

Academic Inquiry & Scholarship (AIS)

AIS 1203. Academic Inquiry and Scholarship. (3-0) 3 Credit Hours.

A general survey of scholarship practiced within three broad cultures of inquiry: the Humanities, Social Sciences and Natural Sciences. Through a cross-disciplinary framework, this course explores the diverse ideas, values, and practices used by various disciplines to investigate and organize their subject matter and create knowledge. Students will consider and compare the assumptions, methods, ethics, and impact of inquiry and scholarship within these three broad cultures of inquiry. Students will examine, compare, and contrast the intellectual endeavors that influence society and human experience. This course is required to fulfill the Core Curriculum requirement in Language, Philosophy and Culture.

Accounting (ACC)

ACC 2003. Foundations of Accounting. (3-0) 3 Credit Hours.

A study of accounting as the language of business. The focus is on the use of accounting information for decision making. This course is designed for nonbusiness majors and cannot be applied toward a degree in the College of Business.

ACC 2013. Principles of Accounting I. (3-0) 3 Credit Hours. (TCCN = ACCT 2301)

An introduction to business external financial reporting designed to create an awareness of the accounting concepts and principles used in preparing the three basic financial statements: the income statement, balance sheet, and statement of cash flow. The course is designed for all business students, whether future users or preparers of accounting information.

ACC 2033. Principles of Accounting II. (3-0) 3 Credit Hours. (TCCN = ACCT 2302)

Prerequisite: [ACC 2013](#). An introduction to the determination, development, and uses of internal accounting information needed by business management to satisfy customers while controlling and containing costs. The course is designed for all business students, whether future users or preparers of accounting information.

ACC 3023. Intermediate Accounting I. (3-0) 3 Credit Hours.

Prerequisites: A grade of "C-" or better in both [ACC 2013](#) and [ACC 2033](#), successful completion of the Principles of Accounting Competency Exam (refer to Department of Accounting Web site), and declared major in the College of Business or approval of Department Chair and dean. An in-depth study of promulgated accounting theory and concepts with an emphasis on corporate financial accounting and reporting, with a focus on U.S. GAAP, and exposure to International Financial Reporting Standards (IFRS).

ACC 3033. Intermediate Accounting II. (3-0) 3 Credit Hours.

Prerequisites: A grade of "C-" or better in [ACC 3023](#) and declared accounting major or approval of Department Chair and dean. A continuation of the in-depth study of promulgated accounting theory and concepts with an emphasis on corporate financial accounting and reporting, with a focus on U.S. GAAP, and exposure to International Financial Reporting Standards (IFRS).

ACC 3043. Federal Income Taxation. (3-0) 3 Credit Hours.

Prerequisites: A grade of "C-" or better in [ACC 3023](#) and declared accounting major or approval of Department Chair and dean. A conceptual introduction to the U.S. federal income tax system. Concepts include gross income, statutory deductions, property transactions, and computation of tax liabilities.

ACC 3053. Intermediate Accounting for Finance Majors. (3-0) 3 Credit Hours.

Prerequisites: [ACC 2013](#) and [ACC 2033](#). An intermediate accounting course with emphasis on interpretation of general-purpose financial statements and the related disclosure notes as they apply to credit analysis and other aspects of corporate finance. Common and significant accounts/transactions will be analyzed, especially those relating to the financing and equity sections of the financial statements. This course cannot be applied toward an accounting major. This course does not satisfy any of the educational requirements of the Texas State Board of Public Accountancy for qualification to sit for the Uniform Certified Public Accounting Examination.

ACC 3113. Accounting Information Systems. (3-0) 3 Credit Hours.

Prerequisites: [ACC 2033](#) with a grade of “C-” or better, [IS 3003](#), and declared accounting major or approval of Department Chair and dean. A study of database management systems as they relate to the accounting function. Topics include database design and applications that focus on accounting, including the entity-relationship model, data modeling, object-oriented design, and database management.

ACC 3123. Cost Analysis. (3-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [ACC 2033](#) and declared accounting major or approval of Department Chair and dean. A study of internal accounting information generation with an emphasis on cost accounting tools to develop, implement, and evaluate strategy; cost accounting methods to determine product cost; and cost management concepts and procedures for making business decisions.

ACC 4013. Principles of Auditing. (3-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in both [ACC 3033](#) and [ACC 3113](#), and declared accounting major or approval of Department Chair and dean. A study of the topic of auditing oriented toward primarily the financial auditing standpoint. The course focuses on the concepts and procedures of auditing applied to the audit of financial statements in accordance with the standards established by the Auditing Standards Board or the Public Company Accounting Oversight Board. Topics also covered include professional ethics, accounting and review services, and the public accounting profession.

ACC 4103. Business Process Management and Control. (3-0) 3 Credit Hours.

Prerequisites: [ACC 3113](#) with a grade of “C-” or better and [IS 3003](#). A study of business processes that support an organization and how they are controlled. This course contributes to the student’s understanding of how key business processes are managed, controlled and integrated in enterprise resource planning systems. SAP will be used to illustrate the concepts discussed in the class. (Same as [IS 4103](#). Credit cannot be earned for both [ACC 4103](#) and [IS 4103](#).)

ACC 4163. Contemporary Issues in Accounting Practice. (3-0) 3 Credit Hours.

Prerequisite: A grade of “C-” or better in all preceding accounting courses; must be taken during the final semester in the undergraduate program. A study of corporate valuation, financial statement analysis, and other advanced topics in accounting practice.

ACC 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: A 3.0 COB grade point average, [MGT 3003](#), taken semester of graduation, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for the required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

ACC 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: A 3.0 COB grade point average, [MGT 3003](#), taken semester of graduation, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for the required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ACC 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: A 3.0 COB grade point average, [MGT 3003](#), taken semester of graduation, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for the required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ACC 4933. Internship in Accounting. (0-0) 3 Credit Hours.

Prerequisites: 12 semester credit hours of upper-division accounting courses including [ACC 3033](#), a 3.0 UTSA grade point average, a 3.0 grade point average in upper-division accounting courses, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Provides students with on-the-job training in public, industry, not-for-profit, or governmental accounting units. [ACC 4933](#) may be completed only once for undergraduate degree credit. Credit cannot be earned for both [ACC 4933](#) and ACC 4963.

ACC 4953. Special Studies in Accounting. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study of accounting topics not normally or not often available as part of the regular course offerings. [ACC 4953](#) may be completed only once for degree credit.

ACC 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: Enrollment limited to students applying for Honors in Accounting. Supervised research and preparation of an honors thesis. May be repeated once for credit with advisor's approval. No more than 3 semester credit hours can apply toward accounting major requirements.

Aerospace Studies (ASC)**ASC 1031. The Foundation of the United States Air Force I. (1-2) 1 Credit Hour.**

A survey course designed to introduce students to the United States Air Force and Air Force Reserve Officer Training Corps. Focuses on mission and organization of the Air Force, officership and professionalism, military customs and courtesies, Air Force opportunities, and an introduction to communication skills. Leadership Laboratory is mandatory for AFROTC cadets and complements the course by providing cadets with followership experiences.

ASC 1041. The Foundation of the United States Air Force II. (1-1) 1 Credit Hour.

A continuation of [ASC 1031](#), students progress in acquiring skills and demonstrating their proficiency. Leadership Laboratory is mandatory for AFROTC cadets and complements the course by providing cadets with followership experiences.

ASC 2031. The Evolution of United States Air Force Air and Space Power I. (1-1) 1 Credit Hour. Examines general aspects of air and space power through a historical perspective. Covers a time period from the first balloons and dirigibles to the space-age systems of the Global War on Terror. Historical examples are provided to extrapolate development of AF distinctive capabilities and missions to demonstrate the evolution of today's USAF air and space power. Examines several fundamental truths associated with war in the third dimension. Reviews importance of AF core values with use of operational examples and historical AF leaders. Stresses development of communication skills. Leadership Laboratory is mandatory for AFROTC cadets and complements the course by providing cadets with followership experiences.

ASC 2041. The Evolution of United States Air Force Air and Space Power II. (1-1) 1 Credit Hour. A continuation of [ASC 2031](#), students progress in acquiring skills and demonstrating their proficiency. Leadership Laboratory is mandatory for AFROTC cadets and complements the course by providing cadets with followership experiences.

ASC 3013. Air Force Leadership Studies I. (3-2) 3 Credit Hours. A study of leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, leadership ethics, and communication skills required of an Air Force junior officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. Leadership Laboratory is mandatory for AFROTC cadets and complements the course by providing advanced leadership experiences in officer-type activities, giving students the opportunity to apply leadership and management principles.

ASC 3023. Air Force Leadership Studies II. (3-1) 3 Credit Hours. A continuation of [ASC 3013](#), students progress in acquiring skills and demonstrating their proficiency. Leadership Laboratory is mandatory for AFROTC cadets and complements the course by providing advanced leadership experiences in officer-type activities, giving students the opportunity to apply leadership and management principles.

ASC 4013. National Security Affairs/Preparation for Active Duty I. (3-1) 3 Credit Hours. Examines the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Special topics of interest focus on the military as a profession, officership, military justice, civilian control of the military, preparation for active duty, and current issues affecting military professionalism. Within the structure, continued emphasis is given to refining communication skills. Leadership Laboratory is mandatory for AFROTC cadets and complements the course by providing advanced leadership experiences in officer-type activities, giving students the opportunity to apply leadership and management principles.

