designed to help students gain practical skills as historians that can be applied to students' careers. Topics may include oral history, public history, pedagogy and history, history in the private sector, historical renovation, museum work, and other skill-sets designed to help students apply their degree in history to careers beyond the graduate program. This course may be taken twice for up to 6 hours of credit, pending professor's and departmental graduate advisor's approval.

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.

HNRS - HONORS

HNRS 1000 - Honors Freshman Seminar
This course will explore a variety of academic issues through an interdisciplinary lens related to colloquium events. The course will also examine issues in personal development with an emphasis on critical thinking. NOTE: Enrollment in this class is limited to students accepted into the Honors Program

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. Satisfies core requirement for Language, Philosophy, Culture and Component Area Option-Human Expression.
Prerequisite: Invitation by the Honors Committee. .

HNRS 1352 - World, Text, and Image II
Comparative study of written and oral communication. This seminar course takes an interdisciplinary approach to thinking, writing, and persuasion. This course is writing intensive. Satisfies core requirement for Communication.
Prerequisite: Invitation by the Honors Committee.

HNRS 2000 - Honors Sophomore Seminar
This course will explore a variety of academic issues through an interdisciplinary lens related to colloquium events. Courses will provide instruction in successful academic study skills, time management strategies, and professional development. Additionally, students will be given guidance related to their contract course work and research project. NOTE: Enrollment in this class is limited to students accepted into the Honors Program.

HNRS 2351 - World, Text, and Image III
Comparative study of human expression and oral communication. This seminar course takes an interdisciplinary approach to speech, social media, and forensics. Satisfies core requirement for Human Expression.
Prerequisite: Invitation by Honors Committee. .

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. Satisfies core requirement for Creative Arts.
Prerequisite: Invitation by Honors Committee. .

HNRS 2413 - Honors Calculus I
Interdisciplinary approach to the development of calculus. This course covers all topics covered in MATH 2413 plus additional topics.
Prerequisite: Invitation by Honors Program. 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.

HNRS 3000 - Honors Junior Seminar
This course will explore a variety of academic issues through an interdisciplinary lens related to colloquium events. Courses will provide instruction in successful academic study skills, time management strategies, and professional development. Additionally, students will be given guidance related to their contract course work and research project. NOTE: Enrollment in this class is limited to students accepted into the Honors Program.

HNRS 4000 - Honors Senior Seminar
This course will explore a variety of academic issues through an interdisciplinary lens related to colloquium events. Courses will provide instruction in successful academic study skills, time management strategies, and professional development. Additionally, students will be given guidance related to their contract course work and research project NOTE: Enrollment in this class is limited to students accepted into the Honors Program.

HNRS 4197 - Honors Practicum
HNRS Practicum is a one-credit course that offers Honors students an opportunity to put practical skills learned in the classroom into action. The primary outcome of this class is the annual Lyceum Research Showcase, which the students will directly oversee. But additionally, students will read, discuss, and practice various leadership and communication skills and abilities. Must be a current Honors Program student to enroll.

HNRS 4368 - Honors Field Experience
This course combines classroom experience with travel. The travel study engages students with particular sites associated with works of literature, history, and/or philosophy.

HRD - HUMAN RESOURCE DEVELOPMENT

HRD 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.

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 and Development
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 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.

HRD 4320 - Job Analysis and Design
Provides a systematic procedure for identifying and analyzing tasks related to specific jobs.

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 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 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 5333 - Human Relations
Study of establishing and maintaining effective working relationships among teachers, trainers, and trainers 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 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, and 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 5399 - INDEPENDENT STUDY
Independent study in specific areas of Human Resource Development 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 academic advisor and department chair.

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 - Organizational Intervention Approaches
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 6343 - Foundations of Qualitative Research
This course examines foundational 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 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 - Univariate Statistics
This course covers a set of univariate quantitative statistical analyses that are key to creating new knowledge in human resource development. Students will learn how to interpret, conduct, and report select univariate quantitative statistical techniques that answer research questions or hypotheses that involve one dependent variable.

HRD 6352 - Structural Equation Modeling
The course leads students through the quantitative research process from start to finish and focuses on using path analysis and structural equation modeling to test theoretically based models relevant to HRD.

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 - Multivariate Statistics
A study of multivariate statistical analyses for HRD research including survey design, exploratory factor analyses, and other multivariate analyses including MANOVA and Canonical Correlation Analyses. Learners will collect and analyze their own data and write up the results suitable for presentation at an academic conference.

HRD 6359 - Research Seminar in Human Resource Development
This course is designed for carrying our disciplined research and strengthening the analyses of data in doctoral studies. Focus is on developing skills in learning advanced data analytic methods and developing publishable 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 6366 - Seminar on Organizational Change and Development
As an advanced doctoral seminar, this course will introduce learners to the field of Organization Development (OD), an area of practice and research in Human Resource Development (HRD). OD is concerned with creating, managing, and sustaining system-wide planned change in organizations using education and social science knowledge and practices to improve organizational, group, and individual functioning and effectiveness. Learners will be exposed to the history, philosophies, theories, techniques and applications of OD through readings, in-class discussions, case activities, self-reflection exercises, and guest scholars.

HRD 6377 - Leadership Theory and Practice
This course focuses on exploring and examining the contemporary leadership phenomenon from both theoretical and practical perspectives, particularly in terms of shaping and skilling mechanisms in the field of human resource development (HRD). Emphasis will be placed on

leadership concepts and research approaches and component approach to conceptualizing and practicing effective leadership.
Corequisite: HRD 6350. Crosslisted as: N/A.

HRD 6388 - Talent Management and Development
This course covers the foundations of research and applications of talent management and development. Emphasis is placed on the perspectives, methodology, and theoretical framework employed by HRD practitioners in developing HRD/M and career development strategies to improve firm performance.

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.

HRD 6399 - INDEPENDENT STUDY
Independent study in specific areas of Human Resource Development not covered by organized doctoral courses. A maximum of six credit hours for independent study courses may be applied toward a doctoral degree.
Prerequisite: Consent of academic advisor and department chair.

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 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 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 1204 - Power Yoga
Study and practice of yoga to improve muscular fitness, balance, and flexibility. Emphasis is placed on proper breathing techniques and postural alignment with the use of dynamic movement and poses to increase knowledge and body awareness.

KINE 1205 - Traditional Yoga
Hatha Yoga focuses on understanding and controlling the body, the breath, and the mind through exercises (asanas), breathing (pranayama), and meditation training. The techniques are designed to increase strength, balance, flexibility, release stress, muscle tension and enhance the ability to concentrate.

KINE 1207 - Zumba
Study and participation in a Latin-inspired dance-fitness class that integrates some of the basic principles of aerobic, interval, and resistance training for cardiovascular and muscular benefits. Emphasis is placed on dance steps from salsa, meringue, and reggae.

KINE 1210 - Beginning Weight Training
Study and participation through weight training utilizing varied training modalities to improve muscular fitness and increased knowledge of basic fundamental skills and techniques.

KINE 1211 - Intermediate Weight Training
Study and participation through weight training utilizing varied training modalities to improve muscular fitness and increased knowledge of advanced concepts, skills and techniques.

KINE 1212 - Tennis
Study and development of basic skills, general rules, and strategies for leisure time use through participation in tennis.

KINE 2330 - Fundamentals of Exercise Science
This course will introduce the key concepts concerning the anatomical, mechanical, physiological, neural, and psychological bases of human movement. This course provides a broad foundation for more detailed study of the sub-disciplines of human movement and for cross-disciplinary studies.

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: Either BIOL 2301 and BIOL 2101 (Lecture and lab) or KINE 2330.

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 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 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 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.

KINE 4321 - Sports Nutrition
Study of nutrition as it relates to optimal training and performance of sports activities.
Prerequisite: KINE 3311 and ALHS 1315 or ALHS 3315.

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 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 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 5335 - Biomechanics
Study of kinematic and kinetic analysis of human motion.

KINE 5341 - Sports Nutrition
Study of nutrition as it relates to optimal training and performance of sports activities.

LATN - LATIN

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 - Build and Manage a Successful Career
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: Course prerequisites are: COSC 1307, MATH 1342, and MANA 3370.

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 3310 - Managing Sports Organizations
A course covering the management of sports oriented organizations, with specific attention to the unique financial and human resources decisions that sports organizations require. This course will identify the differences between for profit and not for profit sports organizations and explore the management theories and practices which might be applied in a prospective leadership role.

MANA 3311 - Fundamentals of Management
An understanding of the management history and functions of planning, organizing, leading, and controlling. The role of a manager is examined in promoting change and providing effective leadership, motivation, team building, communication and decision making.

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 - Organizational Behavior
An understanding and application of individuals and groups in an organizational environment. Topics include critical thinking, interpersonal communication, politics, power, conflict, motivation, leadership, and organizational culture.

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 3326 - Social Entrepreneurship
Exploration of all aspects of social entrepreneurship and the process of creating new social ventures. Topics will include social entrepreneur characteristics and motivations, opportunity recognition, feasibility analysis, marketing challenges, organization and management strategies, venture financing, and scaling social ventures.

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 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 5307 - Service Operations Management
This course focuses on the management of service operations, using both qualitative and quantitative techniques that can help service firms improve their operations. Topics will cover key concepts such as waiting line management, facility location, quality and productivity improvement, and other relevant topics.

MANA 5320 - Organizational Behavior
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 5325 - Global Supply Chain Management
This course covers concepts and issues important in managing global supply chains. From a global perspective, the course will consider both a strategic and tactical viewpoint of how organizations can implement an effective global supply chain.
Prerequisite: MANA 5305.

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 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.

MANA 5365 - Healthcare Analytics
Effective use of quantitative analysis in management decisions is essential for anyone involved in the study or practice of health services administration. This course is useful for healthcare professionals for quantitative analysis to decision making in management.

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 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 - Consumer Insights
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 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 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 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.

MARK 5375 - Special Topics in Marketing
Areas of study in marketing that reflect contemporary topics not covered by organized courses.

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.
Corequisite: To comply with HB 2223, we will make one section of this course and one section of Math 1342 be corequisites.

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 [TCCN: MATH 1332]
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 [TCCN: MATH 1333]
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 [TCCN: MATH 2312]
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.

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.

MATH 3104 - Multivariate Calculus Computer Lab
Multivariate Calculus concepts illustrated and expanded through the use 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 - Advanced Ordinary Differential Equations
This course explores topics in applied mathematics as they pertain to the physical sciences. Topics include linear and nonlinear systems, phase plane analysis, study of bifurcations, transform methods, mechanics, and chaos, 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 3404 - Multivariate Calculus
Vector calculus in Euclidean n-space, functions of several variables, partial differentiation and multiple integration.
Prerequisite: MATH 2414.

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 4301 - Number Theory
A study of the theory of numbers including divisibility, prime numbers, factorization, the Euclidean algorithm, congruences, the Chinese Remainder Theorem, diophantine equations, quadratic residues, quadratic reciprocity, and other topics to be selected by the instructor.
Prerequisite: MATH 3425 and MATH 3315.

MATH 4306 - Topology
Study of metric spaces and topological spaces with emphasis on compactness, connectedness, covering properties, separation and metrization.
Prerequisite: MATH 3345.

MATH 4321 - Combinatorics/Graph Theory
Study of combinatorial structures and techniques. Topics may include: graph theory, coloring problems, planarity, paths and cycles, networks, permutations, combinations, recursion, inclusion-exclusion, ordered sets, partial orders, and directed graphs.
Prerequisite: MATH 3425 with a C or better.

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, and series expansions.
Prerequisite: MATH 3425 and MATH 3404.

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 - Partial Differential Equations
Development of mathematical ideas needed to solve problems in the physical sciences, involving partial differential equations. Topics include heat conduction, wave propagation and Laplace equations, use of separation of variables and transform methods to solve boundary value problems, and the development of Sturm-Liouville Theory.
Prerequisite: MATH 3305, MATH 3203 or MATH 3315, and MATH 3404.

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 5301 - Number Theory
A graduate level study of the theory of numbers including divisibility, prime numbers, factorization, the Euclidean algorithm, congruences, the Chinese Remainder Theorem, diophantine equations, quadratic residues, quadratic reciprocity, and other topics to be selected by the instructor.

MATH 5305 - Set Theory
Mathematical logic, detailed and rigorous study of set theory, introduction to axiomatic systems, examination of real number systems.
Prerequisite: Graduate Standing.

MATH 5306 - Topology
Study of metric spaces and topological spaces with emphasis on compactness, covering properties, separation and metrization.
Prerequisite: MATH 3345 or equivalent.

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 5321 - Topics in Combinatorics
Study of a specialized topic in combinatorics. Topics may include: algebraic combinatorics, combinatorial game theory, generating functions, representation theory, or related topics.

MATH 5322 - Graph Theory
A graduate level survey of graph theory. Topics may include simple graphs, digraphs, connectivity, graph colorings, planar graphs, matchings, graph isomorphisms, graph polynomials, Eulerian graphs, algebraic graph theory, or other fundamental concepts in graph theory.

MATH 5331 - Algebra I
Basic structure, substructure, morphisms, and quotient structures in the categories of groups, rings, and modules.
Prerequisite: MATH 3336 or equivalent.

MATH 5332 - Algebra II
A continuation of the study of algebraic structures. Emphasis is given to groups, rings, modules, vector spaces and fields.
Prerequisite: MATH 5331.

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 I
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 5342 - Real Analysis II
Study of generalized measure and integration. Topics may include the Fubini-Tonelli theorem, the Radon-Nikodym theorem and its consequences, an introduction to Banach and Hilbert spaces, and applications to Fourier analysis.
Prerequisite: MATH 5341.

MATH 5343 - Topics in Analysis
Study of selected advanced topics in real, complex, or functional analysis. Course may be repeated when content changes.

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 5382 - Applied Mathematics II
A continuation of the study of applied mathematics, MATH 5381. Emphasis is given to modeling and solving problems in the physical sciences.
Prerequisite: MATH 5381.

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 in 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 2315 - Sports Communication
A. 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.

(This course was previously taught under the SPCM prefix. The Speech Communication Program has changed to Communication Studies. This course is more appropriate in the Mass Communication curriculum.)

MCOM 2340 - Introduction to Advertising [TCCN: COMM 2327]
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 [TCCN: COMM 2330]
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 3355 - Announcing/Mediated Performance
Advanced study and practice of effective communication through the development of enhanced skills in oral and nonverbal communication, script copy writing and performance, voice and diction improvement, and an advanced understanding and practice of the use of electronic media as a performance medium. (Must have passed both of these pre-requisite courses with a grade of "C" or higher: MCOM 2311, MCOM 2313)
Prerequisite: Students must have passed both of these pre-requisite courses with a grade of "C" or higher: MCOM 2311, 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 3380 - Brand Identity Design
Brand Identity Design covers the theory and practice of creating brand identity design products. A brand is expressed in a system of tangible items that fuel the recognition of that brand. These items will typically have a strong identity that separates them or makes them stand out from the crowd of brands on the market. The emphasis in this course is for students to learn brand strategy and what it takes to Zag or be very different. By practice learn how to create and design projects such as logos, print ads, stationery,

business cards, that support and enhance the brand with the aid of various graphic applications.
Prerequisite: MCOM 2306 Media Design or demonstrated competency with software.