ASC 4023. National Security Affairs/Preparation for Active Duty II. (3-1) 3 Credit Hours. Continuation of [ASC 4013](#), students progress in acquiring skills and demonstrating their proficiency. Leadership Laboratory is mandatory for AFROTC cadets and complements the course by providing advanced leadership experiences in officer-type activities, giving students the opportunity to apply leadership and management principles.

African American Studies (AAS)

AAS 2013. Introduction to African American Studies. (3-0) 3 Credit Hours.

Offers an interdisciplinary introduction to major topics in African American Studies. Course materials will address basic contours of the black experience in the United States. Topics that may be investigated include historical, autobiographical, political, cultural, sociological, literary, and/or popular responses to and representation of African Americans in the United States. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

AAS 2113. African American Culture, Leadership and Social Issues. (3-0) 3 Credit Hours.

This course examines topics related to twentieth-century African American culture, leadership, and social experiences. The focus of this course includes emphasis on civic engagement, leadership, and/or cultural expression (i.e., music, performance arts, film, visual arts) that informs collective identities, social movements, and/or relevant social issues. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

AAS 3013. African American Cultural Experiences. (3-0) 3 Credit Hours.

This course examines cultural expressions (e.g., art, music, film, literature, cultural identity) in the African American experience. The substantive and disciplinary emphasis can vary from one semester to another.

AAS 3113. African American Studies Research Seminar. (3-0) 3 Credit Hours.

This course is designed to introduce students to basic research methods and methodological issues in African American Studies. The course covers methods of social research, research conceptualization, and research design. Students will become familiar with various methods of data collection, data analysis, and theoretical concepts that pertain to developing critical thinking, analytical, and writing skills.

AAS 3123. Civil Rights Movement & African American Education. (3-0) 3 Credit Hours.

This course provides an introduction to the period of struggle in American history known as the Civil Rights Movement. The objective is to survey the major historical figures, organizations, locations, strategies and ideas that coalesce to make the history of the movement. The course will analyze the historical trajectory of educational policies with particular emphasis on the *Brown v. Board of Education* decision in 1954 and its implications over the following 20 years.

AAS 3133. African Americans in Higher Education. (3-0) 3 Credit Hours.

This course explores the history of African Americans in higher education. The course examines especially significant post-secondary issues and topics in the twentieth century, such as access, equity, diversity, student organizations, institutional leadership, and current events.

AAS 4013. Topics in African American Studies. (3-0) 3 Credit Hours.

This course analyzes historical and contemporary issues and phenomena associated with African Americans. It explores different methodological approaches by inquiring about these issues and phenomena, and presents varying arguments and ideological positions concerning these public-affairs matters. May be repeated for credit when topics vary. Two or more topics courses may be taken concurrently.

AAS 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the program director, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not

more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree. A maximum of 3 semester credit hours may be applied to the minor.

AAS 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the program director, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree. A maximum of 3 semester credit hours may be applied to the minor.

AAS 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the program director, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree. A maximum of 3 semester credit hours may be applied to the minor.

AAS 4933. Internship in African American Studies. (0-0) 3 Credit Hours.

Prerequisite: Consent of internship coordinator. Supervised experience relevant to African American studies within selected community organizations. A maximum of 3 semester credit hours may be applied to the minor.

American Sign Language (ASL)

ASL 1013. American Sign Language: Basic I. (3-0) 3 Credit Hours. (TCCN = SGNL 1301)

A study of American Sign Language, including basic concepts and sign lexicon. Grammatical features, including structure of American Sign Language, will be stressed. Each student will be expected to demonstrate to the instructor basic expressive and receptive ASL skills.

ASL 1023. American Sign Language: Basic II. (3-0) 3 Credit Hours. (TCCN = SGNL 1302)

Prerequisite: [ASL 1013](#) or consent of instructor. Continued study of American Sign Language including sign language colloquialisms used in conversational signing. Expands students' receptive and expressive ASL skills and provides a summary of information currently available dealing with ASL grammatical structure and its sociolinguistic and pragmatic usage.

American Studies (AMS)

AMS 2043. Approaches to American Culture. (3-0) 3 Credit Hours.

Introduces students to a variety of approaches to the study of American culture. Course materials will focus on key concepts such as race and ethnicity, transnationalism and border studies, and gender and sexuality. Students will be encouraged to integrate community-based resources such as local museums, archives, and research centers into course-required projects. May be applied toward the Core Curriculum requirement in Social and Behavioral Sciences.

AMS 3013. Early American Culture. (3-0) 3 Credit Hours.

Examines the influences that shaped American culture to the 20th century. Topics may include the impact of colonialism, the Enlightenment, the frontier, industrialism, ethnicity, race, religious reform, and other factors in the development of a distinctive society.

AMS 3023. Modern American Culture. (3-0) 3 Credit Hours.

Examines major trends in American culture during and after the industrial revolution, with special attention to the consequences of urbanization, suburbanization, industrialization, race relations, popular culture, technology, and secularization.

AMS 3123. Applications of American Studies. (3-0) 3 Credit Hours.

Applications of theories and methods of American Studies to particular areas of U.S. culture. Course addresses concepts of nationalism, citizenship, and nation building, inclusion and exclusion in American society, as well as how American cultural and group identities exist in relation to each other.

AMS 3243. Studies in Transnationalism. (3-0) 3 Credit Hours.

Exploration of borders, boundaries, crossings, and exchange in American Studies, with special reference to questions of national identity, material culture, transnationalism, and the impacts of globalization. May be repeated for credit when topics vary.

AMS 3343. Studies in Race and Ethnicity. (3-0) 3 Credit Hours.

The study of historical, social, cultural, and material influences on race and ethnicity. Course will use texts from literature, sociology, history, and other disciplines. May be repeated for credit when topics vary.

AMS 3443. Studies in Gender and Sexuality. (3-0) 3 Credit Hours.

Examination of topics such as masculine, feminine, gay, lesbian, bisexual, and transgendered definitions of gender and sexuality. Course will use texts from literature, sociology, history, and other disciplines. May be repeated for credit when topics vary.

AMS 4823. Topics in American Culture. (3-0) 3 Credit Hours.

An in-depth study of a selected issue or topic in American Studies. May be repeated for credit when topics vary.

AMS 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's AMS advisor, the Department Chair, and Dean of the College of Liberal and Fine Arts. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

AMS 4933. Internship in American Studies. (0-0) 3 Credit Hours.

Prerequisite: Consent of AMS program coordinator. Supervised experience relevant to American Studies within selected community organizations. A maximum of 6 semester credit hours may be earned through Internship in American Studies. Must be taken on a credit/no-credit basis. Only 3 semester credit hours can be applied to the major in American Studies.

AMS 4936. Internship in American Studies. (0-0) 6 Credit Hours.

Prerequisite: Consent of AMS program coordinator. Supervised experience relevant to American Studies within selected community organizations. A maximum of 6 semester credit hours may be earned through Internship in American Studies. Must be taken on a credit/no-credit basis. Only 3 semester credit hours can be applied to the major in American Studies.

AMS 4973. Advanced Seminar in American Studies. (3-0) 3 Credit Hours.

Prerequisites: [AMS 2043](#), [AMS 3123](#), and one of the following: [AMS 3243](#), [AMS 3343](#), [AMS 3443](#), or consent of instructor. An in-depth study of a central theme, problem, or topic in American Studies. Focuses on research methods and preparation of senior portfolio required for the major degree.

AMS 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for Honors in American Studies during their last two semesters. Supervised research and preparation of an honors thesis. May be repeated once with advisor's approval.

Anthropology (ANT)**ANT 1013. Introduction to Anthropology. (3-0) 3 Credit Hours. (TCCN = ANTH 2346)**

Course content spans the study of human culture, past and present; its origins, development, and contemporary change; and the exploration of human physical and cultural differences using the paradigm of adaptation. [ANT 1013](#) fulfills all required learning objectives for the Social and Behavioral Sciences component of the core curriculum.

ANT 1103. Great Discoveries in Archaeology. (3-0) 3 Credit Hours.

This course surveys some of the greatest discoveries made by archaeologists in the last 300 years. Specific archaeological sites and finds illustrate the process of archaeological interpretation, provide insight into past cultures, and help to show how the past influences the present.

ANT 2033. Introduction to Physical Anthropology. (3-0) 3 Credit Hours. (TCCN = ANTH 2301)

A comprehensive evaluation of human biological diversity and its origins. Topics include anatomy, genetics, primate biology, and the human fossil record. Students will gain critical understanding of key theoretical and methodological issues in this anthropological sub-discipline. This course fulfills all required learning objectives for the Life and Physical Sciences component of the core curriculum.

ANT 2043. Introduction to Archaeology. (3-0) 3 Credit Hours. (TCCN = ANTH 2302)

This course presents archaeological approaches to understanding human cultures of the past. Students receive instruction in general anthropological concepts and specific archaeological methods and theories. Particular case studies are presented to illustrate several aspects of archaeological practice, and to show how archaeologists develop their understandings of cultural variation and change. The course fulfills all required learning objectives for the Social and Behavioral Sciences component of the core curriculum.

ANT 2053. Introduction to Cultural Anthropology. (3-0) 3 Credit Hours. (TCCN = ANTH 2351)

This course offers students the opportunity to examine cross-cultural variation in contemporary societies around the world in an anthropological context. It emphasizes ethnographic descriptions to highlight cultural variability in economics, social structures, and ideologies. The course fulfills all required learning objectives for the Social and Behavioral Sciences component of the core curriculum.

ANT 2063. Language, Thought, and Culture. (3-0) 3 Credit Hours.

This course surveys anthropological approaches to the cross-cultural study of language, emphasizing linkages among language, expressive culture, systems of belief and value, and the production of cultural meaning. The effects of social context upon speech are examined as are relations of inequality and power that shape linguistic interaction. Instruction is also given in the fundamentals of descriptive linguistics. The course fulfills all required learning objectives for the Language, Philosophy, and Culture component of the core curriculum.

ANT 3023. Great Discoveries in Archaeology. (3-0) 3 Credit Hours.

This course surveys some of the greatest discoveries made by archaeologists in the last 300 years. Specific archaeological sites and finds illustrate the process of archaeological interpretation, provide insight into past cultures, and help to show how the past influences the present.

ANT 3133. Ritual and Symbol. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. An examination of rituals—highly stereotyped, stylized, and repetitive acts usually taking place in carefully selected locations and marked by use of material items. Students will be offered a cross-cultural examination of ritual activity from various cultural regions. Attention is also given to the theoretical frames that contribute to a holistic understanding of ritual practice.

ANT 3153. Indians of the Great Plains. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. An examination of the fundamental cultural transformation and flourishing of Native American societies of the Great Plains following the introduction of the horse. Attention is also given to the subsequent retrenchment under the imposition of Anglo-American dominance, and the recent emergence of new forms of cultural expression within tribal and urban areas.

ANT 3193. Drug Cultures. (3-0) 3 Credit Hours.

This course will examine different aspects of Western and non-Western drug cultures in historical and contemporary society. Topics may include traditional, medicinal and illicit drug use, food drugs, ethnomedicine, spirituality and altered states, indigenous property rights, as well as the drug trade, markets and globalization.

ANT 3203. Native North Americans. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. Survey of Native North American cultures from ancient times to the present. Emphasis will be placed on cultural responses to colonialism and European/American intrusion as well as contemporary issues confronting native North Americans in the present day.

ANT 3223. Anthropology and the Environment. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. Human adaptation to the environment and interaction with it, comparing simple and complex societies in various environmental contexts. (Formerly titled “Cultural Ecology.”).

ANT 3233. Frauds, Myths, and Mysteries. (3-0) 3 Credit Hours.

This course will critically examine pseudoscience, cult archaeology, and creationism from a scientific perspective. The careful assessment of particular case studies will demonstrate how a strong adherence to professional archaeological methods can uncover facts about the past that are as interesting as myth.

ANT 3253. The Archeology of South America. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2043](#) recommended. The origins and development of the native cultures of South America, and their relationships to the cultural areas of Central America and the Caribbean. Emphasis on the variety of cultural forms and cultural evolution. The roles of demography, subsistence systems, militarism, religion, and other factors in the rise of South American cultures may be discussed.

ANT 3263. Archaeology of North America. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2043](#) recommended. Survey of prehistoric cultures in North America from earliest times to historic contact. May include discussion of Ice Age mammoth hunters, Eastern

mound-building cultures, Southwestern pueblo cultures, and Plains bison hunters. Chronology, sites, settlement and subsistence patterns, and recent research issues may be considered.

ANT 3273. Civilizations of Mexico. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2043](#) recommended. Examination of the development of the ancient civilizations of Mexico and Central America: Olmec, Teotihuacan, Toltec, Aztec, and Zapotec, among others. Insights will be drawn from archaeological data, art, hieroglyphic writing, ethnohistoric accounts, and Colonial Period documents. (Formerly titled “Ancient Civilizations of Mesoamerica.”).

ANT 3293. Analytical Methods in Anthropology. (3-0) 3 Credit Hours.

Prerequisites: Completion of Core Curriculum requirement in mathematics recommended; [ANT 2043](#) or [ANT 2053](#) recommended. Qualitative and quantitative analysis and computer applications as used in anthropological research.

ANT 3303. Nature and Culture in Greater Amazonia. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. This course examines the historical and contemporary situations of the indigenous peoples of lowland South America, focusing specifically on the Amazon Basin. Consideration will be given to classical ethnographic monographs as well as accounts of the political and ecological challenges that currently face the inhabitants of Greater Amazonia.

ANT 3333. Physical Anthropology of Human Populations. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2033](#) recommended. Examines the biological variability of living populations; includes genetics, anatomy, demography, and change within a physical anthropology framework.

ANT 3343. The Contemporary Pacific. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. This course examines the geography, prehistory, colonial contact and contemporary society in the Pacific Islands. Drawing on case studies from Hawaii to Papua New Guinea, emphasis is placed on ethnography and the contribution of the area to anthropological thought.

ANT 3363. Indians of Mesoamerica. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. Survey of the indigenous peoples of Mexico and Central America, including Maya, Zapotec, Mixtec, and Nahua (Aztec) cultures, from before the Spanish conquest to the present. The course emphasizes interactions between native peoples and the Spanish colonial and modern national regimes and processes of culture change.

ANT 3383. Folklore and Folklife. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. Examines vernacular arts, crafts, and customs and their function in the maintenance of group identity. National, regional, ethnic, and occupational traditions are investigated. Attention is given to texts such as legends, myths, and ballads, as well as folk performance, clothing, architecture, and foodways.

ANT 3403. Field Course in Archaeology. (0-0) 3 Credit Hours.

Prerequisites: Upper-division standing, consent of instructor, and at least one previous anthropology or archaeology course. Offers the opportunity to gain intensive training in archaeological field methods: excavation, site survey, mapping, sampling, and interpretation. Additional fees are required. May be repeated for credit with advisor’s permission, but not more than 6 semester credit hours may be applied to a major in anthropology.

ANT 3406. Field Course in Archaeology. (0-0) 6 Credit Hours.

Prerequisites: Upper-division standing, consent of instructor, and at least one previous anthropology or archaeology course. Offers the opportunity to gain intensive training in archaeological field methods: excavation, site survey, mapping, sampling, and interpretation. Additional fees are required. May be repeated for credit with advisor's permission, but not more than 6 semester credit hours may be applied to a major in anthropology.

ANT 3413. The Fieldwork Experience. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2053](#) or consent of instructor. Drawing upon the field experiences of major figures in anthropology, the course explores the scientific and humanistic aspects of research in cultural anthropology. Ethnographic methods and techniques are discussed, with emphasis on participant observation and ethical considerations.

ANT 3503. Human Origins. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2033](#) recommended. The fossil record of human emergence and comparative studies of human evolution. Evolution of social organization, technology, and language development to the end of the Ice Age.

ANT 3513. The Human Skeleton. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2033](#) recommended. Students are given the opportunity to develop skills in the study and analysis of human osteological remains. Applications of skeletal analysis in a variety of fields are considered, including physical anthropology and archaeological demography.

ANT 3523. Medical Anthropology. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#), [ANT 2033](#), or [ANT 2053](#) recommended. This course approaches the study of health and disease patterns in human populations through the combined perspectives of culture, biology, and ecology.

ANT 3543. Museum Studies in Anthropology. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#), [ANT 2043](#), or [ANT 2053](#) recommended. By studying the nature and functioning of museums, past and present, this course will explore major controversies and debates about the politics of memory and visual display. Particular emphasis will be placed upon the role of anthropologists and archaeologists in museum contexts. Methodologically, the course will provide an overview of techniques used in exhibition planning and design as well as in collections management.

ANT 3603. Sex, Gender, and Culture. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2033](#) recommended. Examination of the biological and cultural sources of differences between men and women.

ANT 3713. Anthropology of Material Culture. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2043](#) or [ANT 2053](#) recommended. This course surveys the role of material culture in human social systems of the past and present. Archaeological, historical, and ethnographic case studies are used to illustrate how the material world is variously woven into the fabric of culture. (Formerly titled "Material Culture Systems.").

ANT 3723. Ancient Civilizations. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2043](#) recommended. Cross-cultural exploration of the development of ancient civilizations and their social, economic, and political institutions, using archaeological remains, ancient art, and ancient writing. The course compares ancient civilizations of Mesoamerica, South America, Africa, and Asia. (Formerly titled "Ancient Complex Society.").

ANT 3733. Political and Legal Anthropology. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. Comparative political and legal systems; forms of authority, legitimacy, and power. Major trends in anthropological thought are explored with emphasis on the political uses of myth, symbol, and ritual. Law and judicial processes are examined in Western and non-Western societies.

ANT 3743. The Anthropology of Cyber Cultures. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) recommended. This course focuses on the cultural and historical dimensions of cyberspace. Consideration will be given to a variety of topics that may include virtual worlds and gaming, online communities, social networking, the political economy of information as well as cross-cultural theories of identity, location, and space as these apply to cyber cultures.