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 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 4333 - Narrative Storytelling Across Media
The purpose of this course is to develop an understanding of narrative theories, storytelling techniques across media, and applying narrative theory in the creation of mediated narratives.

Prerequisite: MCOM 2311 and MCOM 2313.

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 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.

MENG 1301 - Engineering Graphics and Design
An introduction to CAD-based engineering design graphics, including spatial visualization, projection theory, and parametric, feature-based solid modeling techniques. The course focuses on skill development through project-oriented and experiential learning activities in a team-based environment conducting mechanical engineering design.

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 3009 - Honors Research Preparation
A course specifically designed to review course contents in preparation for Honors Research I. 0 Credits.
Prerequisite: Junior standing in Honors Program. Corequisite: None.

MENG 3210 - Experimental Measurements and Techniques
This an experiential learning course based on Laboratory experiments. It exposes the students to concepts of accuracy, uncertainty, and usefulness of measurements, Sensors for measuring physical phenomena such as: strain, force, displacement, acceleration, pressure, and temperature will be introduced. Data acquisition and signal processing techniques will also be applied to actual measurements. Student teams will design, analyze and document an experimental procedure. All procedures will result in a professional quality laboratory report.
Prerequisite: A grade of "C" or a better grade is required in the following: ENGR 2302, EENG 2301 or equivalent Programming Applications course, PHYS 2326 and PHYS 2126.

MENG 3211 - Thermal-Fluids Laboratory
Introduction to basic Thermal/Fluid sciences laboratory procedures and practices. 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, MENG 3401, and MENG 3310/CENG 3310.

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.

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 and EENG 2301, both with a "C" grade or better,.

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, minimum C grade is required.

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, MENG 3306/CENG 3306 (C or better), and MENG 3319.

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 and MATH 3305, both with a grade of "C" or better. Corequisite: MATH 3404 is moved from pre to co-requisite because the material is needed at the end of the course. This will add flexibility in registration.

MENG 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: There will be no prerequisites. Corequisite: MENG 3304, MENG 3309, MENG 3316.

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 3401 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. One one-hour lecture and two three-hour lab per week.

Prerequisite: CHEM 1311, CHEM 1111, and MENG 1301, all with a grade of "C" or better.

MENG 3401 - Thermodynamics
Thermodynamic properties of pure substances. Definitions of work, heat, and energy. First and second laws of thermodynamics and its application to fixed mass systems and control volumes. Analysis of thermodynamic cycles and their components.
3 hours and 40 minutes - of lecture per week.
Prerequisite: Must have a "C" or better in all the following: ENGR 2302 Dynamics, PHYS 2325 (Physics I), PHYS 2125 (Physics I Lab) and EENG 2301 Programming Applications.

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: MENG 3309, MENG 3314, SPCM 1315 or SPCM 1311. Corequisite: 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 4215 - Senior Capstone Design I
The first of a sequence of two senior courses including a capstone engineering project that entails the theoretical or experimental investigation of design problems. The nature and scope of the project are determined by the student in consultation with the instructor and depend upon the facilities available. A written technical report is required as part of the course's outcomes. All seniors meet weekly to discuss their projects as teams and with their supervisor. One hour lecture and 3 hours laboratory.
Prerequisite: MENG 3309 and MENG 3316 and MENG 3211 and EENG 3304 and SPCM 1315.

MENG 4216 - Senior Capstone Design II
The second of a sequence of two senior courses including a capstone engineering project that entails the theoretical or experimental investigation of design problems. The nature and scope of the project are determined by the student in consultation with the instructor and depend upon the facilities available. A written technical report is required as part of the course's outcomes. All seniors meet weekly to discuss their projects as teams and with their supervisor. Two sessions of 3 hours laboratory.
Prerequisite: MENG 4215 Senior Capstone Design I, MATH 3203 or MATH 3315, and MENG 4312. Corequisite: MENG 4326.

MENG 4308 - Robotic Vision and Control
This course focuses on the application of machine vision learning in application to robotics, such as the vision-guided control in arm-type robots. A software package will be selected for use a learning support tool. The course includes a design project and computer programming as a major component.
Prerequisite: Successful completion of MENG 4312 - System Dynamics and Control or Graduate Status.

MENG 4309 - Robotics Engineering
This course will introduce students to the field of robotic systems engineering and provide them with the scientific background of the field from a practical perspective. Topics include an introduction to robotic systems, fundamentals, terminology, spatial description and manipulation, stationary manipulator kinematics, trajectory planning, and applications.
Prerequisite: MENG 3303: Dynamics of Machinery.

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 3309, MENG 3211, and MENG 3316.

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 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. A grade of "C" or a better grade is required.

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 and MENG 1301.

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 Analysis
A required introductory course providing undergraduate engineering students with fundamentals of finite element (FE) concepts, analysis, and applications in real-world problems. A software package will be selected for use a learning support tool, which also provides students with a marketable skill. The course includes a project as a major component.

Prerequisite: MENG 3401 - Thermodynamics. Corequisite: MENG 3309 Mechanical Systems Design (can be a pre-requisite or co-requisite).

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
The course focuses on the use of controls in the process industry. The development of process models will involve measurement of variables, controller types, and final elements. Design and evaluation of controllers in processes including thermal systems will be carried out. General instrumentation design and practice will be conducted.
Prerequisite: MENG 4312 or EENG 4308.

MENG 4342 - Energy Management
An 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. The course focuses on energy use in buildings.
Prerequisite: MENG 3401 and MENG 3310.

MENG 4345 - Energy Conversion
This course introduces students to the different energy conversion systems as an integrated form of application of different knowledge bases such as: thermodynamics, chemistry, heat transfer and fluid mechanics. Analysis and design of systems for energy conversion and storage will be carried out with emphasis on efficiency, performance and environmental impact.
Prerequisite: MENG 3316.

MENG 4347 - Polymer Science and Engineering
This course provides an introduction to polymer science and engineering, including polymer synthesis, microstructure, characterization methods, mechanical and rheological properties of polymers, and the applications of polymers in nanotechnology and bioengineering.
Prerequisite: MENG 3319.

MENG 4348 - Applied Computational Fluid Dynamics and Heat Transfer
This course provides an understanding of the theory and process of computational flow analysis and computational heat transfer analysis by giving students the opportunity to use commercial simulation software to design, model, and analyze thermo-fluid systems.
Prerequisite: MENG 3316 with a C or better.

MENG 4370 - Undergraduate Internship
This course provides the opportunity for students to pursue enrichment and experiential learning in mechanical engineering outside the classroom, at a level appropriate for undergraduates. A minimum of 150 work hours are required during the internship experience under the supervision of a mentoring engineer at the workplace simultaneously with an advisor from the department of mechanical engineering. A written advisor evaluation and a technical report are required at the conclusion of the internship. A typical recommended setup to maximize benefit from such experience is for the student to be immersed in an engineering role within an engineering firm. Other experience can be accepted if approved by the advisor and the department.
Prerequisite: C grade or better in the following: MENG 3306/CENG 3306 – Mechanics of Materials, ENGR 2302 – Dynamics, MATH 3305 and Consent of the department chair.

MENG 4371 - Honors Internship
A program providing a new and challenging learning experience in mechanical engineering and environment appropriate for the Honors undergraduate level of work with a minimum of 150 hours work. An oral presentation and a written technical report containing significant mechanical engineering work during the internship are 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. Offered every semester.
Prerequisite: Consent of the department chair.

MENG 4373 - Undergraduate Internship II
This is a second course allowing students to extend enrichment and experiential learning in mechanical engineering outside the classroom, at a level appropriate for undergraduates. A minimum of 150 work hours are required during the internship experience under the supervision of a mentoring engineer at the workplace simultaneously with an advisor from the department of mechanical engineering. A written advisor evaluation and a technical report are required at the conclusion of the internship. A typical recommended setup to maximize benefit from such experience is for the student to be immersed in an engineering role within an engineering firm where they have conducted their first internship course. Other experience can be accepted if approved by the advisor and the department.
Prerequisite: MENG 4370 Undergraduate Internship I and 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 5305 - Advanced Mechanics and Applied Elasticity
Concepts from the theory of elasticity and topics from advanced solid mechanics, including exact solutions for bending and torsion, energy methods, and thin plates.
Prerequisite: MENG 3306/CENG 3306 or equivalent a prerequisite for this course. A grade of "C" or a better grade is required.

MENG 5306 - Elasticity I
Development of the basic field equations of linear elasticity. General concepts of stress and strain. Generalized Hooke's Law. Saint Venant torsion and flexure. Introduction to three dimensional problems of elasticity.
Prerequisite: MENG 3306 or equivalent.

MENG 5308 - Robotic Vision and Control
This course focuses on the application of machine vision learning in application to robotics, such as the vision-guided control in arm-type robots. A software package will be selected for use a learning support tool. The course includes a design project and computer programming as a major component.
Crosslisted as: Graduate Status.

MENG 5309 - Robotics Engineering
This course will introduce students to the field of robotic systems engineering and provide them with the scientific background of the field from a practical perspective. Topics include an introduction to robotic systems, fundamentals, terminology, spatial description and manipulation, stationary manipulator kinematics, trajectory planning, and applications. A graduate level component is included in the course providing opportunities for research and development in the area of robotics.
Prerequisite: MENG 4312 - System Dynamics or instructor's permission.

MENG 5314 - Micro Electro Mechanical Systems (MEMS)
This course introduces the students to principles, modeling, interfacing and signal conditioning of micro-electro-mechanical systems (MEMS) such as motion sensors and actuators. It also covers basic electronic devices, MEMS resonators, embedded microprocessor systems and control, power transfer components and mechanism design. The course provides knowledge in the analysis and design of hardware-in-the-loop through simulation and rapid prototyping of real-time closed-loop computer control of electromechanical systems.
Prerequisite: ENGR 2302 Dynamics, MATH 3305 or Graduate student 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 1301, 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 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, MATH 3203 or equivalents; MENG 3316 or CI.

MENG 5330 - Process Control
The course focuses on the use of controls in the process industry. The development of process models will involve measurement of variables, controller types, and final elements. Design and evaluation of controllers in processes including thermal systems will be carried out. General instrumentation design and practice will be conducted. Graduate students are expected to carry out a major project as an assignment within this course.
Prerequisite: MENG 4312 or EENG 4308.

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 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 5340 - Advanced Topics in Mechanical Engineering

MENG 5341 - Advanced Thermodynamics
First law and second law of thermodynamics for closed and open systems. Exergy analysis. Application of thermodynamics to engineering energy systems.
Prerequisite: MENG 3304 or equivalent.

MENG 5342 - Energy Management
An 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. The course focuses on energy use in buildings.
Prerequisite: MENG 3301, MENG 3304 or equivalents.

MENG 5343 - Advanced 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 5345 - Energy Conversion
This course introduces students to the different energy conversion systems as an integrated form of application of different knowledge bases such as: thermodynamics, chemistry, heat transfer and fluid mechanics. Analysis and design of systems for energy conversion and storage will be carried out with emphasis on efficiency, performance and environmental impact. Graduate students are expected to carry out a major project as an assignment within this course.
Prerequisite: MENG 3316.

MENG 5347 - Polymer Science and Engineering
This course provides an introduction to polymer science and engineering, including polymer synthesis, microstructure, characterization methods, mechanical and rheological properties of polymers, and the applications of polymers in nanotechnology and bioengineering.
Prerequisite: Graduate standing.

MENG 5348 - Applied Computational Fluid Dynamics and Heat Transfer
This course provides an understanding of the theory and process of computational flow analysis and computational heat transfer analysis by giving students the opportunity to use commercial simulation software to design, model, and analyze thermo-fluid systems.
Prerequisite: MENG 3401 (Themodynamics), MENG 3316 (Heat Transfer) and MENG 3310 (Fluid Mechanics) or equivalent, and Graduate Standing.

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 5361 - Biomechanics

The purpose of the course is to introduce students to concepts of mechanics as they apply to human movement, particularly those pertaining to exercise, sport, and physical activity. The student should gain an understanding of the mechanical and anatomical principles that govern human motion and develop the ability to link the structure of the human body with its function from a mechanical perspective. Furthermore, this course introduces students to musculoskeletal biomechanics and the quantitative analysis of human movement. Students will learn how muscles act as mechanical actuators to produce movement. Students will also evaluate how muscles, bones, and joints work together as a mechanical system. A course project is required towards the end of the course.

Prerequisite: ENGR 2302.

MENG 5362 - Biomaterials
Introduction to biomaterials used in design of implantable devices and tissue replacement. Synthesis and processing of metallic, ceramic, polymeric and composite biomaterials. Analysis of mechanical and chemical properties, biocompatibility and biological response, degradation and regulatory compliance for biomaterials. A project is required at the end of the course.
Prerequisite: MENG 3319.

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. Offered 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 - - Applied Music Courses
List of additional Applied Music courses are located in the Department of Music, College of Arts and Sciences section of this catalog.

MUAP 1111 - Harmony and Keyboard I
Beginning piano study for music majors, incorporating keyboard harmony assignments on level with MUSI 1311.

MUAP 1112 - Harmony and Keyboard II
Second semester of piano study for music majors, incorporating keyboard harmony assignments on level with MUSI 1312.

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 1187 - Composition
MUAP 1187 and MUAP 2187 consist of private, weekly applied lessons in music composition at the Freshman/Sophomore grade levels. The focus is on fundamental skills development, technical writing exercises, style copy assignments, and listening assignments.

MUAP 2001 - Piano Proficiency
An assessment of competencies at the piano keyboard commensurate with advanced musical study and professional expectations. Skills assessed include sightreading, accompanying skills, and theory applications including lead sheets, figured bass and harmonic progressions.
Prerequisite: MUAP 2111 Harmony & Keyboard III or 3 semesters of either class piano or applied piano.

MUAP 2111 - Harmony and Keyboard III
Intermediate-level piano study for music majors, incorporating keyboard harmony assignments on level with MUSI 2311.

MUAP 2112 - Harmony and Keyboard IV
Continued intermediate-level piano study for music majors, incorporating keyboard harmony assignments on level with MUSI 2312.

MUAP 2187 - Composition
MUAP 1187 and MUAP 2187 consist of private, weekly applied lessons in music composition at the Freshman/Sophomore grade levels. The focus is on fundamental skills development, technical writing exercises, style copy assignments, and listening assignments.

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 3100 - Recital
Recital.