ANT 3803. Media, Power, and Public Culture. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. Film and media images facilitate the production, consumption, and circulation of ideas and practices in the United States and cross-culturally. The course traces the history and meaning of various communication technologies and their impact on culture. It will examine print, film, television, new digital media and the Internet, asking how these are used to create and perpetuate dominant cultural forms as well as how these are appropriated and used by people on the margins as critique and resistance. In an increasingly media-dominated world—mass advertising, indigenous film as political resistance, politics as media campaigns, DVD productions by gangs and terrorist organizations—understanding the relationship between media and culture is a critical dimension of the professional knowledge of our future.

ANT 3823. Applied Anthropology. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. Applied cultural anthropology directly addresses the needs and problems of communities and organizations throughout the world. Topics include the history of applied anthropology; a conceptual framework for understanding the different styles of applied research; methods of applied anthropology; domains of applied anthropology: international development, medicine, education, business, criminal justice, and the environment; career options and becoming a professional.

ANT 3833. Indians of Texas. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. Ethnological survey of the Indian populations of Texas from the early historic period to the present. (Formerly ANT 4133. Credit cannot be earned for both [ANT 3833](#) and ANT 4133.).

ANT 3843. Introduction to Primate Diversity. (3-0) 3 Credit Hours.

This course offers a broad survey of the social behavior and ecology of the living primates. It begins with a survey of primate taxonomy, drawing distinctions among prosimians, monkeys, and apes. The course concludes with consideration of what the study of nonhuman primates can tell us about human evolution.

ANT 3853. Modern Ape Behavior and Ecology. (3-0) 3 Credit Hours.

Modern apes show considerable diversity in their behavioral and morphological adaptations. This course focuses on the major theoretical approaches to understanding the biological variation within this primate group. The question of whether great apes exhibit culture is also discussed.

ANT 3863. The Evolution of Human Nature. (3-0) 3 Credit Hours.

A central concept in the evolution of human behavior is the idea that our brains, like our bodies, have been shaped by natural selection. The extent to which this factor influences the diverse behavior of modern humans is a topic of considerable debate. This course takes a critical look at different attempts to explain human behavior based on adaptive design.

ANT 3873. Food, Culture, and Society. (3-0) 3 Credit Hours.

This course explores the relationship between food and culture in diverse societies by examining food, food practices, and production, as well as the meanings associated with food. Topics include issues of identity, class, food habits, global food systems, and world hunger.

ANT 3883. Death and Dying. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#), [ANT 2043](#), or [ANT 2053](#) recommended. Cross-cultural approaches to death, dying, and bereavement with a focus on either contemporary or prehistoric cultures depending on instructor's emphasis. When exploring contemporary cultures, attention will be given to the emotional, social and ethical issues of dying, and the social organization of death and dying. When exploring prehistoric groups, attention will be given to conceptualizing death through diverse funerary practices, body treatment of the deceased, and religious principles involved with death. In both cases, the course seeks to provide a comparative understanding of death and its wider social implications. May be repeated once with advisor's approval when topic varies.

ANT 3893. Primate Ecology. (3-0) 3 Credit Hours.

Nonhuman primates in their natural habitats, including biogeography, feeding and ranging behavior, structure and social organization of groups in relation to environment, and primates as members of communities.

ANT 3903. Introduction to Linguistics. (3-0) 3 Credit Hours.

Basic principles of analysis and description of the structure of language, including sound system, word order, and meaning. Also, overview of selected subfields of linguistics, such as historical linguistics, sociolinguistics, language acquisition, and bilingualism. (Same as [ENG 3343](#) and [LNG 3813](#). Credit cannot be earned for more than one of these courses.).

ANT 4013. Maya Civilization. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2043](#) recommended. Examination of the development of Maya civilization in Mexico and Central America. Insights will be drawn from archaeological data, art, hieroglyphic writing, ethnohistoric accounts, and Colonial Period documents.

ANT 4023. Histories of Anthropology. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2033](#), [ANT 2043](#), [ANT 2053](#), or [ANT 2063](#) recommended. This course examines the history of anthropology as a distinct field, including considerations of historical figures, institutions and relationships among subfields. Emphasis will be placed on changes in theoretical and methodological orientations as they emerge in specific historical contexts.

ANT 4033. Dogs, Wolves, and Human Evolution. (3-0) 3 Credit Hours.

Archaeological, historical, and genetic data suggest that humans have a closer and longer history with dogs than any other animal species, perhaps as long as 100,000 years. Dogs can even interpret our gestures and facial expressions better than our closest living relative, the chimpanzee. In this class, we explore the underpinnings of this relationship from its earliest origins in the domestication of wolves to our interactions with them today. Topics include human-wolf interactions in North America, Europe and Asia, evolutionary cognition of dogs, human-dog coevolution, and dog and wolf behavior in a larger comparative framework, including chimpanzees and other primates.

ANT 4113. Archaeology of Texas. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2043](#), [ANT 3263](#), or [ANT 3663](#) recommended. Detailed review of prehistoric and historic aboriginal cultures of Texas and adjacent areas; current trends in Texas archaeology; examination of artifacts; and field trips to local prehistoric sites.

ANT 4123. Archaeology of the American Southwest. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2043](#) or [ANT 3263](#) recommended. Consideration of the prehistoric cultures in the American Southwest and northern Mexico from the earliest occupations to European contact. Paleo-Indian, Archaic, Mogollon, Anasazi, and Hohokam occupations are reviewed with a consideration of recent research directions and theory.

ANT 4143. Primate Feeding Biology. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2033](#), [ANT 3843](#), or [ANT 3893](#) recommended. An investigation into the ecology and evolution of wild primate feeding biology and nutrition. Topics include primate-plant interactions, nutritional requirements, plant defensive chemistry, foraging theory, sensory ecology, evolution of body size and its implications for feeding, and evolution of primate feeding-related anatomy.

ANT 4183. Diet, Nutrition and the Human Brain. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2033](#), [ANT 3843](#), or [ANT 3893](#) recommended. An investigation into the impact of digestion, food and diet on human brain evolution. Topics include a review of macronutrients and metabolism, brain and gut anatomy and physiology, the interactions between the central nervous system and enteric nervous system, food and cognition, and the roles of hunting, meat consumption, and cooking in human evolutionary history.

ANT 4233. Conservation of Primates in Global Perspective. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2033](#) or [ANT 3843](#) recommended. Analysis of the conservation status of the world's nonhuman primates, and the specific threats to their survival. Includes examination of issues relating to the anthropology of conservation, such as human-nonhuman primate resource competition, anthropogenic habitat alteration related to land use and development, and efforts to achieve community-based conservation.

ANT 4243. Ethnographic Film. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. Critique of major ethnographic films, concentrating on field methodology, production values, and the issue of representation.

ANT 4263. Anthropology of Globalization and Development. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. Anthropological perspectives on the nature, causes, and consequences of social and cultural change, with an emphasis on how local cultures are shaped by and resist the process of globalization and development. (Formerly titled "Social and Cultural Change.")

ANT 4273. The Anthropology of Oil. (3-0) 3 Credit Hours.

Prerequisite: [ANT 1013](#) or [ANT 2053](#) recommended. This course explores the social, cultural, and political-economic significance of oil, the most important industrial commodity of the world. Case studies will be drawn from books, articles, and films that describe the importance of oil at the level of its production, distribution, and consumption in the United States and around the world.

ANT 4283. Culture in Theory and Practice. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2033](#), [ANT 2043](#), [ANT 2053](#), or [ANT 2063](#) recommended. Examines philosophical approaches to culture and their applications within anthropology. Readings will include significant theoretical works from within anthropology and influential texts from related disciplines. Case studies will be used to illustrate these perspectives.

ANT 4333. Ecology and Evolution of Human Diseases. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2033](#) recommended. Ecological, evolutionary, and biocultural aspects of human disease. Topics include the ecology of infectious/parasitic disease pathogens and their human hosts, the

evolution of human host-pathogen interactions, the impact of cultural and demographic change in human populations, and the effects of global environmental change on human disease patterns.

ANT 4363. Primate Evolutionary Biology. (3-0) 3 Credit Hours.

Prerequisite: [ANT 2033](#) or consent of Instructor. This course evaluates the evolutionary history of the nonhuman primates. Examination will include information gained from fossil and genetic data as well as from modern phylogenetic methods.

ANT 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ANT 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ANT 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ANT 4933. Internship in Anthropology. (0-0) 3 Credit Hours.

Prerequisite: Consent of internship coordinator. Supervised experience relevant to anthropology within selected community organizations. A maximum of 6 semester credit hours may be earned through Internship in Anthropology. Must be taken on a credit/no-credit basis.

ANT 4936. Internship in Anthropology. (0-0) 6 Credit Hours.

Prerequisite: Consent of internship coordinator. Supervised experience relevant to anthropology within selected community organizations. A maximum of 6 semester credit hours may be earned through Internship in Anthropology. Must be taken on a credit/no-credit basis.

ANT 4953. Special Studies in Anthropology. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ANT 4983. Anthropology Honors Research. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for Department Honors during their last two semesters; approval of the Department faculty. Supervised individual research and preparation of a major paper in support of Department Honors. May be repeated once with advisor's approval.

ANT 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for University Honors in Anthropology during their last two semesters; and consent of the Honors College. Supervised research and preparation of an honors thesis. May be repeated once with advisor's approval.

Arabic (ARA)**ARA 1014. Elementary Arabic I. (3-2) 4 Credit Hours. (TCCN = ARAB 1411)**

Fundamentals of Arabic offering the opportunity to develop speaking, listening, reading, and writing skills. Introduction to Arabic culture. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

ARA 1024. Elementary Arabic II. (3-2) 4 Credit Hours. (TCCN = ARAB 1412)

Prerequisite: [ARA 1014](#), an equivalent, or an appropriate placement test score. Fundamentals of Arabic offering the opportunity to further develop speaking, listening, reading, and writing skills. Further exposure to Arabic culture.

ARA 2013. Intermediate Arabic I. (3-1) 3 Credit Hours. (TCCN = ARAB 2311)

Prerequisite: [ARA 1024](#), an equivalent, or an appropriate placement test score. Continued opportunity to develop listening, speaking, reading, and writing skills. Continued exposure to Arabic culture.

ARA 2023. Intermediate Arabic II. (3-1) 3 Credit Hours. (TCCN = ARAB 2312)

Prerequisite: [ARA 2013](#), an equivalent, or an appropriate placement test score. Continued opportunity to develop listening, speaking, reading, and writing skills. Continued exposure to Arabic culture.

Architecture (ARC)**ARC 1113. Introduction to the Built Environment. (3-0) 3 Credit Hours. (TCCN = ARCH 1311)**

Prerequisites: Completion of, or concurrent enrollment in, [ARC 1213](#) and [ARC 1313](#). An introduction to the design and construction of the built environment. Includes consideration of professional practice, ethics, interior design, landscape architecture, planning, urbanism and construction. May be applied toward the core curriculum requirement in Language, Philosophy and Culture. (Formerly COA 1113. Credit cannot be earned for both [ARC 1113](#) and COA 1113.).

ARC 1133. Construction Material and Concepts. (3-0) 3 Credit Hours.

Introduction to concepts and skills fundamental to structure, construction, building enclosure, sustainability, and interior environments. Analysis and selection of materials, components, and assemblies. Introduction to the historic role of materials in architectural and interior design. (Formerly ARC 2213 and COA 1133. Credit cannot be earned for [ARC 1133](#) and either ARC 2213 or COA 1133.).

ARC 1151. Introduction to Architecture and Design. (1-0) 1 Credit Hour.

A lecture course introducing ideas and concepts associated with architectural and interior design.

ARC 1213. Design I. (0-8) 3 Credit Hours. (TCCN = ARCH 1303)

Prerequisites: Completion of, or concurrent enrollment in, [ARC 1113](#) and [ARC 1313](#). Introduction to design through a focus on design literacy and the creative conceptualization of issues fundamental to the design of human environments. Emphasis on the realization and experience of architectural ideas in

materials. May be applied toward the core curriculum requirement in Creative Arts. (Formerly COA 1213. Credit cannot be earned for both [ARC 1213](#) and COA 1213.).

ARC 1223. Design II. (1-8) 3 Credit Hours.

Prerequisites: [ARC 1213](#) and [ARC 1313](#). Introduction to design as a broadly creative process based on consideration of spatial experience, context, program, building form, representation, and design communication. (Formerly ARC 1226 and COA 1223. Credit cannot be earned for [ARC 1223](#) and either ARC 1226 or COA 1223.).

ARC 1313. Design Visualization. (0-8) 3 Credit Hours.

Prerequisites: Completion of, or concurrent enrollment in, [ARC 1113](#) and [ARC 1213](#). Introductory exploration of graphic processes and techniques utilized in the design and construction of the built environment for the representation, visualization, analysis, and presentation of the designed environment. Completion of or concurrent enrollment in this course is required in order to take COA 1213. (Formerly COA 1313. Credit cannot be earned for both [ARC 1313](#) and COA 1313.).

ARC 1413. Architecture and Culture. (3-0) 3 Credit Hours. (TCCN = ARCH 1305)

Introduces architecture by exploring its relation to culture and the dynamic interrelationship between humans and the environment. May be applied toward the core curriculum requirement in Language, Philosophy and Culture.

ARC 1513. Great Buildings and Cities of the World. (3-0) 3 Credit Hours. (TCCN = ARCH 1301)

Introducing buildings and places that exemplify timeless architectural concepts and design strategies considered enduring contributions to the cultural heritage of the world. Examples from Africa, Asia, Europe, and the Americas are presented within the context of diverse cultures and express a variety of different aesthetic, political, and religious values. The course draws from diverse sources from high culture and vernacular sources span from antiquity to the present. May be applied toward the core curriculum requirement in Creative Arts.

ARC 2133. Principles of Architectural Structures. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as an ARC or IDE major. An introduction to the principles of architectural structures as related to architectural design. Includes consideration of spatial, structural, and aesthetic issues of building structural systems, and introduces structural behavior, forces and responses in structural systems.

ARC 2156. Drawing and Modeling Studio. (0-14) 6 Credit Hours.

Prerequisite: Enrollment as an ARC or IDE major. Architectural design through the agency of model building and drawing. Course content includes the development of design skills for the conceptualization and informed design of buildings.

ARC 2166. Digital Design Studio. (0-14) 6 Credit Hours.

Prerequisites: Enrollment as an ARC or IDE major. Architectural design through the agency of digital design media. Course content includes the development of design skills for the conceptualization and informed design of buildings.

ARC 2233. Principles of Environmental Systems. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as an ARC or IDE major. Introduction to the design of environmentally responsive buildings and the natural and artificial systems that support them. Includes consideration of topics such as, embodied energy, active and passive heating and cooling, indoor air quality, solar orientation, daylighting and artificial illumination, acoustics, and building services systems.

ARC 2413. History of Architecture I. (3-0) 3 Credit Hours. (TCCN = ARCH 1301)

Introduction to the history of architecture, urbanism, and material culture from prehistory to the 15th century. Explores the varied ways in which architecture reflects and shapes social, religious, and political concerns in the Western and non-Western world.

ARC 2423. History of Architecture II Nineteenth Century. (3-0) 3 Credit Hours. (TCCN = ARCH 1302)

Introduction to the history of architecture, urbanism, and material culture from the 15th to the 20th century. Explores the varied ways in which architecture reflects and shapes social, religious, and political concerns in the Western and non-Western world.

ARC 2513. Digital Design Media. (2-2) 3 Credit Hours.

Prerequisite: Enrollment as an ARC or IDE major or consent of instructor. Introduction to 2-dimensional and 3-dimensional digital design media. Addresses design skills, principles, techniques, procedures, and knowledge of how digital media impacts the design process, profession, and design culture.

ARC 3113. Advanced Design Visualization. (0-6) 3 Credit Hours.

Prerequisite: Enrollment as an ARC or IDE major or consent of instructor. Advanced exploration of graphic processes and techniques utilized in the design of the built environment.

ARC 3203. Housing Planning: Design and Development. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as an ARC or IDE major or consent of instructor. Survey of the evolution of housing design, planning and development that encompasses the design, location, organization, and financing of housing and community development programs and the capital and labor markets that impact such development at the local level.

ARC 3433. Topics in Architecture and Thought. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as an Architecture or Interior Design major or consent of instructor. A lecture/seminar course that provides students the opportunity to explore a variety of architectural ideas, concepts, theories, approaches, or topics related to architectural design. May be repeated for credit when topics vary.

ARC 3553. Introduction to Architectural Theory. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as an ARC or IDE major or consent of instructor. A lecture/seminar course introducing theories that inform architectural design.

ARC 3613. History of Modern Architecture. (3-0) 3 Credit Hours.

Prerequisites: [WRC 1013](#) and [WRC 1023](#). Study of the social, aesthetic, theoretical, technical, cultural, and professional forces that form, shape, and communicate modern architecture. Completion of [ARC 2413](#) and [ARC 2423](#) is recommended for Architecture and Interior Design majors.

ARC 4143. Architecture Topics. (3-0) 3 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. A course exploring issues in architecture. May be repeated for credit when topics vary.

ARC 4153. Topics in International Architecture. (3-0) 3 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. An examination of current international trends and issues in architecture and urbanism. May be repeated for credit when topics vary.

ARC 4156. Building Design Studio. (0-14) 6 Credit Hours.

Prerequisites: [ARC 2133](#), [ARC 2156](#), [ARC 2166](#), and [ARC 2233](#). Architectural design with emphasis on building technology, materials, assemblies, tectonics, structure, environmental systems, and the inter-relationship of building and environment. Course may be repeated for credit. No more than 24 credit hours of [ARC 4156](#) may count towards the degree.

ARC 4183. Environmental Systems. (2-2) 3 Credit Hours.

Prerequisites: [ARC 2156](#), [ARC 2166](#), and [ARC 2233](#). Advanced issues in the design of environmentally responsive buildings and the natural and artificial systems that support them, such as embodied energy, active and passive heating and cooling, indoor air quality, solar orientation, daylighting and artificial illumination, acoustics, and building services systems. Includes the use of appropriate performance assessment tools.

ARC 4213. Furniture Design and Construction. (0-8) 3 Credit Hours.

Prerequisite: [ARC 2156](#), [ARC 2166](#), or consent of instructor. Focuses on essential elements of furniture design and construction, emphasizing relations to architectural space, human factors, and the use of materials, connections, and finishes.

ARC 4223. Topics in Design Computing. (2-2) 3 Credit Hours.