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 - Concert Chorale
Concert 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 formal 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 - Concert Chorale
Concert 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 formal 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 - Concert Chorale
Concert 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 formal 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.
Prerequisite: A grade of C or better in Music Fundamentals (MUSI 1301), or permission of the instructor granted upon earning a passing score on the Music Fundamentals Placement Exam. Corequisite: MUSI 1311.

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.

MUSI 1259 - Broadway Musical Scenes
This course forms a performing ensemble with a focus on scenes from Broadway and Broadway-style musicals. Students will learn advanced techniques for singing, dancing and acting as they prepare and present scenes and songs as soloists, and members of small and large casts in public performance settings. As students develop through their work at this level, they will gain important performing skills in ensemble and solo singing and acting technique.
Prerequisite: Teacher's permission. Students must have previous singing and stage experience.

MUSI 1301 - Music Fundamentals [TCCN: MUSI 1301]
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.

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.
Prerequisite: A grade of C or better in Music Fundamentals (MUSI 1301), or permission of the instructor granted upon earning a passing score on the Music Fundamentals Placement Exam. Corequisite: MUSI 1116.

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.

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.

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.

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.

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.

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 4320 - Piano Literature
Piano literature.

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 - 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 5299 - 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.

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 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 3307 - Pharmacological Basis for Nursing
This course explores evidence-based pharmacotherapeutic nursing interventions to improve patient care. Emphasis is on principles of safe medication administration and patient education. Community, ethical/legal and cultural considerations are explored.
Prerequisite: Admission to the Bachelor of Science in Nursing Program and NURS 3303.

NURS 3308 - Holistic Health Assessment
This course focuses on patient assessment across the lifespan, including health history and physical assessment. Cultural perspectives, diversity, belief systems, and holistic healthcare are addressed.
Prerequisite: Admission to the Bachelor of Science in Nursing Program and NURS 3303. Crosslisted as: None.

NURS 3309 - Wellness and Health Promotion
This course will explore factors that impact a healthy society, including vulnerable populations across the lifespan, and how these factors contribute to optimal health or premature illness. This course will introduce the concepts of chronic care, risk reduction, vaccinations, health promotion, and patient teaching.
Prerequisite: Admission to the Bachelor of Science in Nursing Program and NURS 3303.

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 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 3313 - Chronic Care Coordination
This course will introduce models of care to improve the health of people with chronic illness. The focus will be on contributing factors, self-management, health systems, delivery system design, clinical information systems, and quality improvement process.
Prerequisite: NURS 3605 and NURS 3309.

NURS 3333 - Evidence-Based Decision Making
This course introduces evidence-based decision making for the purpose of providing best care to healthcare consumers. The EBP Process is introduced, of which critical appraisal of selected research designs and methods are focused on to gain knowledge and skills in establishing best practices for nursing. Ethical considerations for the implementation of evidence into practice, including addressing human subjects in the conduct of research are integrated throughout the course.
Prerequisite: Successful completion of MATH 1342 for the generic student. For the RN-BSN student, NURS 3415 and MATH 1342. Special permission required by the School 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 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 3303 and admission to the nursing programs. (Credit: 3:3). Corequisite: Successful prior completion of, or concurrent enrollment in, NURS 3307 and NURS 3310.

NURS 3605 - Fundamentals of Nursing
This course introduces nursing concepts and skills essential to provide the foundation for safe and effective nursing practice. Clinical hours are focused on basic therapeutic nursing skills with an emphasis on core competencies: critical thinking skills, communication, assessment, and technical skills.
Prerequisite: Admission to the Bachelor of Science in Nursing Program and NURS 3303. Corequisite: Successful completion of, or concurrent enrollment in NURS 3307, & NURS 3308.

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 3303, NURS 3307, NURS 3310, and NURS 3603. (Credit: 3:3).

NURS 3615 - Caring for the Chronically Ill
This course introduces nursing care required for individuals who have been diagnosed with chronic physical or mental conditions. Emphasis is on using evidence-based practice for professional collaborative management of chronic illness. A variety of clinical experiences will be used to apply caring and evidence-based professional nursing care for persons with chronic conditions.
Prerequisite: NURS 3605 and NURS 3309. Corequisite: Successful completion of, or concurrent enrollment in NURS 3313.

NURS 3617 - Population Health
This course focuses on professional nursing care of at-risk populations. Emphasis is on environmental and demographic factors that influence health. A variety of clinical experiences will be used to apply caring, evidence-based, professional nursing care for persons at risk for or living with chronic conditions.
Prerequisite: NURS 3605 and NURS 3309. Corequisite: Successful completion of, or concurrent enrollment in NURS 3313.

NURS 4141 - 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 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 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 4241 - 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 4312 - GERONTOLOGICAL NURSING
Theories and concepts related to gerontology and nursing principles are presented within the framework of critical thinking and caring. The focus is on health promotion through nurturing, protective, and generative, evidence based practice interventions emphasizing the well and the frail and vulnerable older adult population.

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 4329 - Evidence Based Decision Making
This course will focus on synthesis and application of evidence, along with clinical expertise and patient values, to improve patient outcomes.
Prerequisite: NURS 3313, NURS 3615, NURS 3617.

NURS 4338 - Clinical Immersion
This course expands on previously learned knowledge and clinical skills and allows the student to explore an area of interest. Emphasis is on immersion in a selected environment.
Prerequisite: NURS 4626; NURS 4628; NURS 4329. Corequisite: Successful completion of, or concurrent enrollment in NURS 4634.

NURS 4339 - Capstone
This course will integrate principles of evidence-based practice, health promotion, population health, quality and safety, and leadership to develop a project to improve client outcomes.
Prerequisite: NURS 4626; NURS 4628. Corequisite: Successful completion of, or concurrent enrollment in NURS 4634; NURS 4338.

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 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 4441 - 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 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 4541 - 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 4626 - Caring for the Acutely Ill
This course introduces nursing care required for individuals across the lifespan who have been diagnosed with acute physical or mental conditions. Emphasis is on using evidence-based practice for professional collaborative management of acute illness. A variety of clinical experiences will be used to apply caring, evidence-based, professional nursing care for persons experiencing acute illnesses. The focus will be on managing acute conditions, prevention of complications, patient safety and quality care.
Prerequisite: NURS 3615 & NURS 3617. Corequisite: Successful completion of, or concurrent enrollment in NURS 4329.

NURS 4628 - Special Populations
This course introduces holistic nursing care for special populations across the lifespan. Emphasis is on using evidence-based practice for professional collaborative management of vulnerable populations. A variety of clinical experiences will be used to apply caring, evidence-based, professional nursing care for special populations. The focus will be professional

collaborative management of vulnerable populations emphasizing patient safety and quality care.
Prerequisite: NURS 3615 & NURS 3617. Corequisite: Successful completion of, or concurrent enrollment in NURS 4626 and NURS 4329.

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 4634 - Transitions to Practice
This course focuses on the role of the professional nurse as a leader and manager of health care for diverse populations. Emphasis is on integration of evidence-based practice, quality improvement, professional standards, client advocacy, and legal and ethical responsibilities. This course will use a variety of clinical experiences to apply leadership and management principles to care for persons in various settings.
Prerequisite: NURS 4626; NURS 4628. Corequisite: none.

NURS 4641 - 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 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.
Prerequisite: Admission to any MSN degree program or FNP post-master's certificate.

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 5301 - Translational Science I
Students will follow steps 0-3 of the evidence-based practice (EBP) process. Students will answer clinical questions by critical appraisal of research and explore theoretical and ethical issues in translating evidence into practice as they begin assimilating in their advanced practice role in nursing.
Prerequisite: Admission to any MSN program.

NURS 5302 - Translational Science II
This course builds upon the learning in Translational Science I, continuing steps 0-3 and beginning step 4 of the EBP process. Students focus on evaluation and synthesis of relevant evidence to answer clinical questions. Students begin translating science into practice by recommending best practices and subsequent outcomes as they actualize their advanced practice role in nursing.
Prerequisite: NURS 5301.

NURS 5321 - Health Policy for Population Health
This course explores the reciprocity between health care policies and population health.
Prerequisite: Admission to any MSN program or enrolled in the PhD in Nursing program.

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.
Prerequisite: Admission to any MSN program or enrolled in the PhD in Nursing program.

NURS 5325 - Organizational and Systems Leadership
This course builds on prior knowledge, continuing step 4 of the EBP process. Students will explore leadership styles/principles and their impact on healthcare delivery systems, including economic, ethical, legal and political factors. Students will analyze evidence-based quality improvement principles that include metrics to demonstrate their impact on healthcare outcomes with group and individual application.
Prerequisite: NURS 5302.

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: NURS 5301, NURS 5321 or Admission to Edu Cert program or enrolled in the PhD in Nursing 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
Prerequisite: NURS 5327 or enrolled in the PhD in Nursing program.

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 5328 or enrolled in the PhD in Nursing program.

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 5301 AND Admission to any MSN program or enrolled in the PhD in Nursing program. Admission to the Admin Cert program.

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: NURS 5331 or enrolled in the PhD in Nursing program.

NURS 5337 - Nursing Administration: Delivery of Care
Focuses on the delivery of care within the healthcare environment at the organizational, community, state, national, **and international** levels. Enables the professional nurse to participate in the design of care delivery systems within healthcare organization in community, state, and national environments.
Prerequisite: NURS 5335.

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: NURS 5352, Pre-Requisite or Co-Requisite of NURS 5354 AND Admission to MSN NP or NURS 5352, Pre-Requisite or Co-Requisite of NURS 5354 AND Admission to the NP Cert program. Corequisite: Pre-Requisite or Co-Requisite of NURS 5354 AND Admission to MSN NP or Pre-Requisite or Co-Requisite of NURS 5354 AND Admission to the NP Cert 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 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 Internship 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 AND Admission to MSN FNP program or NURS 5351, NURS 5353, NURS 5455 AND Admission to FNP Cert program .

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 Internship 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: Pre-Requisite or Co-Requisite of NURS 5347 AND Admission to MSN NP program or Pre-Requisite or Co-Requisite of NURS 5347 AND Admission to NP Cert program. Corequisite: Pre-Requisite or Co-Requisite of NURS 5347 AND Admission to MSN NP program or Pre-Requisite or Co-Requisite of NURS 5347 AND Admission to NP Cert program.

NURS 5350 - Advanced Pathophysiology
Regulatory and compensatory mechanisms as they relate to commonly occurring diseases across the lifespan are explored.
Prerequisite: Admission to the NP Program or NP Cert program.

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 5339 AND Admission to MSN FNP program or NURS 5339 AND Admission to FNP Cert program *This course does not allow concurrent enrollment in NURS 5353 or NURS 5455.

NURS 5352 - Advanced Health Assessment for Nurse Practitioners
This course in intended for the nurse practitioner. Incorporates integration of advanced health assessment principles and skills for comprehensive examination of clients that leads to differential diagnosis. Focus will be on common deviations from normal. Populations across the lifespan will be included.
Prerequisite: Pre-Requisite or Co-Requisite of NURS 5350 AND Admission to NP programs or Pre-Requisite or Co-Requisite NURS 5350 AND Admission to NP Cert program. Corequisite: Pre-Requisite or Co-Requisite of NURS 5350 AND Admission to NP programs or Pre-Requisite or Co-Requisite NURS 5350 AND Admission to NP Cert program.

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 5339 AND Admission to MSN FNP program or NURS 5339 AND Admission to FNP Cert program*This course does not allow concurrent enrollment in NURS 5351 or NURS 5455.

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 a NP program or Admission to NP Cert program. Corequisite: Admission to a NP program or Admission to NP Cert program.

NURS 5355 - Integrated Advanced Health Assessment, Pathophysiology, and Pharmacology
This course is designed for the master's students who are not planning to pursue a nurse practitioner certification. Students will integrate concepts of advanced pathophysiology and advanced pharmacology to apply advanced health assessment principles and skills for comprehensive examination of clients. Focus will be on common deviations from normal. Populations across the lifespan will be included.
Prerequisite: Admission to MSN Edu program or enrolled in the PhD in Nursing program.

NURS 5357 - Neurobiology Overview: Mental Health and Illness
This course integrates theory and evidence-based practice in clinical application. Students will complete a capstone project in a mental health setting under the guidance of a clinical preceptor. Emphasis is on applying theory and research to individuals and families experiencing complex mental health problems. Related professional issues will also be explored in this clinical course. (135 hours)
Prerequisite: NURS 5350 Advanced Pathophysiology; NURS 5352 Advanced Health Assessment; NURS 5354 Advanced Pharmacotherapeutics.

NURS 5359 - Psychopharmacology: Prescribing Practices in Mental Health
This course provides an overview of prescribing principles and best practices for treating mental health disorders across the lifespan. Drug action and pharmacogenomics are discussed. Polypharmacy within vulnerable populations is considered. A case-based approach is used to examine the clinical uses, neuropharmacological mechanisms, risks, benefits, and outcomes of commonly used psychotropic drugs in the context of comprehensive treatment plans.
Prerequisite: NURS 5354: Advanced Pharmacotherapeutics.

NURS 5363 - Differential Diagnosis of Mental Disorders
Using a case-based approach, students develop advanced skills for the differential diagnosis of mental disorders, including observation and interviewing skills, and the use and interpretation of screening tools, laboratory tests, and behavioral assessments. Case studies will utilize the most current edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* and other appropriate methodologies for diagnosing mental disorders.
Prerequisite: NURS 5350; NURS 5352; NURS 5354.

NURS 5365 - Psychotherapeutic Theories and Modalities
This course provides an overview of major concepts, theories, and research related to psychotherapeutic treatments for mental disorders across the lifespan. Emphasis is placed on the integration of two content areas: psychotherapeutic case formulation and treatment planning; and the application of evidence-based brief psychotherapies for the treatment of particular disorders, symptoms and issues. Application of therapeutic approaches such as Cognitive Behavioral Therapy and Motivational Interviewing will be examined in detail through a case-based learning approach.
Prerequisite: NURS 5357.

NURS 5367 - PMHNP Practicum I
This course provides clinical training in the full role of the psychiatric mental health nurse practitioner. Emphasis is placed on the integration of two content areas: the knowledge and skills for PMHNP practice; and the specific mental health needs of adults and older adults. Clinical experiences, lectures, case discussions, and projects allow students the opportunity to develop competencies in the ethical, safe, collaborative, and evidence-based provision of mental health care to adults and older adults in the context of a changing health care system. (125 clinical hours)
Prerequisite: Successful completion of, or concurrent enrollment in NURS 5368.

NURS 5368 - Integrated Mental Health Care I-Adult/Gerontology
This course integrates theory and research in clinical application of the care of adults/geriatrics by nurse practitioners. Students will provide care to adults/older adults in the clinical setting under the guidance of a clinical preceptor. Emphasis is on applying theory and research to adults and older adults experiencing complex health problems. Related professional issues will be explored in this clinical course. (125 clinical hours)
Prerequisite: NURS 5365.

NURS 5370 - Psychiatric-Mental Health Nurse Practitioner Practicum II
This course provides clinical training in the full role of the psychiatric mental health nurse practitioner. Emphasis is placed on the integration of two content areas: the knowledge and skills for Psychiatric Mental Health Nurse Practitioner (PMHNP) practice; and the specific mental health needs of children and families. Clinical experiences, lectures, case discussions, and projects allow students the opportunity to develop competencies in the ethical, safe, collaborative, and evidence-based provision of mental health care to children, adolescents and families in the context of a changing health care system. (125 clinical hours)
Prerequisite: Successful completion of, or concurrent enrollment in, NURS 5373.

NURS 5373 - Integrated Mental Health Care II Capstone
This course integrates theory and evidence-based practice in clinical application. Students will complete a capstone project in a mental health setting under the guidance of a clinical preceptor. Emphasis is on applying theory and research to individuals and families experiencing complex mental health problems. Related professional issues will also be explored in this clinical course. (135 hours)
Prerequisite: NURS 5365.

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 5381 - Healthcare Informatics for the 21st Century
Provides introductory principles to understand conceptual and theoretical basis for information management in healthcare informatics. An interdisciplinary approach will be used to examine the clinical aspects, practice considerations, and application of information technology.

NURS 5382 - Capstone
Students will synthesize evidence for a clinical problem and develop an evidence-based project building on work in prior core and clinical courses. This project will be comprised of evidence-based best practice innovations that will actualize the nursing advanced practice role in educational, administrative, and clinical environments to impact health of individuals or populations. This course is designed to fall within the final two semesters of the MSN program.
Prerequisite: NURS 5325 and at least one program specialty course.

NURS 5383 - Applied Informatics: Quality, Safety and Cost
Provides foundational education in the role of informatics in assisting healthcare organizations, clinicians and consumers to achieve the goals of: (1) quality care, (2) reducing the cost of healthcare, (3) improving the health of populations while improving the experience of the clinician.

NURS 5385 - Information Systems Life Cycle
This course is focused on preparing the students for all facets of information system procurement and implementation. A primary focus of the course is on the tactical skills and competencies required to implement information systems in various healthcare settings. This course prepares the student to function as a project team member during the implementation

of a clinical information system and to participate in system evaluation and maintenance.

NURS 5387 - Data Analysis and Healthcare Technology
Learning to effectively manage and analyze healthcare data is essential to the practice of healthcare informatics. In this course, students examine data standards, management, analysis, application and transformation. The students will have hands-on experience with data analysis from conception of a project to presenting the results. Students will examine other ways technologies are being used in healthcare such as simulation, robotics, wearable devices and communication.

NURS 5389 - Informatics, Quality & Safety Capstone
This course is focused on demonstrating critical thinking, self-direction, and competency in the skills needed by healthcare informatics professions entering the profession. Using students' learning from the prerequisites courses, a series of real-world work products will be created based on unfolding case studies using simulated data sets. Students will work in one or more consulting team(s) however; a portfolio of their individual work will be created as exemplars for the future.
Prerequisite: NURS 5381, NURS 5383, NURS 5385, NURS 5387.

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 5339 AND Admission to MSN FNP program or NURS 5339 AND Admission to FNP Cert program*This course does not allow concurrent enrollment in NURS 5351 or NURS 5353. Corequisite: CPR as a prerequisite.

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 6301 - Introduction to DNP Role & Culture
The role of the DNP prepared nurse is examined, with emphasis on issues related to healthcare in rural and underserved communities. Self-assessment and reflection of individual strengths and emotional intelligence are conducted; action plans for individual growth during the DNP program are developed. Leadership opportunities are examined through identification of a relevant clinical problem/issue as the foundation for the DNP scholarly project.
Offered: Fall.

NURS 6303 - Healthcare Informatics
In-depth exploration of data management systems and skills needed to manage patient, systems and research information is the focal point of this course. Students will use external evidence (research) and internal evidence (practice data) within healthcare databases and clinical information systems to determine best practices for achieving optimal patient outcomes. The influence of clinical information systems and internal evidence, such as costs/budgets, and the selection, design, and planning of these systems that will effectively support meaningful use and provide data to improve patient care outcomes is discussed.
Prerequisite: NURS 6301 and NURS 6326. Corequisite: NURS 6315. Offered: Spring.

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: Prerequisite: NURS 6341.

NURS 6312 - Theory Construction and Evaluation
In-depth analyses of theories and models applicable to nursing science. Concept analysis to support development and critique of conceptual models will lay the foundation to guide programs of nursing research and development of nursing projects.
Prerequisite: NURS 6310 or Admission to the DNP.

NURS 6315 - Evidence-based Practice I
EBP paradigm and EBP process are the foundation of this course. Concepts, models and methods for translation and implementation of research into practice are applied. Evaluation methods of the processes and outcomes of implementation and practice change are discussed. Principles of sustainable evidence-based practice change across disciplines and within various healthcare settings are included.
Prerequisite: NURS 6301 and NURS 6326. Corequisite: NURS 6303. Offered: Spring.

NURS 6317 - Evidence Based Practice II
EBP models, principles of sustainability, and evaluation of outcomes are the focus in this course. Implementation science as applied to rural or underserved communities of interest will be discussed. Students will explore the impact of challenges with changing healthcare delivery and clinical practice in a context of culture.
Prerequisite: NURS 6358. Corequisite: This course requires no corequisites.

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: Prerequisite: NURS 6310.

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 6326 - Advanced Epidemiology
Epidemiological strategies to determine patterns of illness or injury. Students will examine concepts of health, disease causality, and risk, for development of evidence-based programs focused on disease prevention among target populations. This course provides the student with the opportunity to complete the background and significance of issues from

internal and external evidence that serves as the epidemiological evaluation and basis for the DNP Scholarly Project.
Corequisite: NURS 6301. Offered: Fall.

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 6331 - Organizational Leadership and Culture
Leadership skills pertaining to systems perspectives, health care policy, organizational change, and inter-professional collaboration are discussed. Strengths-based leadership skills required to lead practice improvement initiatives and inter-professional health care teams serving in rural and underserved areas are emphasized. The impact of economic, socio-political and other forces on their organization and regional health care policies will be explored.

Prerequisite: NURS 6343.

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 6330 & NURS 6333. Corequisite: NURS 6322.

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 6337.

NURS 6341 - Scholarship of Writing for the PhD and DNP
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 manuscript to contribute to the evidence base of a professional discipline. Progressive written products with feedback/critique will move incrementally toward the completed manuscript that will be submitted for publication to a peer-reviewed scholarly journal. Students are advised to come into the course with a written academic paper that will foster their program of research or clinical focus or previous unpublished research that can be transformed into a manuscript for publication.

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: NURS 6341.

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 6358 - Population Health Within a Context of Culture
Health outcomes for rural and underserved populations are examined. Social and cultural determinants of health and factors that increase risk for poor health outcomes are emphasized. Interventions related to clinical prevention and population health, the use of information systems, and interdisciplinary methodologies for improving health care delivery will be evaluated. The student will utilize strengths to identify implementation strategies used in the DNP scholarly project to address population health needs.
Prerequisite: NURS 6315. Offered: Summer.

NURS 6371 - Advanced Leadership I
Skills for organizational and systems leadership are addressed. Identifying and solving problems within health care across the delivery systems and professions are explored. Quality, safety and evidenced based practice are emphasized. Includes advanced leadership experience practicum (125 hours).
Prerequisite: NURS 6358. Corequisite: NURS 6317.

NURS 6373 - Advanced Leadership II
Application of business, economics, and financial management principles in healthcare organizations are examined. Developing and monitoring budgets for practice initiatives are addressed. Design and evaluation of practice changes are emphasized. Includes advanced leadership experience practicum (125 hours).
Prerequisite: NURS 6371 Advanced Leadership I.

NURS 6375 - Leadership Scholarly Synthesis I
Evaluation of outcomes, impact and sustainability plan for the DNP Scholarly Project is addressed. Synthesis of previous coursework, including strengths-based leadership plan and inter-professional management of populations with complex health needs will be incorporated. Includes immersion in an advanced leadership role. Provides advanced leadership practicum (125 hours).
Prerequisite: NURS 6373. Corequisite: NURS 6352.

NURS 6377 - Leadership Scholarly Synthesis II
Dissemination of the DNP Scholarly Project is addressed. Synthesis of previous coursework, including strengths-based leadership plan and inter-professional management of populations with complex health needs will be incorporated. Includes immersion in an advanced leadership role. Provides advanced leadership practicum (125 hours).
Prerequisite: NURS 6375.

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 6381 - Advanced Clinical Practice I
Students will utilize strengths-based leadership to provide expert clinical management of patients and populations with complex healthcare needs by implementing the DNP Scholarly Project. Principles of epidemiology, health promotion, cost-effective care, and evidence-based practice are incorporated. Includes advanced practice practicum (125 hours).
Prerequisite: NURS 6358. Corequisite: NURS 6317.

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.

NURS 6383 - Advanced Clinical Practice II
Advanced clinical management of patients and populations with complex health care needs is addressed. Evidence-based inter-professional practice in rural and underserved areas is emphasized. Includes advanced practice practicum (125 hours).
Prerequisite: NURS 6381 Advanced Clinical Practice I.

NURS 6385 - Practice Scholarly Synthesis I
Evaluation of outcomes, impact and sustainability plan for the DNP Scholarly Project is addressed. Synthesis of previous coursework, including strengths-based leadership plan and inter-professional management of populations with complex health needs will be incorporated. Includes immersion in an advanced clinical practice role (125 hours).
Prerequisite: NURS 6383. Corequisite: NURS 6352.

NURS 6387 - Practice Scholarly Synthesis II
Dissemination of the DNP Scholarly Project is addressed. Synthesis of previous coursework, including strengths-based leadership plan and inter-professional management of populations with complex health needs will be incorporated. Includes immersion in an advanced clinical practice role. Provides advanced practicum leadership experience (125 hours).
Prerequisite: NURS 6385.

OCTH - OCCUPATIONAL THERAPY

OCTH 5175 - Professional Development Seminar I
First of a series of courses focused on professional behaviors, professional case studies, community service, reflective practices. Service learning experience (30 hours) in community based organizations to build a foundation of knowledge and practice that adheres to ethics of care and cultural competence.

OCTH 5180 - Professional Development Seminar II
Series of courses focused on professional behaviors, professional case studies, community service, reflective practices. Required Level I fieldwork (40 hours) in clinical occupational therapy practice to build a foundation of knowledge and practice to support understanding of the occupational therapy practice process (fall, spring or summer).
Prerequisite: OCTH 5175, OCTH 5210, OCTH 5300, OCTH 5320, OCTH 5335.

OCTH 5185 - Professional Development Seminar III
Series of courses focused on professional behaviors, professional case studies, community service, reflective practices. Required Level I fieldwork (30 hours) in clinical occupational therapy practice builds a foundation of knowledge and practice to support understanding of the occupational therapy practice process (fall, spring or summer)
Prerequisite: OCTH 5340, OCTH 5247, OCTH 5315, OCTH 5180, OCTH 5325. Corequisite: None. Crosslisted as: None.

OCTH 5190 - Professional Development Seminar IV
Series of courses focused on professional behaviors, professional case studies, community service, reflective practices. Required Level I fieldwork (30 hours) or service learning experience in clinical occupational therapy practice build a foundation of knowledge and practice to support understanding of the occupational therapy practice process.
Credits: 1
Prerequisite: OCTH 5185.

OCTH 5195 - Prof. Development Seminar V
Fifth of a series of courses focused on professional behaviors, professional case studies, community service, reflective practices. Required Level 1 Fieldwork cases and simulations and service learning experiences in clinical occupational therapy practice build a foundation of knowledge and practice to support understanding of the occupational therapy practice process. This course serves as a "capstone" review course for previous semesters work and includes licensure and credentialing information as well as strategies for ongoing professional development.
Prerequisite: Successful completion of all Module 4 courses is required before students may enroll in this course. Corequisite: None. Crosslisted as: None.

OCTH 5210 - Foundations of Occupational Therapy Practice
Foundational overview of occupational therapy practice. Survey of historical perspectives, current practice trends and emerging practice areas. Introduction of occupational therapy practice framework, professional skills, clinical reasoning.

OCTH 5235 - Health & Wellness in Community-Based Occupational Therapy Practice
Application of health, wellness and disability prevention models through program creation. Creation of program to support client and community health & wellness outcomes.
Prerequisite: OCTH 5340, OCTH 5247, OCTH 5315, OCTH 5180, OCTH 5325. Corequisite: None. Crosslisted as: None.

OCTH 5247 - Assistive Technology in Pediatric Occupational Therapy Practice
Support participation in pediatric and family populations through assistive technology. Introduction model of AT assessment and decision-making. Focus on universal design and individualized technologies to support occupational performance in pediatric and family populations.
Prerequisite: OCTH 5210, OCTH 5300, OCTH 5320, OCTH 5335, OCTH 5175.

OCTH 5260 - Advanced Upper Extremity Rehabilitation: Splinting, Assistive Technology & Modalities
Focus on upper extremity splinting, powered mobility, driver rehabilitation, environmental modifications and assistive technology to support occupational performance. Practice in prosthetics/orthotics, physical agent modalities and pain management.
Credits: 2
Prerequisite: Students need to complete OCTH 5247 Assistive Technology in Pediatric Occupational Therapy Practice before enrolling in this course.

OCTH 5270 - Occupational Conditions & Interventions III
Application of client centered outcomes in intervention planning for middle to older adult practice including neurological, musculoskeletal, general medical and acquired conditions. Application of clinical reasoning skills as part of the intervention process as appropriate for the client population and setting.
Prerequisite: Successful completion of all Module 4 courses is required before students may register for this course. Corequisite: None. Crosslisted as: None.

OCTH 5275 - Teaching, Learning, & Educational Leadership in Occupational Therapy
Overview of higher education in the health sciences and responsibilities of the educator fulfilling professional missions of research, teaching and service in occupational therapy practice and education. Focus on Adult Learning Model.
Prerequisite: Successful completion of all Module 4 courses is required before students may enroll in this course. Corequisite: None. Crosslisted as: None.

OCTH 5280 - Leadership & Management
Critical analysis of trends, practice issues and leadership strategies in occupational therapy practice. Principles of management, current health care policy and federal/state regulations, reimbursement systems.
Prerequisite: Successful completion of all Module 4 courses is required before students may enroll in this class. Corequisite: None. Crosslisted as: None.

OCTH 5300 - Applied Neuroanatomy
Emphasis on neurophysiology, neuroanatomy, and disorders of the nervous system. Focus on the relationship between occupational therapy practice and the structure and function of the nervous system.