Prerequisite: [ARC 2513](#) or consent of instructor. Theory-based seminar course exploring critical, spatial and philosophical issues relative to the impact of digital technologies within the field of architecture. Involves some usage of 2-D and 3-D digital media.

ARC 4233. Computer Projects in Design. (2-2) 3 Credit Hours.

Prerequisite: [ARC 2513](#) or consent of instructor. Project-driven lecture/laboratory course exploring advanced issues associated with 3-D modeling, animation, photo-realistic visualization, and computer-aided manufacturing. Considers the role these processes play in architectural and interior design. (Same as [IDE 4233](#). Credit cannot be earned for both [ARC 4233](#) and [IDE 4233](#).)

ARC 4283. Architectural Structures. (2-2) 3 Credit Hours.

Prerequisites: [ARC 2133](#), [ARC 2156](#), and [ARC 2166](#). Advanced study of architectural structures; considers the physical principles that govern classical statics and strength of materials. Graphical and mathematical design of structural systems. Consideration of the role of structural articulation in the design of buildings.

ARC 4333. Practicum/Internship. (0-0) 3 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. Offers students majoring in architecture, interior design, and real estate finance and development participation in a variety of design, development, and construction concerns. Students work under supervision 15 to 20 hours a week in an approved internship to gain knowledge of their respective professional fields.

ARC 4816. International Studies Studio. (0-14) 6 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. An architecture or planning studio associated with a study abroad program. (Formerly titled "Study Abroad: Studio.") (Same as [IDE 4816](#). Credit cannot be earned for both [ARC 4816](#) and [IDE 4816](#).)

ARC 4823. International Studies Theory Seminar. (3-0) 3 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. A lecture/seminar course associated with a study abroad program; involves field trips. (Formerly titled "Study Abroad: History/Theory.") (Same as [IDE 4823](#). Credit cannot be earned for both [ARC 4823](#) and [IDE 4823](#).)

ARC 4833. International Studies Drawing Seminar. (0-6) 3 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. A drawing course associated with a study abroad program; involves field trips. (Formerly titled “Study Abroad: Observational Drawing.”) (Same as [IDE 4833](#). Credit cannot be earned for both [ARC 4833](#) and [IDE 4833](#).)

ARC 4843. International Studies History Seminar. (0-6) 3 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. A lecture/seminar course associated with a study abroad program; involves field trips. (Same as [IDE 4843](#). Credit cannot be earned for both [ARC 4843](#) and [IDE 4843](#).)

ARC 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor’s degree.

ARC 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor’s degree.

ARC 4916. Independent Study. (0-0) 6 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor’s degree.

ARC 4953. Special Studies in Architecture. (0-6) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or often available as part of the regular course offerings. Special studies may be repeated for credit when the topics vary, but not more than 3 semester credit hours for [ARC 4953](#) or 12 hours for [ARC 4956](#), regardless of discipline, will apply to a bachelor’s degree.

ARC 4956. Special Studies in Architecture. (0-14) 6 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or often available as part of the regular course offerings. Special studies may be repeated for credit when the topics vary, but not more than 3 semester credit hours for [ARC 4953](#) or 12 hours for [ARC 4956](#), regardless of discipline, will apply to a bachelor’s degree.

Art (ART)

ART 1003. Two Dimensional Foundations. (0-6) 3 Credit Hours. (TCCN = ARTS 1311)

Prerequisite: Art or Art History majors only. A grade of “C-” or better must be earned in this course to satisfy the prerequisite for subsequent courses in the Art major. Exploration of the visual structure and organization of two-dimensional surfaces using a variety of media, with an emphasis on the development of creative and critical skills. This course may not be applied to Core Curriculum requirements. (Formerly titled “Design: Two Dimensional.”).

ART 1013. Three Dimensional Foundations. (0-6) 3 Credit Hours. (TCCN = ARTS 1312)

Prerequisite: Art or Art History majors only. A grade of “C-” or better must be earned in this course to satisfy the prerequisite for subsequent courses in the Art major. Exploration of the visual structure and organization of multidimensional forms in a variety of materials, with an emphasis on the development of creative and critical skills. This course may not be applied to Core Curriculum requirements. (Formerly titled “Design: Three Dimensional.”).

ART 1103. Introduction to Visual Arts. (3-0) 3 Credit Hours. (TCCN = ARTS 1301)

A course utilizing images and text designed to offer the general university student an introductory understanding of the broad range of history, interpretations and approaches comprising and applied to the field of visual art. May be applied to the Creative Arts Core Curriculum requirement for non-art majors. This course is designed for non-art majors and cannot be used to fulfill any of the major requirements for the B.A. in Art, the B.A. in Art History and Criticism, or the B.F.A.

ART 1143. Art for Non-Art Majors. (0-6) 3 Credit Hours. (TCCN = ARTS 1325)

An introduction to the history, fundamental principles, materials, and methods of visual art. Individual course sections will be devoted to the study of a specific art discipline such as drawing, painting, photography, or printmaking. May be repeated for credit when topics vary. May be applied to the Creative Arts Core Curriculum requirement for non-art majors. May not be applied to the degree requirements for a major in art.

ART 1213. Drawing I. (0-6) 3 Credit Hours. (TCCN = ARTS 1316)

Prerequisite: This course is restricted to Art and Art History majors. A grade of “C-” or better must be earned in this course to satisfy the prerequisite for subsequent courses in the Art major. Introduction to fundamental principles, materials, and techniques using a variety of drawing media. Emphasizes drawing from observation as a means to develop perceptual and technical skills for visual expression. Includes perspective and other systems of spatial organization. This course may not be applied to Core Curriculum requirements.

ART 1223. Drawing II. (0-6) 3 Credit Hours. (TCCN = ARTS 1317)

Prerequisites: [ART 1213](#); Art or Art History majors only. A grade of “C-” or better must be earned in this course to satisfy the prerequisite for subsequent courses in the Art major. Continued experience with fundamental principles, materials, and techniques emphasizing drawing from observation. Experiences in a variety of media provide opportunities for further development of perceptual and technical skills for visual expression. This course may not be applied to Core Curriculum requirements.

ART 2113. Painting: Basic. (0-6) 3 Credit Hours. (TCCN = ARTS 2316)

Prerequisites: [ART 1003](#) and [ART 1223](#). Instruction in basic painting concepts, skills, and materials with an emphasis on the use of oil paint and oil mediums.

ART 2223. New Media: Basic. (0-6) 3 Credit Hours.

Prerequisite: [ART 1003](#). This course emphasizes the exploration of new methods and means of art making with contemporary media, and builds upon traditional art processes and concepts. It is an introduction to the essentials of using digital tools, providing an opportunity to learn a broad range of skills and techniques such as the fundamentals of Adobe Photoshop® and Illustrator®, preparation for printing, digital still cameras, scanning, and CD burning. Basic digital concepts covered include the operating system, storage media, directory structure, bitmap vs. vector graphic, and file conversions.

ART 2313. Photography: Basic. (0-6) 3 Credit Hours. (TCCN = ARTS 2348)

Prerequisite: [ART 1003](#). This introductory level course will offer instruction on camera controls, black & white and color image development in a digital darkroom, in-house printing, file management, documentation of 2-D and 3-D artwork, online publishing, and digital montage primarily through the use of Adobe software. Projects emphasize both aesthetic and conceptual development through the introduction of historic and contemporary photographic genres. Students must have access to a digital SLR camera. Previous computer experience is helpful, but not required. Transfer students who have not had experience with digital darkroom must enroll in this course before proceeding to Photography: Intermediate and Advanced Topics ([ART 3513](#) and [ART 4533](#)). (Formerly ART 2513.).

ART 2413. Printmaking: Basic. (0-6) 3 Credit Hours. (TCCN = ARTS 2333)

Prerequisites: [ART 1003](#) and [ART 1223](#). Introduction to printmaking processes, concepts, and materials.

ART 2613. Sculpture: Basic. (0-6) 3 Credit Hours. (TCCN = ARTS 2326)

Prerequisite: [ART 1013](#). Instruction in basic sculptural concepts and materials.

ART 2713. Ceramics: Basic. (0-6) 3 Credit Hours. (TCCN = ARTS 2346)

Prerequisite: [ART 1003](#). Students will be given the opportunity to learn basic ceramic concepts and techniques including wheel throwing, slab building, coil construction, and glazing, to create vessel and sculptural forms. Emphasis is placed on technical execution and the use of the material for personal expression. Students will also participate in team loading, unloading, and firing kilns. Lectures/presentations provide a general introduction to historical and contemporary ceramic artists and influences.

ART 3023. Color Theory and Practice. (0-6) 3 Credit Hours.

Prerequisites: [ART 1003](#), [ART 1013](#), and [ART 1223](#). Exploration of color theories and the practical use of color in its many different aspects including additive, subtractive, and 3-dimensional color; color mixing; interactions of color and light; color symbolism; and creative applications in various art media. Course format consists of lectures, student presentations, and assigned studio projects.

ART 3033. Contemporary Studio: Concepts and Practice. (0-6) 3 Credit Hours.

Prerequisites: Satisfactory completion of 9 semester credit hours of any three 2000-level art courses, and 6 semester credit hours of AHC courses. Interdisciplinary studio projects generated from lectures, readings and discussion, focusing on critical and cultural issues from the 1970s to the present. Projects are intended to encourage collaborative efforts and nontraditional solutions. Required of all B.F.A. degree candidates.