OCTH 5315 - Research & Knowledge Translation in Occupational Therapy I
Access, critique and incorporate evidence into practice with the goal to improve client outcomes. Evaluate current research evidence and apply evidence to practice decisions. Focus on critically appraised topics based on community practice stakeholder PICO questions.
Prerequisite: OCTH 5210, OCTH 5300, OCTH 5320, OCTH 5335, OCTH 5175.

OCTH 5320 - Contextual Movement for Occupational Therapists
Emphasis on the origin, nature and course of musculoskeletal and neurological disorders using biomechanical intervention and treatment planning to support occupational participation and engagement. Focus on basic biomechanical assessments and interventions.

OCTH 5325 - Occupations, Conditions, & Interventions in Occupational Therapy Practice I
Application of client-centered outcomes in intervention planning for pediatric practice including neurological, musculoskeletal, general medical, genetic and acquired conditions. Application of clinical reasoning skills as part of the intervention process as appropriate for the client population and setting. Focus on developmental and sensory frames of reference.
Prerequisite: OCTH 5210, OCTH 5300, OCTH 5320, OCTH 5335, OCTH 5175.

OCTH 5330 - Research & Knowledge Translation in Occupational Therapy II
Access, critique and incorporate evidence into practice with the goal to improve client outcomes. Foundational knowledge translation concepts. Determine needs of client and design practice change project to target improved client outcomes related to knowledge translation. Focus on basic concepts related to knowledge translation in health care and principles of qualitative research.
Prerequisite: OCTH 5315.

OCTH 5335 - Art & Science of Occupational Therapy Practice
Engagement in occupation with emphasis on Occupational Therapy Practice Framework to support activity analysis and adaptation. Application of materials and therapeutic use of self to support occupational performance.

OCTH 5340 - Occupation & Evaluation in Occupational Therapy I
Application of client-centered outcomes in evaluation for pediatric practice including neurological, musculoskeletal, general medical, genetic and acquired conditions. Practice and application of standardized assessments and service delivery across contexts and cultures. Focus on developmental and sensory frames of reference including Sensory Integration and Developmental.
Prerequisite: OCTH 5210, OCTH 5300, OCTH 5320, OCTH 5320, OCTH 5175.

OCTH 5345 - Occupation, Evaluation, Conditions, and Interventions I
Application of client-centered outcomes and evaluation for psychosocial practice in community and clinical settings. Focus on psychosocial frames of reference including MOHO. Application of client-centered outcomes in intervention planning for psychosocial practice in community and clinical settings. Focus on group process, therapeutic communication and therapeutic use of self.
Prerequisite: OCTH 5340, OCTH 5247, OCTH 5315, OCTH 5180, OCTH 5325. Corequisite: None. Crosslisted as: None.

OCTH 5350 - Occupation & Evaluation in Occupational Therapy Practice II
Application of client-centered outcomes in evaluation for young adulthood practice including neurological, musculoskeletal, general medical and acquired conditions. Practice and application of standardized assessments and service delivery. Focus on frames of reference and models of practice.
Credits: 3
Prerequisite: OCTH 5345.

OCTH 5355 - Occupation, Conditions, & Interventions in Occupational Therapy II
Application of client centered outcomes in intervention planning for young adult practice including neurological, musculoskeletal, general medical and acquired conditions. Application of clinical reasoning skills as part of the intervention process as appropriate for the client population and setting. Focus on frames of reference and models of practice.
Prerequisite: OCTH 5325.

OCTH 5365 - Occupational Evaluation IV
Application of client-centered outcomes in evaluation for older adulthood practice including neurological, musculoskeletal, general medical and acquired conditions. Practice and application of standardized assessments and service delivery.
Prerequisite: Successful completion of all Module 4 courses is required before the student can enroll in this course. Corequisite: None.

OCTH 5860 - Level II Fieldwork
Field experience in clinic or community, 12 weeks full time clinical experience off site rotation (480 hours).

OCTH 5862 - Level II Fieldwork 2
Field experience in clinic or community, 12 weeks full time clinical experience off site rotation (480 hours).

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 5307 - Metropolitan Problems
Using case study as its principal methodology and moving from theoretical propositions to practical considerations, this course examines an in-depth study of the conditions underlying major social problems in big cities. Also, the course examines many current metropolitan problems such as transportation, housing, and crime.

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 the role of information technology when applied to public management. The mission of the course is to provide public managers with a useful framework for understanding the latest technologies in a non-technical way. The focus will be on opportunities and threats created by rapidly changing information technology.
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 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 5353 - Public Administration Capstone Seminar
Course provides a capstone experience for students as they address an important policy and administrative issue. Students draw on the coursework and experiences of their MPA education to develop specific recommendations for design. I implementation, and evaluation of a project task. Should be taken in student's final semester of coursework.

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 twice for credit when content changes.

PADM 5385 - Studies in Demography
This course 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.

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 7001 - Introductory Pharmacy Practice Experience Year One Complementary
This Introductory Pharmacy Practice Experience (IPPE) course provides students with an introductory understanding of pharmacy practice under the direct supervision of a preceptor

PHAR 7002 - Introductory Pharmacy Practice Experience Year Two Complementary
This Introductory Pharmacy Practice Experience (IPPE) course provides students with a more advanced understanding of pharmacy practice under the direct supervision of a preceptor.

PHAR 7121 - Introduction to Preparing for a Future in Academic Pharmacy (1)
This course introduces the student to valuable tools for success in academic pharmacy. Students will be exposed to grant writing, precepting, presentation skills, service, work-life balance, and instructional design. Students will learn valuable tools to apply to any academic pharmacy environment.
Prerequisite: 2nd or 3rd year pharmacy student.

PHAR 7132 - Medical Terminology
Introductory course in medical terminology.

PHAR 7122 - Practical Applications to Preparing for a Future in Academic Pharmacy (1)
This course introduces the student to valuable tools for a success in academic pharmacy. Students will build upon the introductory class and design projects/presentations focused on teaching and clinical and academic service while incorporating work-life balance and academic efficiency.
Prerequisite: PHAR 7121 and 2nd or 3rd year pharmacy student.

PHAR 7123 - Delivering an Effective Professional Presentation (1)
This course introduces the basic skills and concepts necessary to create and deliver all components of a professional presentation: curriculum vitae, biosketch/abstract, podium presentation, objectives, handout, references and assessment questions. A large component will also focus on public speaking, professionalism and communication skills. By the end of the course, all students will have created and delivered a podium presentation on a pharmacy topic of their choice.
Prerequisite: P2 or P3 standing.

PHAR 7124 - Clinical Research: Drug Development and the Role of the Pharmacist (1)
This course will help the students develop expertise with the clinical research drug development process and locating enrolling clinical trials. Students will gain the ability to discuss with patients, caregivers, and other healthcare providers the advantages and disadvantages of participation in clinical research and become and expert about trial availability for specific conditions that may be prevalent in their practice location and patient population. In addition, this course will evaluate ethical issues in the clinical drug develop process, including patient access to experimental therapies.
Prerequisite: P2 or P3 Academic Standing.

PHAR 7125 - Principles of Drug Design
This course provides basic understanding to principles of drug discovery, design and development. The topics covered include choosing a disease, identifying drug targets, establishing testing procedures, finding a lead compound, lead optimization, performing the preclinical and clinical trials, and introducing new drugs to the market. The course will have more emphasis on the methods used to design a lead compound, such as ligand/structure-based drug design methods. It will also explain the approaches used in improving the pharmacodynamic and pharmacokinetic properties of lead compounds. Recent advances in drug design such as the use of molecular modeling software tools will also be presented.

PHAR 7126 - Infectious diseases – Antimicrobial Stewardship 1
This course reviews the importance of antimicrobial stewardship programs in improving outcomes in patients with infectious complications, while minimizing the unintended consequences of antimicrobial use. During this course the student will be exposed to the different tools needed to design and implement an antimicrobial stewardship program. These skills include antibiogram development, metrics, guideline and clinical trial reviews, and optimization of antimicrobial therapy. The student will also have the opportunity to meet other members of the antimicrobial stewardship team (infectious diseases physician, microbiologist, infection preventionists, pharmacists, informatics).

PHAR 7127 - Social-Behavioral Aspect of Health Care
This course offers an overview of the social-behavioral aspects of health care. The pharmacist's role is explored in the context of major social issues affecting health care - in particular medication safety issues - integrating information from both pharmaceutical and social sciences. Students may use this knowledge towards understanding the individual needs of the patient in a practice setting. The course will help students consider how organizations and social systems impact patient experiences with medications, contributing to an improved system of patient-centered practice and care.

PHAR 7128 - Introduction to Medication Therapy Management (1)
Introduction to MTM: This elective course introduces the student to the concept and application of medication therapy management (MTM) and the pharmacist's patient care process (PPCP). The course is based on the profession's accepted and standardized approach to direct patient care (PPCP). The student is taught the principles of MTM using the American Pharmacists Association (APhA) Delivering Medication Therapy Management Services Certificate course. Course instruction is delivered using mini-topic discussions, applications, cases, and hands-on experience with MTM web-based platforms. The course is intended to prepare student pharmacists to transition directly into the practice of MTM during their advanced practice pharmacy experiences (APPEs). Upon successful completion of this course, students will obtain their APhA Medication Therapy Management Services certification.
Prerequisite: Admission to the College of Pharmacy and P3 standing.

PHAR 7129 - Advanced Medication Therapy Management (1)
This elective course introduces the student to advanced medication therapy management including complex medication therapy management (MTM) patients, communication skill development including motivational interviewing, and MTM billing with an in-depth look at MTM's place and importance in Medicare Part D and the Affordable Care Act. The course will also introduce how to promote MTM services at the pharmacy as well as other patient care services. The course will present MTM's vital role during transitions of care in patients and how it may be used to help facilities reach quality measures. Course instruction is delivered using mini-topic discussions, applications, cases, and hands-on experience with MTM web-based platforms. The course is intended to prepare student pharmacists to transition directly into the practice of MTM during their advanced practice pharmacy experiences (APPEs).
Prerequisite: Admission to the College of Pharmacy and P3 standing.

PHAR 7130 - Diabetes Elective (1)
The aim of this course is to focus on practical implications regarding understanding and caring for patients with type 1 and type 2 diabetes mellitus. The class will reiterate basic pharmaceutics and pharmacotherapy knowledge from previous Integrated Pharmacy courses and build upon that by requiring students to take a more active role through simulations of the day to day requirements of a diabetic patient and by providing more detailed information on counseling, recommendations, medication regimens and follow-up.
Prerequisite: Admission to the College of Pharmacy and P3 standing.
Corequisite: Completion or current enrollment in PHAR 7509 and PHAR 7250.

PHAR 7131 - Ambulatory Care Pharmacy Elective
The course is designed to build upon therapeutic skills acquired in the Integrated Pharmacy courses in order to assist students with advanced problem-solving and critical thinking skills necessary to be successful in managing complex patients in outpatient settings. This course will place emphasis on the most commonly encountered chronic disease states, such as diabetes, dyslipidemia and hypertension, in addition to disease states associated with anticoagulant and antiplatelet therapies. Students will also be challenged through integration of management of various other chronic conditions including, but not limited to, chronic obstructive pulmonary disease, gout, thyroid disorders and depression.
Prerequisite: Admission to the College of Pharmacy and P3 standing.

PHAR 7133 - Substance Use Disorders (1)
Students in this course will review the history, pathophysiology, and social issues of substance use disorders. Focus will be placed on the use and management of specific substances, including opioids, alcohol, marijuana, synthetic drugs, other "uppers and downers," and prescription medications.
Prerequisite: Admission to the College of Pharmacy.

PHAR 7134 - Advanced Topics in Pharmacogenomics
This Pharmacy Selective course is designed to provide students with a more detailed examination of the current state of the field of Pharmacogenomics in pharmacy practice. Students will examine the barriers to implementation of pharmacogenomics in pharmacy practice, accumulate a set of tools to use for keeping up with the growing field after graduation, review and evaluate available guidelines for altering drug therapies to personalize patients' treatment based on their genetic profiles and evaluate literature from which the guidelines were developed.
Prerequisite: Current enrollment in the College of Pharmacy and P3 standing.

PHAR 7135 - Caring For Underserved Populations
This course introduces pharmacy students to caring for vulnerable and underserved populations in a healthcare setting.

PHAR 7136 - Applied Evidence-Based Medicine: Defense of the Clinical Arts I
This course provides second year students the opportunity to integrate and apply the fundamentals of the biomedical, pharmaceutical, and clinical sciences to patient cases. This course is discussion-based and students will be exercising their clinical reasoning and communication skills to engage in oral debates and oral defense of their patient care plans. Patient cases will be representative of core and common disease states that are created by faculty or taken from actual patient scenarios. Case topics are likely to change with each offering of the course.
Prerequisite: P2 standing.

PHAR 7137 - Obtaining a Residency
This course provides students with an overview of post-graduate residency programs and the residency application process. Students will gain additional opportunities including mock interviews, preparing publications, enhancing presentation skills, and interacting directly with residency trained clinical pharmacists in order to adequately prepare for post-graduate residency applications.

PHAR 7138 - Biochemistry of Metabolic Diseases (1)
This didactic classroom elective course will introduce the student to the biochemical foundations of metabolically based diseases. The class work will be summarized in a comprehensive case.
Prerequisite: Admission to the College of Pharmacy and P3 standing with successful completion of PHAR 7602, PHAR 7508, PHAR 7248, and PHAR 7168.

PHAR 7139 - Applied Evidence-Based Medicine: Defense of the Clinical Arts II
This course provides third year students the opportunity to integrate and apply the fundamentals of the biomedical, pharmaceutical, and clinical sciences to patient cases. This course is discussion-based and students will be exercising their clinical reasoning and communication skills to engage in oral debates and oral defense of their patient care plans. Patient cases will be representative of core and common disease states that are created by faculty or taken from actual patient scenarios. Case topics are likely to change with each offering of the course.
Prerequisite: Admission to the College of Pharmacy and P3 standing.

PHAR 7140 - Follow Your Compass (1)
This elective will enable students to set achievable goals to become competitive candidates for postgraduate training, as well as specialized pharmacy positions. Area specialists will discuss how they achieved their current position to provide valuable insights to students. Additionally, students will undergo self-reflection for each of the specialized areas examined, and develop a specific timeline with individualized goals for a specific specialized pharmacy area.
Prerequisite: Admission to the College of Pharmacy and P3 standing.

PHAR 7145 - Contemporary Topics in Pharmacy
This course introduces the student to contemporary topics in pharmacy with an emphasis on boarding the students' appreciation of current issues and opportunities that they may face as practicing pharmacist.

PHAR 7158 - Interprofessional Education Course
This course focuses on interprofessional team education and interprofessional team dynamics to prepare students to provide patient-centered care as a contributing interprofessional team member.

PHAR 7169 - Introduction to Pharmacy Practice Experience 9 (1)
The Introductory Pharmacy Practice Experience (IPPE) PHAR 7169 course provides students with an understanding of public health promotion and wellness. Students will be actively engaged with patients by helping to provide health and wellness services such as brown bag sessions, immunizations, health screenings and medication therapy management sessions under the direct supervision of a registered preceptor. Students will be required to utilize communication skills along with the use of knowledge and abilities to care for a diverse population in various settings.
Prerequisite: Current P3 Standing.

PHAR 7170 - Introductory Pharmacy Practice Experiences 10 (1)
The Introductory Pharmacy Practice Experience (IPPE) PHAR 7170 course provides students with an understanding of the many aspects of institutional care on off-hours which includes, nights, holidays and weekend shifts. The students will be assigned to a registered preceptor who will guide them through procedures and policies on night, holiday and weekend shifts. Different patient populations including different disease states should be seen and how interprofessional care occurs during these times.
Prerequisite: Current P3 Standing.

PHAR 7171 - Introductory Pharmacy Practice Experience 11 (1)
The Introductory Pharmacy Practice Experience (IPPE) PHAR 7171 course provides students with an understanding of the many aspects of community care on off-hours which includes, nights, holidays and weekend shifts. The students will be assigned to a registered preceptor who will guide

them through procedures and policies on night, holiday and weekend shifts. Different patient populations including different disease states should be seen and how interprofessional care occurs during these times.
Prerequisite: Current P3 Standing.

PHAR 7172 - Introductory Pharmacy Practice Experience 12 (1)
The Introductory Pharmacy Practice Experience (IPPE) PHAR 7172 course provides students with an understanding of the many aspects of senior care. The students will be put into interprofessional groups with nursing students. Each group will be assigned a senior patient to care for throughout the year. Students will be able to complete assignments with their senior patient on communication strategies, screening tests, medications and conditions that affect the senior population.
Prerequisite: Current P3 Standing.

PHAR 7182 - Introductory Pharmacy Practice Experiences 2
This course provides students with an overview of pharmacy practice sites and provides opportunities to practice basic pharmacy skills under the direct supervision of a preceptor in a community pharmacy.
Prerequisite: PHAR 7281 or equivalent course.

PHAR 7185 - Introductory Pharmacy Practice Experience 5
This course focuses on the development and application of advanced pharmacy practice skills and drug knowledge through the completion of experiential hours in an institutional practice setting and at health and wellness events in East Texas.
Prerequisite: P3 Standing; PHAR 7281 or equivalent.

PHAR 7186 - Introductory Pharmacy Practice Experience 6
This course focuses on the development and application of advanced pharmacy practice skills and drug knowledge through the completion of drug information questions, journal club, SOAP notes, Case Presentations, and Health and Wellness Events, to prepare students for upcoming APPE rotations.
Prerequisite: P3 Standing; PHAR 7281 or equivalent course.

PHAR 7190 - Special Topics
The special topics courses cover topics previously not covered within the curriculum or cover topics in greater depth.

PHAR 7191 - Pharmacy Lab 1: Intro to Pharmacy Practice Skills
This course introduces the student to the fundamentals of communication with patients and healthcare workers, drug information resources, prescription dispensing, and an introduction to patient assessment.

PHAR 7192 - Pharmacy Lab 2: Non Sterile Compounding
Introduction to the science and practice of non-sterile pharmaceutical compounding.
Prerequisite: PHAR 7201: Pharmaceutical Calculations.

PHAR 7193 - Pharmacy Lab 3: Sterile Products and Intravenous Admixtures
This laboratory course will provide students with hands on experience in preparing and dispensing parenteral and sterile products and admixtures using aseptic techniques.

PHAR 7198 - Clinical Toxicology & Teratogenicity
This required course shall serve as an introduction to clinical toxicology with specific emphasis given to toxidromes and acute patient management.
Prerequisite: P3 Standing.

PHAR 7199 - Independent Study
Independent study in specific areas of pharmacy not covered by organized pharmacy courses.

PHAR 7201 - Pharmaceutical Calculations (2)
In this course, fundamental principles and basic techniques involved in pharmaceutical calculations are presented in order for students to develop skills in pharmaceutical calculations and problem solving applicable to the practice of pharmacy. Scope primarily includes computations related to prescriptions and medication orders.

PHAR 7202 - Principles of Microbiology & Immunology (2)
This course provides an overview of medical immunology and medical microbiology and the host-microbe interactions in infectious diseases in humans. It integrates the basic concepts of the immune response to infectious agents and other triggers and their roles in disease. An introduction to the rational management, prevention, and control of infectious diseases is provided.
Prerequisite: None. Corequisite: This course provides an overview of medical immunology and microbiology. Crosslisted as: None.

PHAR 7203 - Introduction to Medicinal Chemistry (2)
This course focuses on introducing medicinal chemistry concepts and few major drug classes to pharmacy students.
Prerequisite: PHAR 7401 - Principles of Biochemistry and PHAR 7301 - Principles of Physiology, Pharmacology and Pharmacogenomics.

PHAR 7211 - Nuclear Pharmacy (2)
Introduction to the science and practice of nuclear pharmacy
Prerequisite: P3 Year Standing.

PHAR 7217 - Introduction to Pharmacy Practice, Professionalism, & Ethics (2)
This introductory course focuses on providing students with the foundational concepts and skills needed to practice in the evolving field of pharmacy in a professional, ethical, and adaptive manner.

PHAR 7218 - Nonprescription Medications and Self Care
Nonprescription medications and dietary supplements comprise a large market within the health care industry. Students will learn to formulate preventative therapies and treatment plans for various disease states and medical conditions with use of nonprescription medications and self-care remedies. Self-care guidelines will be discussed in addition to differentiation of when to treat versus refer patients to a health care provider. This course will provide the foundation on the safe and effective use of non-prescription and self-care products. The course will also introduce valuable skills required to provide individualized patient care, such as patient assessment techniques; patient interviewing and counseling; and pharmaceutical calculations.
Prerequisite: PHAR 7191.

PHAR 7219 - Drug Information Retrieval, Literature Evaluation, & Informatics (2)
This course is designed as broad introduction to the use of primary, secondary, and tertiary literature and the strategies used to evaluate literature and information resources
Prerequisite: None. Corequisite: None.

PHAR 7220 - Therapeutic Drug Monitoring and Clinical Pharmacokinetics
This course prepares the student for the application and incorporation of therapeutic drug monitoring and clinical pharmacokinetics into the patient care process.
Prerequisite: PHAR 7481.

PHAR 7223 - Presentation Seminar Elective
This course educates pharmacy students on the development and delivery of presentations.

PHAR 7225 - Serious Games and Pharmacy Education
This course is intended for students interested in a career in academia. Students will learn about the benefits of gamification to pharmacy education and the basic components of educational game design

PHAR 7229 - Advanced Medication Therapy Management
This elective course focuses on the application of skills and resources needed for pharmacists to perform medication therapy management services in clinical practice.

Prerequisite: P3 standing.

PHAR 7232 - Cystic Fibrosis Elective
This course provides an in-depth review of cystic fibrosis (CF) evidence-based medicine. Students will follow a progressive patient case from birth through adolescence and develop plans accordingly to address CF self-care, pharmacotherapy, pulmonary exacerbations, related complications, and common patient barriers to care.
Prerequisite: Admission to the College of Pharmacy and P3 Standing.

PHAR 7233 - Substance Use Disorders (2)
Students in this course will review the history, pathophysiology, pharmacotherapy, and social issues of substance use disorders
Prerequisite: None. Corequisite: None.

PHAR 7234 - Advanced Topics in Pharmacogenomics (2)
This Pharmacy elective course is designed to provide students with a more detailed examination of the current state of the field of Pharmacogenomics in pharmacy practice, including an introduction to pharmacogenomic patient counseling.
Prerequisite: None. Corequisite: None.

PHAR 7235 - Service and Leadership in Healthcare
This elective course provides students with the skills necessary to become responsible and ethical leaders in pharmacy while cultivating their own personalized leadership style.

PHAR 7236 - Applied Evidence-Based Medicine: Defense of the Clinical Arts I
This elective course focuses on the application of evidence-based medicine to complex patient cases through clinical reasoning and use of the Pharmacist's Patient Care Process.

PHAR 7237 - Obtaining a Residency (2)
This course provides students with an overview of post-graduate residency programs and the residency application process. Students will gain additional opportunities including mock interviews, publications, presentations and direct contact with residency trained clinical pharmacists in order to adequately prepare for post-graduate residency applications.
Prerequisite: Admission to the College of Pharmacy and P2 or P3 standing.

PHAR 7238 - Biochemistry Metabolic Diseases Elective (2)
This didactic classroom elective course will give the pharmacy student a greater biochemical background as it pertains to metabolically based diseases. The class work will be summarized in a comprehensive case.
Prerequisite: P3 Standing.

PHAR 7239 - Applied Evidence-Based Medicine: Defense of the Clinical Arts
This elective course focuses on the application of evidence-based medicine to complex patient cases through clinical reasoning and use of the Pharmacist's Patient Care Process.

PHAR 7240 - Fountain of Youth: Geriatric Pharmacotherapy
This elective course focuses on the development and application of skills needed to provide optimal patient care for geriatric patients.

PHAR 7273 - Healthcare Systems (2)
This course focuses on the structure, organization, delivery, regulation, and financing of the U.S. Health Care System.
Corequisite: None.

PHAR 7274 - Biostatistics & Clinical Research Methods (2)
This course introduces pharmacy students to the principles of applied biostatistics and research methods. The goal of this course is for the students to develop the ability to critically appraise health and drug literature in order to make evidence-based decisions in their practice.

PHAR 7275 - Public and Rural Health in Pharmacy
This course introduces the student to public health issues that affect East Texas, the United States, and the world, and how pharmacists can improve public health outcomes.

PHAR 7276 - Social-Behavioral Pharmacy and Practice Management
This course focuses on management principles such as planning, organizing, directing, and controlling pharmacy resources applied to various pharmacy practice settings and patient outcomes.
Prerequisite: PHAR 7273.

PHAR 7281 - Introductory Pharmacy Practice Experience 1 (2)
This course focuses on acquiring and practicing basic knowledge and skills required for upcoming pharmacy practice experiences including Immunization Certification and participation in patient care events.

PHAR 7283 - IPPE 3: Intro Pharmacy Practice Experience (Community)
This course focuses on the development and application of pharmacy practice skills and basic drug knowledge through the completion of experiential hours in a community pharmacy practice setting and at patient care events.
Prerequisite: PHAR 7281 or equivalent course.

PHAR 7284 - IPPE 4: Intro Pharmacy Practice Experience (Institutional)
This course focuses on the development and application of pharmacy practice skills and basic drug knowledge through the completion of experiential hours in an institutional pharmacy practice setting and at patient care events.
Prerequisite: PHAR 7281 or equivalent course.

PHAR 7285 - Clinical Toxicology & Teratogenicity
This required course shall serve as an introduction to clinical toxicology with specific emphasis given to toxidromes and acute patient management.
Prerequisite: P3 Standing.

PHAR 7294 - Pharmacy Lab 4: Patient Assessment
This laboratory course will provide students with the knowledge and skills needed to perform patient assessments for patients with a variety of disease states.

PHAR 7295 - Applied Pharmacy Practice Skills
This laboratory course focuses on the application of skills and resources needed for pharmacists to effectively provide patient care in the outpatient setting.
Prerequisite: PHAR 7191.

PHAR 7296 - Applied Pharmacy Practice Skills 2
This pharmacy lab focuses on the application of skills and resources needed for pharmacists to ensure patient safety and optimize patient outcomes in the inpatient settings.

PHAR 7299 - Independent Study
Independent study in specific areas of pharmacy not covered by organized pharmacy courses.

PHAR 7290 - Special Topics
The special topics courses cover topics previously not covered within the curriculum or cover topics in greater depth.

PHAR 7301 - Principles of Physiology, Pharmacology and Pharmacogenomics (3)
This course introduces students to basic principles related to the body and how drugs act within it. Basic principles of physiology, pharmacology and pharmacogenomics will be presented.

PHAR 7302 - Principles of Pharmacokinetic and Biopharmaceutics
Qualitative and quantitative understanding and application of pharmacokinetics focusing on the processes of drug absorption, distribution, metabolism, and elimination.
Prerequisite: PHAR 7402.

PHAR 7377 - Pharmacoepidemiology and Pharmacoeconomics
This course introduces pharmacy students to the principles of pharmacoepidemiology and pharmacoeconomics with emphasis on application to pharmacy practice and evaluation of drug literature.
Prerequisite: PHAR 7274.

PHAR 7390 - Special Topics
The special topics courses cover topics previously not covered within the curriculum or cover topics in greater depth.

PHAR 7399 - Independent Study
Independent study in specific areas of pharmacy not covered by organized pharmacy courses.

PHAR 7401 - Principles of Biochemistry (4)
This course provides the theoretical building blocks necessary to understand the biochemistry pathways of the cell. The interrelationship between biochemical pathways and physicochemical drug properties influencing drug metabolism and pharmacologic response.

PHAR 7402 - Pharmaceutics (4)
A study of the applications of physical, chemical and biopharmaceutical principles in pharmacy and pharmaceutical sciences, especially in designing and evaluating various stable pharmaceutical dosage forms.
Prerequisite: PHAR 7201: Pharmaceutical Calculations. Corequisite: Completion or current enrollment in PHAR 7192: Pharmacy Practice Lab 2.

PHAR 7481 - Integrated Pharmacotherapy 1: Respiratory and Renal
This course focuses on the application of the knowledge and skills needed for pharmacists to care for patients with various renal and respiratory disorders.

PHAR 7483 - Integrated Pharmacotherapy 3: Cardiovascular (4)
This integrated pharmacy course focuses on pathophysiology, medicinal chemistry, and pharmacology to develop therapeutic plans for patients with cardiovascular disorders.

PHAR 7484 - Integrated Pharmacotherapy 4: GI, Nutrition, and Musculoskeletal
This course introduces basic science and clinical concepts of pharmacy practice. The focus of this course surrounds scientific and therapeutic aspects of the gastrointestinal and musculoskeletal systems and common diseases affecting those systems. In addition, this course will focus on how to appropriately address nutritional disorders. Development of patient-specific therapeutic plans using non-prescription, non-pharmacological, complementary and prescription modalities will be learned. Ultimately, students will be provided with the knowledge-base and clinical skills necessary to provide pharmaceutical care to patients with gastrointestinal and musculoskeletal disorders.

PHAR 7487 - Integrated Pharmacotherapy 7: Selected Topics and Special Populations
This integrated pharmacy course focuses on pathophysiology, medicinal chemistry, pharmacology, and therapeutics to develop therapeutic plans for patients with dermatological and eye, ear, nose, and throat disorders. In addition, this course will focus providing optimal patient care for special populations.