ART 3113. Painting II. (0-6) 3 Credit Hours.

Prerequisites: [ART 1003](#), [ART 1223](#), and [ART 2113](#). Continued study of the methods and materials of painting connecting color, form, and composition to image and idea development. This course emphasizes the use of oil paint and oil mediums. Transfer students who have not had experience with oil paint must enroll in this course before proceeding to Painting III. May be repeated once for credit with instructor permission.

ART 3133. Painting III. (0-6) 3 Credit Hours.

Prerequisite: [ART 3113](#) or consent of instructor. Structured advanced painting projects that present a variety of approaches to painting with an aim to furthering both competence and an individual viewpoint in relation to historical and contemporary issues. Although a variety of media may be used at the instructor's discretion, all students must have had previous experience using oil paint. Transfer students who have not had experience with oil paint must enroll in [ART 3113](#). Sections focusing on a special topic such as abstraction or the figure will occasionally be offered. May be repeated for credit.

ART 3223. Drawing: Figure. (0-6) 3 Credit Hours.

Study of the human figure and its historical and contemporary implications for the artist, including anatomical and structural dynamics, gesture, narrative, and issues concerning the body as subject. May be repeated for credit.

ART 3233. Drawing: Intermediate. (0-6) 3 Credit Hours.

Prerequisite: [ART 1223](#). Structured drawing projects assigned with an emphasis on the interrelationship of drawing and space. Explores a range of spatial models including observational, abstract, and physical. May be repeated once for credit.

ART 3513. Photography: Intermediate. (0-6) 3 Credit Hours.

Prerequisite: [ART 2313](#). Students will build on technical knowledge through introduction of 35mm and medium film formats as well as black & white techniques and laboratory procedures. Students will further conceptual exploration of photography as a fine art medium through projects that explore historic and contemporary genres. Students must have access to a 35mm analog (film) SLR camera. Transfer students who have not had experience with traditional darkroom must enroll in this course before proceeding to Photography: Advanced Topics. This course cannot be repeated for additional credit.

ART 4033. Studio Art Problems. (0-6) 3 Credit Hours.

Prerequisite: Satisfactory completion of any two 2000-level art courses. An advanced exploration of visual art ideas and practices using various media, materials, and processes. Occasionally may be devoted to a specific topic of study. May be repeated for credit when topics vary.

ART 4133. Painting / Drawing IV. (0-6) 3 Credit Hours.

Prerequisites: [ART 3133](#) or [ART 3233](#) and Consent of Instructor. Development of an individual direction in painting or drawing (including mixed media, hybrid forms, and experimental approaches) emphasizing the successful synthesis of material, technical, formal and conceptual qualities specific to each student's work. Additional emphasis is given to the understanding and articulation of historical and contemporary issues in the theory and practice of painting and drawing. Other course work, such as reading and/or writing assignments may be required to complement individual studio work. Students repeating [ART 4133](#) will be required to demonstrate an advanced and expanded performance building on their accomplishments in prior sections of [ART 4133](#). Permission of instructor is required for enrollment in this course. Admission is based on student's demonstrated ability to undertake the development of a focused and proficient body of work with dedicated time in the studio environment. May be repeated for credit.

ART 4233. Drawing: Advanced. (0-6) 3 Credit Hours.

Prerequisites: [ART 3233](#) and consent of instructor. Diverse topics with an emphasis on contemporary drawing practices such as drawing and the body, drawing and duration, and drawing and site. May be repeated for credit. (Formerly titled "Drawing III.")

ART 4313. New Media. (0-6) 3 Credit Hours.

Prerequisite: [ART 2223](#). The focus of this course is on new media as an extension of fine arts practice. Depending on the term topic, there may be instruction in static and/or non-static electronic media, including various forms such as digital print, Web, video, animation, and sound. Students will be encouraged to use digital and other new media tools experimentally to create original electronically generated art that amplifies and extends image making beyond traditional techniques. [ART 4313](#) may be repeated for credit. Specific UTSA Department of Art and Art History degree plans require students to take this course multiple times, up to 15 credit hours (including Internship and Independent Study where the work falls primarily in the discipline of New Media). Students are expected to enroll in varying sections of [ART 4313](#) in order to expand their knowledge of diverse new media: New Media: Video; New Media: Sound; New Media: Animation; New Media: Web. Students will be required to demonstrate an advanced and expanded performance, which includes execution of artwork, progression in digital media literacy and writing ability, building on their accomplishments in prior sections of [ART 4313](#). This process of developing a refined skill set is time consuming and individualized to each student, as are the benchmarks of material, process and conceptual success that characterize each student's work. Students taking [ART 4313](#) for additional credit will be evaluated on an increased mastery of the skill sets defined above in the learning outcomes of this course. Increased mastery of skills will include but not be limited to:

- The exploration of an additional area of digital media not used in prior semesters.
- The experimentation with, and the refinement of, an additional process(es) not used in prior semesters.
- Improved personal standard of quality demonstrated by a refinement in the sophistication of conceptual, material and process success that characterize the student's work.
- A demonstrated improvement of the student's ability or skill to formulate and verbally articulate his or her developing artistic direction measured against performance in prior semesters as well as over the course of the semester.
- An increased and more specific understanding of the history of new media especially directed towards the interests and investigations of the student. (Formerly titled "Multimedia Art.").

ART 4433. Printmaking. (0-6) 3 Credit Hours.

Prerequisite: [ART 2413](#). An emphasis on the development of a personal vision and individual approach to the use of the medium, including experimentation in multiple processes. [ART 4433](#) may be repeated for credit. Specific UTSA Department of Art and Art History degree plans require students to take this course multiple times up to 15 credit hours (including Internship and Independent Study where the work falls primarily in the discipline of printmaking). Students enrolling in [ART 4433](#) will be required to demonstrate an advanced and expanded performance building on their accomplishments in prior sections of [ART 4433](#). This process of developing a refined skill set is time consuming and individualized to each student as are the benchmarks of material, process and conceptual success that characterize each student's work. Students taking [ART 4433](#) for additional credit will be evaluated on an increased mastery of the skill sets defined above in the learning outcomes of this course. Increased mastery of skills will include but not be limited to:

- The exploration of an additional material(s) not used in prior semesters.
- The experimentation with, and the refinement of, an additional process(es) not used in prior semesters.
- Improved personal standard of quality demonstrated by a refinement in the sophistication of conceptual, material and process success that characterize the student's work.
- A demonstrated improvement of the student's ability or skill to formulate and verbally articulate his or her developing artistic direction measured against performance in prior semesters as well as over the course of the semester.
- An increased and more specific understanding of the history of printmaking especially directed towards the interests and investigations of the student.

ART 4533. Photography : Advanced Topics. (0-6) 3 Credit Hours.

Prerequisites: [ART 2313](#) and [ART 3513](#). Emphasis on the development of a personal voice through exploration of advanced photographic techniques, concepts as well as self-defined projects. Students will build knowledge and understanding of photography as a fine art medium. Topics may include: Non-Silver and Alternative Processes; Controlled Lighting; Advanced Black and White; Image-Based Performance,

Intervention, and Installation; Advanced Color and Digital Darkroom; Primitive Technologies–Pinhole and Toy Cameras. Transfer students who have not had experience with both digital and traditional darkroom must enroll in [ART 2313](#) and [ART 3513](#) before proceeding to Photography: Advanced Topics. While each offered topic may be repeated once for credit, students who chose photography as their emphasis area should take a minimum of four of the offered topics. [ART 4533](#) may be repeated for credit. Specific UTSA Department of Art and Art History degree plans require students to take this course multiple times up to 15 credit hours (including Internship and Independent Study where the work falls primarily in the discipline of Photography). Students enrolling in [ART 4533](#) will be required to demonstrate an advanced and expanded performance building on their accomplishments in prior sections of [ART 4533](#). This process of developing a refined skill set is time consuming and individualized to each student as are the benchmarks of material, process and conceptual success that characterize each student's work. Students taking [ART 4533](#) for additional credit will be evaluated on an increased mastery of the skill sets defined above in the learning outcomes of this course. Increased mastery of skills will include but not be limited to: • The exploration of an additional material(s) not used in prior semesters. • The experimentation with, and the refinement of, an additional processes(s) not used in prior semesters. • Improved personal standard of quality demonstrated by a refinement in the sophistication of conceptual, material and process success that characterize the student's work. • A demonstrated improvement of the student's ability or skill to formulate and verbally articulate his or her developing artistic direction measured against performance in prior semesters as well as over the course of the semester. • An increased and more specific understanding of the history of photography especially directed towards the interests and investigations of the student. (Formerly titled "Photography.").

ART 4673. Sculpture. (0-6) 3 Credit Hours.