PHAR 7488 - Integrated Pharmacotherapy 8: Hematology, Oncology, and Critical Care
This course integrates knowledge of pathophysiology, pharmacology, and pharmacotherapy to make appropriate treatment recommendations for cancer and critical care patients.
Prerequisite: P3 Standing.

PHAR 7490 - Special Topics
The purpose of the Special Topics courses is to provide the students with elective courses that cover topics not currently in the curriculum or to explore these topics in greater depth.

PHAR 7499 - Independent Study (4)
Independent study in specific areas of pharmacy not covered by organized pharmacy courses.

PHAR 7582 - Integrated Pharmacotherapy 2: Infectious Diseases
This integrated pharmacy course focuses on the application of skills and resources needed for pharmacists to guide patients' infectious-related needs

PHAR 7585 - Integrated Pharmacotherapy 5: Endocrine, Women's & Men's Health
This integrated pharmacy course focuses on pathophysiology, medicinal chemistry, and pharmacology to develop therapeutic plans for patients with endocrine disorders as well as specific men's and women's health conditions (i.e. menopause and benign prostatic hyperplasia).
Prerequisite: P3 Standing.

PHAR 7586 - Integrated Pharmacotherapy 6: Psychiatry, Neurology, and Pain Management
This course integrates knowledge pathophysiology, pharmacology, and pharmacotherapy to make appropriate treatment recommendations for pain management and for patients with psychiatric and neurologic disorders.
Prerequisite: P3 Standing.

PHAR 7590 - Special Topics
The special topics courses cover topics previously not covered within the curriculum or cover topics in greater depth.

PHAR 7599 - Independent Study
Independent study in specific areas of pharmacy not covered by organized pharmacy courses.
Prerequisite: None. Corequisite: None.

PHAR 7613 - Integrated Pathophysiology & Pharmacology (6)
This course will provide students with foundational concepts in pathophysiology and pharmacology.
Prerequisite: PHAR 7301: Principles of Physiology, Pathophysiology and Pharmacology.

PHAR 7681 - Advanced Pharmacy Practice Experience-Advanced Community Practice
Professional experiential rotation designed to provide experience in the delivery of pharmaceutical care in a community pharmacy setting.
Prerequisite: Students must have successfully completed Introductory Pharmacy Practice Experiences and required didactic courses prior to beginning their Advanced Community Pharmacy Practice Experience.

PHAR 7682 - Advanced Pharmacy Practice Experience-Ambulatory Care Practice
Professional experiential rotation designed to provide experience in the delivery of direct pharmaceutical patient care in an outpatient setting.
Prerequisite: Fourth year Pharmacy (P4) classification.

PHAR 7683 - Advanced Pharmacy Practice Experience-Acute Care
Advanced pharmacy practice rotation designed to develop knowledge, skills and experience in providing pharmaceutical care and clinical pharmacy services to inpatient adult medicine/acute care patients.

Prerequisite: Students must have successfully completed Introductory Pharmacy Practice Experiences and required didactic courses prior to beginning their Advanced Pharmacy Practice Experiences.

PHAR 7684 - Advanced Pharmacy Practice Experience-Advanced Institutional Rotation (6)
Advanced professional experiential rotation designed to provide experience in the delivery of pharmaceutical care in an institutional pharmacy setting.
Prerequisite: Students must have successfully completed Introductory Pharmacy Practice Experiences and required didactic courses prior to beginning their Advanced Community Pharmacy Practice Experience.

PHAR 7685 - Advanced Pharmacy Practice Experience-Elective
Professional experiential rotation designed to provide competencies needed to skillfully perform the functions and meet the responsibilities of a pharmacy management environment.
Prerequisite: Students must have successfully completed Introductory Pharmacy Practice Experiences and required didactic courses prior to beginning their Advanced Community Pharmacy Practice Experience.

PHAR 7686 - Advanced Pharmacy Practice Experience-Clinical Patient Care Elective
This six-week elective experiential rotation is designed to develop knowledge, skills and experience in providing pharmaceutical care and clinical pharmacy services to varied population of patients and settings.

Prerequisite: Students must have successfully completed Introductory Pharmacy Practice Experiences and required didactic courses prior to beginning their Advanced Community Pharmacy Practice Experience.

PHAR 7687 - Advanced Pharmacy Practice Experience: Non-Patient Care Elective
This six-week elective experiential rotation is designed to provide the competencies needed to skillfully perform functions and responsibilities in a variety of non-patient care settings.
Prerequisite: Students must have successfully completed Introductory Pharmacy Practice Experiences and required didactic courses prior to beginning their Advanced Community Pharmacy Practice Experience.

PHAR 7690 - Special Topics
The special topics courses cover topics previously not covered within the curriculum or cover topics in greater depth.

PHAR 7699 - Independent Study (6)
Independent study in specific areas of pharmacy not covered by organized pharmacy courses.

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 1304 - Introduction to World Religions [TCCN: PHIL 1304]
A comparative and philosophical introduction to the religions of the world including but not limited to Judaism, Christianity, Islam, Hinduism, and Buddhism.

PHIL 2303 - Introduction to Logic [TCCN: PHIL 2303]
An introduction to informal, formal, and inductive logic including fallacies, propositional logic, and scientific arguments.

PHIL 2306 - Introduction to Ethics [TCCN: PHIL 2306]
A study of moral theory and ethical decision-making including a critical analysis of practical and professional cases.

PHIL 2331 - Foundations of Leadership
A survey of approaches to leadership in both Western and Eastern philosophy including but not limited to the ideas of Lao Tzu, Plato, and Locke.

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: None.

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: None.

PHIL 3331 - Modern Philosophy
A study of the main issues and movements in philosophy from the seventeenth century through the 20th Century.

PHIL 3344 - Ethical Leadership
A study of moral philosophy as it applies to leadership and issues in the workplace.

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.

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 or MATH 2413. 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 [TCCN: PHYS 1303]
A basic study of the solar system, stars from proto-stars to black holes, cosmology, dark energy and dark matter. Satisfies 3 hours of the LPS or STEM component of the core.

PHYS 1410 - Elementary Physics
This course is a comprehensive examination of motion, forces, energy, circuits and optics that will develop the participants' conceptual understanding of physics through the process of the scientific method. The course will consist of three hours of lecture and three hours of laboratory each week.

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 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 4326 - Introduction to Quantum Physics
The topics covered in this course will include state functions, wave packets, observables, the Heisenberg uncertainty principle and the Schrodinger equation.
Prerequisite: PHYS 2326 and MATH 3404.

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 [TCCN: GOVT 2304]
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 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 - Development of the First Amendment
This course examines the development of the Supreme Court's First Amendment jurisprudence, by studying the religious, political, and expression-based freedoms protected in this amendment. Through an examination of legal precedent, students will scrutinize the extent to which the judiciary can be a catalyst for constitutional, social, and political change through its interpretation of the First Amendment.
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 3327 - Southern Politics
Focuses on the history and evolution of southern politics and the role of race, religion, and political culture as these factors impact individual states and give the region its distinctive political features. These factors, plus the realignment of the political parties in these states, contribute to southern political strength in American politics.
Prerequisite: POLS 2305 and POLS 2306 or instructor permission.

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 3356 - Practicing Texas Politics
A study of Texas political culture and party competition, as well as the issues facing the legislative, executive, and judicial systems in the state. The class also explores patterns in policy and elections, particularly debates of national concern that started in Texas. The class further highlights the many ways Texas politics are distinct from the rest of the region and nation.
Prerequisite: POLS 2305 and POLS 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 3391 - Global Studies
This course is designed to introduce students to the processes of globalization and a broad range of cultural, economic, political, and social issues confronting our world today.
Prerequisite: POLS 2305 and POLS 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
The course is an examination of the institutions, norms, and actors that structure the American legal system at both the federal and state level. In understanding how the judiciary shapes public policy, students will analyze issues related to judicial selection, judicial behavior, and the political and social consequences of judicial decisions.
Prerequisite: POLS 2305 and 2306.

POLS 4321 - American Constitutional Law
An examination of the legal disputes where the Supreme Court has been called upon to define the limitations of governmental power for both the federal and state governments. Analyzing the development of constitutional law in this area, the course explores topics such as judicial review, separation of powers, federalism, Congress's commerce power, Congress's taxing and spending authority, and substantive due process.
Prerequisite: POLS 2305 and 2306.

POLS 4322 - The Law of Civil Liberties
An examination of the controversies where the Supreme Court has attempted to determine the proper boundaries of governmental power as it relates to individual rights and liberties. Through an analysis of judicial precedent, the course explores the development of individual due process and equal protection rights and examines how the Court has interpreted the protections of the Bill of Rights and subsequent amendments.
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 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 4352 - Political Behavior
This course examines the public's orientation toward and involvement in government and politics. The course will analyze public opinion, partisan identification, individual and group attitudes, party coalitions, campaigns and elections, as well as political participation in the United States.
Prerequisite: POLS 2305 and POLS 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 POLS 2306.

POLS 4355 - American Politics in Mass Media
Examines politics at the mass media level, with an emphasis on communication, opinion, behavior, and culture. Topics include mass media in political campaigns, the influence of popular culture on public opinion and political behavior, as well as the electoral and governing strategies of political communication.
Prerequisite: POLS 2305 and POLS 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 4385 - Archer Program 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 4388 - Religion and Politics: A Study in Religion and the State
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.
Prerequisite: POLS 2305 and POLS 2306. Crosslisted as: RELI 3350 Religion and Politics.

POLS 4390 - The Politics of National Memory
This course explores the sources and use of power in Washington. It focuses attention upon such issues as the constitutional and technological limits to power, power and the media, and the struggle for control over national memory and language. Enrollment limited to Archer Center Fellows.

POLS 4393 - The Principles of Public and Political Leadership
This course explores the priniciples and concepts of leadership and the application of those concepts in public and political leadership. The purpose of this course is to enable students to prepare themselves to become leaders and to embark on paths of personal leadership development. This journey into leadership requires personal curiosity and reflection from students as well as personal openness and sharing with the professor. Leadership development concepts used in the course will be immediately applicable for students and useful for the rest of their lives.

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 5319 - Law and Justice
Law and Justice.

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 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 5332 - Public Budgeting and Finance
Public budgeting and finance.

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 5380 - 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.

POLS 5381 - Inside Washington: Policymaking from the Ground Up
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 5382 - Archer Center Independent Study and Research
This course is tailored to each student's graduate program of study. An Archer Center faculty member will work independently with each student to develop a research project that is designed to advance the student's academic and research goals.

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 [TCCN: PSYC 2301]
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 [TCCN: PSYC 2317]
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 3315 - Positive Psychology
An introduction to the study of Positive Psychology, the scientific study of optimal human functioning. Positive emotions, engagement, relationships, meaning, and accomplishments will be related to well-being.

PSYC 3320 - Interpersonal and Small Group Interaction
Students will study the psychology of interpersonal and small group communication and behavioral processes, including verbal and nonverbal communication. Self-awareness of personal communication behaviors and skills will be critically examined. Students will learn how to enhance their effectiveness in interpersonal and small group situations, socially, professionally and personally.

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 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.

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 3380 - Topics in Psychology
A thorough exploration of topics of substantial scholarly interest in psychology.

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 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 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 - Advanced Topics in Psychology
A thorough exploration of advanced topics of substantial scholarly interest in psychology. Prerequisite: Senior standing in psychology or consent of instructor.
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 4381 - Honors in Psychology I
The first course in a two-part honors in psychology sequence, in which students will study and engage with advanced content in a specific sub-area of psychology, and work in groups to design an original research proposal in that same sub-are of psychology to be conducted the following semester.
Prerequisite: PSYC 2331 and PSYC 2354, Psychology Honors Designation, and departmental approval.

PSYC 4382 - Honors in Psychology II
The second course in a two-part honors in psychology sequence, in which students will carry-out, analyze, write up, and present the findings of an original research project in psychology.
Prerequisite: PSYC 2331, PSYC 2354, PSYC 4381, Psychology Honors Designation, and departmental approval.

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-played practice of fundamental counseling response skills.

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 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 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 225 clock hours (125 direct) 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 - Advanced Supervised Practicum in Psychology
At least 225 clock hours (125 direct) 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.

PSYC 6301 - Advanced Tests and Measurement
Provides an understanding of varied approaches to assessment and evaluation in a multicultural society, including: introduction and history of testing and assessment; concepts of standardized and non- standardized testing and other assessment techniques; statistical and psychometric concepts (e.g., scales of measurement, reliability, validity, & test theory);

social and cultural factors related to assessment; and ethical issues related to assessment.

PSYC 6308 - Advanced Psychopathology and Diagnosis
Examines psychopathology and diagnosis. Attention given to the causes of abnormal behavior patterns, the labeling process, the impact of culture, psychiatric nomenclature, and treatment procedures. Biological, psychological, and social constructs in diagnosis will be emphasized.
Prerequisite: PSYC 6301. Crosslisted as: Cross-listed with PSYC 5308.

***PSYC 6310 - Cognitive and Emotional Foundations**

PSYC 6311 - Social and Cultural Psychology
This course will cover fundamental theories and research on the topics of social psychology and cultural psychology. The purpose of this course is to provide an advanced overview of social psychology and cultural psychology, as well as how the two branches of psychology may be integrated. We will cover topics such as social cognition, group dynamics, and the cultural foundations of self.

***PSYC 6312 - Supervised Practicum Underserved Population**

***PSYC 6320 - Advanced Human Growth and Development**

PSYC 6340 - Advanced Statistics and Research Design
Includes aspects of complex experimental designs, statistical hypothesis testing, decision theory, multiple regression analysis, ANOVA, distribution-free techniques, and factor analysis.
Crosslisted as: Cross-listed with PSYC 5340.

PSYC 6341 - Multivariate Statistics
Includes study and application of complex multivariate research designs and multivariate statistical analyses including MANOVA/MANCOVA, discriminant function analysis, canonical analysis, structural equation modeling and factor analysis.
Prerequisite: PSYC 6340.

PSYC 6352 - Biological Foundations of Behavior
Advanced study of the biological mechanisms underlying behavior. Content will include review of brain neuroanatomy, neuron function, neurotransmitters, emotion process, language, learning and memory function, biological correlates of targeted mental disorders such as mood and anxiety disorders, schizophrenia, and developmental and cognitive disorders. Advanced content will include current research on emerging brain behavior relationships and clinical applications.
Crosslisted as: PSYC 5352.

PSYC 6366 - Advanced Assessment of Mental Abilities
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 WAIS-IV.
Prerequisite: PSYC 6301. Crosslisted as: Cross-listed with PSYC 5366.

PSYC 6368 - Clinical and Diagnostic Assessment
An examination of personality assessment instruments that are employed in a variety of settings: Administration, scoring, interpretation, and psychological report writing for selected personality instruments will be covered.
Crosslisted as: Cross-listed with PSYC 5368.

***PSYC 6375 - Advanced Practicum in Psychology**

PSYC 6384 - Cognitive and Behavioral Therapy Approaches
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.
Crosslisted as: Cross-listed with PSYC 5384.

***PSYC 6386 - Internship in Psychology**

***PSYC 6398 - Dissertation**

***PSYC 6399 - Dissertation**

PYED - PHYSICAL EDUCATION

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 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.

READ - READING EDUCATION

READ 3320 - Literacy Development in the Early Years
Introduction to the development of literacy in young children beginning from birth and continuing into the upper elementary grades.

READ 3323 - Children's Literature in the Classroom
Study of features, history, selection, and use of Children's Literature. Designed for teachers in preparation in the Pre-K through elementary levels.
Prerequisite: No prerequisite required.

READ 3326 - Teaching Writing in Language Arts
Introduction to writing development and the teaching of writing from young children beginning from birth and continuing into the upper elementary grades.
Prerequisite: No prerequisite required.

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 4320 - Literacy Assessment & Instruction I
Foundations of literacy assessment and instruction for beginning teachers with a focus on identifying student strengths and needs using formal and informal assessment measures and strategies, and designing literacy instruction commensurate with those needs. Clinical or field experiences required.
Prerequisite: No prerequisite required.

READ 4323 - Language Acquisition, Culture, and Society in Literacy
A survey of key theoretical, research, and policy understandings about language acquisition, cultural influences, and social contexts, and how these understandings inform the design of instruction to support the language and literacy development of all students, including English learners.
Prerequisite: No prerequisite required.

READ 4326 - Literacy Assessment & Instruction II
Supervised literacy assessment and instruction practicum for beginning teachers with a focus on identifying student strengths and needs using formal and informal assessment measures and strategies, and on designing instruction commensurate with those needs in a school or community setting. Clinical or field experiences required.
Prerequisite: READ 4320.

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 for the Classroom
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 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 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 - Issues in the of Teaching Literacy Using Children's and Adolescent 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 the in 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.
Prerequisite: READ 5306.

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 - Foundations of 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 5310 - Literacy Coaching Practicum
Field experience focused on expanding literacy coaching knowledge, skills, and dispositions by studying and engaging in literacy coaching and professional development work in authentic PreK-12 clinical and/or school settings. **A field-based practicum is required.** READ 5310 builds on the knowledge, skills, and experiences gained in READ 5309, which is designed to prepare you for the supervised practicum. In this companion course, you

will have an opportunity to apply what you learned about literacy coaching while working directly with teachers in real-world school settings.
Prerequisite: Pre-requisite: READ 5309: Foundations of Literacy Coaching.

READ 5311 - Literacy Coaching as Collaborative Professional Development
Field experience focused on expanding literacy coaching knowledge, skills, and dispositions by studying and engaging in literacy coaching that focuses on professional development in authentic PreK-12 clinical and/or school settings. READ 5311 builds on the knowledge, skills, and experiences gained in READ 5309 and READ 5310, which is designed to prepare you to plan and provide professional development for PreK-12 teachers. In this companion course, you will have an opportunity to apply what you learned about literacy coaching while working directly with teachers in real-world school settings.
Prerequisite: Pre-requisite: READ 5310: Literacy Coaching Practicum.

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 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 3301 - Religion and Society
This course examines religion from the perspective of modern social science, including psychological, sociological, economic, phenomenological, and anthropological theories of religion.

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: Thervada, 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 3351 - Major Religious Thinkers
This course introduces students to the thought, historical setting, and influence of thinkers from Eastern and Western religious traditions. The figures covered include traditional religious thinkers, such as the Biblical prophets and Laozi; recent and contemporary religious thinkers, such as Thomas Merton and the Dalai Lama; and critics of religion, such as Karl Marx and Sigmund Freud.

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.

RNBS - RN TO BSN

RNBS 3303 - Pathophysiology
This on line course focuses on the etiologic, symptomatologic, and pathologic aspects of selected human diseases across the life span. Concepts of health promotion, disease prevention, disease progression, and treatment are approached from a cellular and multi-system perspective. Influences of genetic, ethnic, and cultural variables on human diseases are analyzed. Content aims at stimulating critical thinking for application to nursing practice.
Prerequisite: Registered nurse, Admission to the RN-BSN track.

RNBS 3312 - Health Assessment for Registered Nurses
This course focuses on the synthesis of nursing knowledge and skills to perform a comprehensive health assessment of individuals across the lifespan. Students practice health assessment skills in laboratory settings. 2:1
Prerequisite: Registered Nurse, Admission to the RN-BSN Track.

RNBS 3315 - Professional Development for the Registered Nurse
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: Pre-Requisite: Admission to the RN-BSN Track. Special permission required from the School of Nursing to take out of sequence. May take course prior to completing State Boards (NLCEX).

RNBS 3333 - Evidence-Based Decision Making (EBDM)
This course advances evidence-based decision making 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: Admission to the RN-BSN track. RNBS 3303 and RNBS 3312 and RNBS 3415. Special permission required from the School of Nursing to take out of sequence.

RNBS 4234 - Issues in Professional Practice
This course for the registered nurse (RN) synthesizes ethical/legal concepts required for examination of sound decision making in clinical practice and legal responsibility. The focus is on value clarification, application of ethical theory, ethical decision-making models, and professional ethical standards. Emphasis is on ethical obligations of professional nurses in their roles as citizens, members of a profession, providers of care, and designers and managers of care.
Prerequisite: Admission to the RN-BSN track. Successful completion of RNBS 3303 and RNBS 3312 and RNBS 3415. Special permission required from the School of Nursing to take out of sequence.

RNBS 4309 - Wellness and Health Promotion
Course Description
This course will explore factors that impact a healthy society and how these factors contribute to optimal health or premature illness. This course will discuss the concepts of personal wellness, risk reduction, and health promotion across the lifespan.
Prerequisite: Pre-Requisite: Admission to the RN-BSN Track. Special permission required from the School of Nursing to take out of sequence. Successful completion of RNBS 3303 and RNBS 3312 and RNBS 3315 and RNBS 3333, and RNBS 4313 and RNBS 4631.

RNBS 4312 - Gerontological Nursing
Theories, issues and concepts related to gerontological nursing principles are presented within the framework of critical thinking and caring for the Registered Nurse. The focus is on health promotion through nurturing, protective and generative evidence-based practice interventions emphasizing the well and the frail and vulnerable older adult population.
Prerequisite: Admission to the RN-BSN track. Successful completion of RNBS 3303 and RNBS 3312 and RNBS 3415. Special permission required from the School of Nursing to take out of sequece.

RNBS 4313 - Care Coordination for the Registered Nurse
This course will investigate models of care to improve the health of people with chronic illness. Focus will be on contributing factors, self-management, health systems, delivery systems design, clinical information systems, and quality improvement process.
Prerequisite: Pre-Requisite: Admission to the RN-BSN Track. Special permission required from the School of Nursing to take out of sequence. Successful completion of RNBS 3303 and RNBS 3312 and RNBS 3315.

RNBS 4601 - Community and Population Focused Nursing
This course introduces the RN to concepts of community health utilizing the population focused nursing process. Includes levels of disease prevention, principles of epidemiology, community assessment, environmental health, disaster preparedness, and professional nursing roles and interprofessional collaboration in various community settings. Emphasis is on health promotion, risk reduction, and disease management across the lifespan in selected community settings. 3:3
Prerequisite: Admission to the RN-BSN track. Successful completion of RNBS 3303 and RNBS 3312 and RNBS 3415 and RNBS 3333 and RNBS 4312 and RNBS 4631. Special permission required from the School of Nursing to take out of sequence.

RNBS 4631 - Nursing Leadership and Management
Synthesis of theories and concepts related to critical thinking, change theory, conflict resolution, delegation, and changes that impact the health care delivery system are discussed. Theories and concepts related to leadership and management are presented. Opportunities for theory application are provided in selected structured and unstructured settings. 3:3
Prerequisite: Admission to the RN-BSN track. Successful completion of RNBS 3303 and RNBS 3312 and RNBS 3415. Special permission required from the School of Nursing to take out of sequence.

SOCW - SOCIAL WORK

SOCW 2361 - Introduction to Social Work
This course provides a historical perspective on the development of the social work profession and identifies the generalist's social work base practice and associated foundations of values, ethics, professionalism, and fields of social work practice.

SOCW 3301 - Understanding Human Behavior for Social Workers
This course examines numerous theories associated with human behavior including systems theory, conflict theory, empowerment theory, feminist theory, Erikson's Psychosocial Stages, and other relevant theories that enhance one's understanding of human behavior associated with the professional, organizational, and personal environments. This course provides students with a framework for assessing behaviors that will ultimately support the development of empathic and empowering relationships with others.
Prerequisite: SOCW 2361: Introduction to Social Work May be taken concurrently.

SOCW 3307 - Understanding Individual Differences for Social Workers
Examines issues of diversity in social work practice such as age, gender, class, sexual orientation, religion and disabilities and the relationship between the differences and the impact of social justice.
Prerequisite: SOCW 2361: Introduction to Social Work May be taken concurrently.

SOCW 3334 - Social Work Practice I
Identifies generalist theoretical perspectives and examines practice environments with individuals and families. This course focuses on preparing for, engaging with, and interviewing the client as part of the first stage of the planned change process.
Prerequisite: SOCW 2361: Introduction to Social Work.

SOCW 4310 - Child and Family Social Work
Provides an overview of the history, goals, policies, and associated interventions while working with children and families in foster care, adoption, child protection services, and family displacements.
Prerequisite: SOCW 2361: Introduction to Social Work.

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 [TCCN: SOCI 2326]
Theories, methods, and applications in social psychology; the nature and type of social variables and methods used to study them.

SOCI 3302 - Deviant Behavior (Same as CRIJ 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 3321 - Multi-Cultural Studies
Studies relations among cultural groups.

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 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 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 4360 - Topics in the Sociology of Institutions
Research and theory in selected social institutions. May be repeated for credit when the content changes.

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.

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 preterit 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 1313, 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 preterit 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 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 5301 - Medical Spanish I
This course will develop the ability to do a culturally appropriate medical/clinical examination in Spanish for a select patient population.

SPAN 5302 - Medical Spanish II
This course, a continuation of SPAN 5301, will further develop the ability to do a culturally appropriate clinical medical examination and patient history in Spanish for a select patient population.
Prerequisite: SPAN 5301.

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 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 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 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 preachment; 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 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 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 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 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 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 COSC 1307 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 3320 - Lean Six Sigma Green Belt Techniques
An intermediate analysis of lean and statistical tools used to reduce costs, improve processes, and reduce variation. The DMAIC approach will be discussed as well as most topics currently covered on lean six sigma certification exams.

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 COSC 1307 or equivalent.

TECH 3331 - Project Management
Study of the accepted project management body of knowledge. Topics such as the management of project time, costs, quality, human resources, communication, risks, procurement, stakeholders, and ethics will be covered.

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 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 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 3355 - Supply Chain Management
An overview of supply chain operations covering logistics, outsourcing, distribution, warehousing, site location, and globalization.
Prerequisite: TECH 2323 or COSC 1307 or equivalent.

TECH 4199-4699 - Independent Study
Prerequisite: Consent of academic advisor.

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 COSC 1307 or equivalent.

TECH 4323 - Lean Production
Applications of metal materials processing with an emphasis on lean manufacturing tools for reducing waste and streamlining production.

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. Due to scheduling issues with our students and that the content of the course is not dependent upon content covered in TECH 3311 Manufacturing Processes, the requirement for TECH 3311 is no longer applicable. Please omit any prerequisites for this course.

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 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 5302 - Applied Research Methods
An introduction to the language of research, ethical principles and challenges, and the components of the research process within quantitative, qualitative, and mixed methods approaches. Students will critically review literature relevant to a technical area of interest and determine how their research findings can be applied to the field of industrial management.

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 - 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 - Research 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 5331 - Project Management
A study of the generally accepted body of knowledge for project management covering the following 10 project knowledge areas: integration management, scope management, time management, cost management, quality management, human resource management, communications management, risk management, procurement management, and stakeholder management.

TECH 5333 - Agile and Scrum Principles
An introduction and analysis of the benefits of Agile principles used in project management and applied with the Scrum framework. This course is the preparation course to be certified as a Scrum Master and be ready to deploy development teams using an iterative project management approach to the delivery of products and services.
Prerequisite: Since this new course is based upon expediting projects a thorough understanding of project management is required. Therefore, TECH 5331 Project Management is a prerequisite.

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 5336 - Lean Healthcare
This course focuses on continuous improvement and the elimination of waste in a healthcare facility by empowering individuals to identifying waste and non-value-added activity as well as identifying and improving value-streams to reduce costs. Students will also learn to create better flow for patients and processes, thereby, preventing errors and improving quality in a systematic way.

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 5348 - Warehousing
Concerns organizing, stocking, inventorying, scheduling, transporting, packaging, receiving, loss accounting and fire protection for warehouse operation
Crosslisted as: Cross listed with an existing undergraduate course TECH 4348 Warehousing which needs to be reactivated.

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 - Research 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 [TCCN: DRAM 1320]
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 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 2367 - Development of the Cinema: WWII to the Present [TCCN: DRAM 2367]
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 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 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 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.

UNIV - UNIVERSITY-WIDE

UNIV 1000 - Student Success Seminar
Student Success Seminar is intended for students 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 reparation 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 1005 - Presidential Fellows Seminar for Freshmen
This freshman seminar helps assist our Presidential Fellows as they begin expanding their professional portfolio. The seminar will focus on developing on the Presidential Fellow's understanding of research.
Prerequisite: Students must be a Presidential Fellow to register for this seminar.

UNIV 1380 - Special Topics
The study of a current issue/topic that is of interest to students across departments/colleges. May be repeated for credit when content changes.

UNIV 2005 - Presidential Fellows Seminar -Sophomores
This sophomore seminar helps assist our Presidential Fellows as they begin expanding their professional portfolio. The seminar will focus on developing on the Presidential Fellow's understanding of research.
Prerequisite: The student must be a Presidential Fellow to register for this course.

UNIV 3005 - Presidential Fellows Seminar Juniors
This junior seminar helps assist our Presidential Fellows as they begin expanding their professional portfolio. The seminar will focus on expanding the Presidential Fellows understanding and experience in research and service to the discipline/university.
Prerequisite: Must be a Presidential Fellow to register for this seminar.

UNIV 4005 - Presidential Fellows Seminar Seniors
This senior seminar helps assist our Presidential Fellows as they launch their professional careers and/or graduate school experiences. In addition, the seminar will assist Presidential Fellows with refining components of their professional portfolio such as research and service.
Prerequisite: Students must be a Presidential Fellow in order to register for this seminar.

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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