Prerequisites: [ART 1003](#) and [ART 2613](#). An emphasis on the development of a personal vision and individual approach to the use of the medium. [ART 4673](#) may be repeated for credit. Specific UTSA Department of Art and Art History degree plans require students to take this course multiple times up to 15 credit hours (including Internship and Independent Study where the work falls primarily in the discipline of Sculpture). Students enrolling in [ART 4673](#) will be required to demonstrate an advanced and expanded performance building on their accomplishments in prior sections of [ART 4673](#). This process of developing a refined skill set is time consuming and individualized to each student as are the benchmarks of material, process and conceptual success that characterize each student's work. Students taking [ART 4673](#) for additional credit will be evaluated on an increased mastery of the skill sets defined above in the learning outcomes of this course. Increased mastery of skills will include but not be limited to: • The exploration of an additional material(s) not used in prior semesters. • The experimentation with, and the refinement of, an additional processes(s) not used in prior semesters. • Improved personal standard of quality demonstrated by a refinement in the sophistication of conceptual, material and process success that characterize the student's work. • A demonstrated improvement of the student's ability or skill to formulate and verbally articulate his or her developing artistic direction measured against performance in prior semesters as well as over the course of the semester. • An increased and more specific understanding of the history of sculpture especially directed towards the interests and investigations of the student.

ART 4753. Ceramics. (0-6) 3 Credit Hours.

Prerequisites: [ART 1003](#), [ART 1013](#), and [ART 2713](#). An exploration of advanced techniques and processes including large-scale ceramic sculpture, the use of armatures, and clay body and glaze development. Emphasis is placed on technical execution and the use of the material for personal expression. Readings, lectures, and presentations are designed to broaden the students' historical and contemporary reference. [ART 4753](#) may be repeated for credit. Specific UTSA Department of Art and Art History degree plans require students to take this course multiple times up to 15 credit hours (including Internship and Independent Study where the work falls primarily in the discipline of Ceramics). Students enrolling in [ART 4753](#) will be required to demonstrate an advanced and expanded performance building on their accomplishments in prior sections of [ART 4753](#). This process of

developing a refined skill set is time consuming and individualized to each student, as are the benchmarks of material, process and conceptual success that characterize each student's work. Students taking [ART 4753](#) for additional credit will be evaluated on an increased mastery of the skill sets defined above in the learning outcomes of this course. Increased mastery of skills will include but not be limited to: • The exploration of an additional material(s) not used in prior semesters. • The experimentation with, and the refinement of, an additional processes(s) not used in prior semesters. • Improved personal standard of quality demonstrated by a refinement in the sophistication of conceptual, material and process success that characterize the student's work. • A demonstrated improvement of the student's ability or skill to formulate and verbally articulate his or her developing artistic direction measured against performance in prior semesters as well as over the course of the semester. • An increased and more specific understanding of the history of ceramics especially directed towards the interests and investigations of the student.

ART 4833. Internship in the Visual Arts. (0-0) 3 Credit Hours.

Prerequisite: Permission in writing (departmental form available). Students will participate in projects on an individual basis. The practical application of art methods and principles in such projects as providing special art programs or exhibition assistance to organizations and providing technical studio assistance for artists. Students must confer with instructor during the semester prior to enrolling in order to formulate the content of the internship. May be repeated for credit. (Formerly titled "Practicum in the Visual Arts.").

ART 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent studio projects produced under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree. This course may be used only under extraordinary conditions when a self-directed student needs special instruction in an area of studio art not offered within normal course offerings.

ART 4953. Special Studies in Art. (0-6) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ART 4983. Senior Seminar and Exhibition. (0-6) 3 Credit Hours.

Prerequisites: [ART 3033](#), and must have completed application for graduation. This course prepares the student in the professional concerns of aesthetics, art practices, and exhibition. The student will prepare work for a group exhibition in consultation with both the class instructor and a faculty advisor from his or her studio area of specialization.

Art History and Criticism (AHC)

AHC 1113. Survey of Art and Architecture from Prehistoric Times to 1350. (3-0) 3 Credit Hours. (TCCN = ARTS 1303)

A critical and historical study of art and architecture as it developed from Paleolithic times to 1350 in the various civilizations of Europe, the Near East, and the New World. Course will include selected readings from related fields. May be applied to the Creative Arts Core Curriculum requirements for art and non-art majors.

AHC 1123. Survey of Art and Architecture in Europe and the New World from 1350 to 1750. (3-0) 3 Credit Hours. (TCCN = ARTS 1304)

A critical and historical study of art and architecture as it developed from the Renaissance in Europe and the period of the Aztecs and Incas in the New World to 1750. Course will include selected readings from related fields. May be applied to the Creative Arts Core Curriculum requirement for art and non-art majors.

AHC 1133. Survey of Modern Art. (3-0) 3 Credit Hours.

A critical and historical study of modern art from 1750 to the present. Course will include selected readings from related fields. May be applied to the Creative Arts Core Curriculum requirement for art and non-art majors.

AHC 3113. Contemporary Art. (3-0) 3 Credit Hours.

Prerequisite: 3 semester credit hours of lower-division art history. History, theory, and criticism of the visual arts of the United States and Europe from 1960 to the present. (Formerly AHC 4113. Credit cannot be earned for both [AHC 3113](#) and AHC 4113.).

AHC 3423. Arts of Ancient America. (3-0) 3 Credit Hours.

Prerequisite: 3 semester credit hours of lower-division art history. A critical and historical study of art and architecture in the Western Hemisphere. (Formerly titled “Pre-Columbian Art and Architecture of Mesoamerica.”).

AHC 3523. Latin American Art. (3-0) 3 Credit Hours.

Prerequisite: 3 semester credit hours of lower-division art history. A critical and historical study of art from the independence period to the present.

AHC 4333. Topics in Art History and Criticism. (3-0) 3 Credit Hours.

Prerequisite: 3 semester credit hours of lower-division art history passed with a grade of “C-” or better. Focus on a specific period, medium, or theoretical and critical issue within the history and criticism of art. May be repeated for credit when topics vary.

AHC 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion and/or critical writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

AHC 4933. Art Gallery and Museum Internship. (0-0) 3 Credit Hours.

Prerequisite: Permission in writing (departmental form available). Supervised experience related to preparation and installation of exhibitions in gallery and museum settings. Students must confer with instructor during the semester prior to enrolling in order to formulate the content of the internship. May be repeated once for credit. Enrollment limited to juniors and seniors with declared major or minor in Art History and Criticism.

Astronomy (AST)

AST 1013. Introduction to Astronomy. (3-0) 3 Credit Hours. (TCCN = ASTR 1303)

Prerequisite: [MAT 1023](#) or [MAT 1073](#). A descriptive course including the development of astronomy, its methods, and the motions, laws, and evolution of the solar system. Topics include general properties and types of stars, unusual stellar objects such as quasars and black holes, galaxies, evolution, and cosmology. Occasional evening viewing sessions are held. May apply toward the Core Curriculum requirement in Life and Physical Sciences.

AST 1031. Introduction to Astronomy Laboratory. (1-2) 1 Credit Hour. (TCCN = ASTR 1103)

Prerequisite: Completion of or concurrent enrollment in [AST 1013](#), or consent of instructor. This course is an introduction to practical observational techniques, using the school's telescopes as well as student-built classical instruments and exercises in the use of the telescope and certain other astronomical instruments, including simple observations, measurements, and photography. Topics include in-class projects on spectroscopy, stellar positions, solar heating, planetary motions, solar and astrophotography, star clusters, galaxies, and cosmology.

AST 1033. Exploration of the Solar System. (3-0) 3 Credit Hours. (TCCN = ASTR 1304)

Prerequisite: [MAT 1023](#) or [MAT 1073](#). A descriptive course of modern studies of the solar system, including a survey of the properties of the planets and smaller bodies (asteroids and comets) and current theories of the origin of planetary systems. Topics include results from the latest satellite, robotic, and human exploration of space, origin of life in the solar system, existence of other planetary systems, possibilities of space colonization, and the search for extraterrestrial life (techniques and possibilities of communication with other intelligences). May apply toward the Core Curriculum requirement in Life and Physical Sciences.

AST 1043. Current Topics in Astronomy. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1023](#) or [MAT 1073](#). Astronomy receives considerable attention from the media and the public in general. It allows us to ask fundamental questions about who we are, where we come from, and where we will end up as a world. This course will concentrate on the areas of astronomy that are currently most covered by the media—planet detection and interpretation, recent NASA spacecraft missions, supermassive black holes, gamma-ray bursters, dark matter and dark energy in the Universe, and other significant developments that arise during the semester. This course will cover each of these in depth, but will also concentrate on the reaction that the media has had on them. The media and public often have an uncanny ability to probe directly to the main reasons for why scientists study a particular problem. The student who completes this course will be expected to not only have a better scientific understanding of the current hot topics in astronomy, but also understand how the media can actually drive science in general.

AST 1053. Extreme Astronomy. (3-0) 3 Credit Hours.

Prerequisite: [AST 1013](#) completed with a grade of "C-" or better. Topics include supernovae, neutron stars and pulsars; black holes, X-ray astronomy, and gamma-ray bursts; extragalactic radio sources, active galactic nuclei, and quasars.

AST 1073. Astrobiology: Search for Life in the Universe. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1023](#) or [MAT 1073](#). The concept that life might exist elsewhere besides the Earth has intrigued humankind for centuries. Technology has now enabled this fundamental question to be pursued with substantial international scientific vigor. Within the Solar System, several Mars probes, as well probes to the moons of Jupiter (Europa) and Saturn (Titan), are being developed with specific emphasis on the development of in-situ instrumentation to detect the presence of life. Beyond the Solar System, the

search for life signs has gained momentum with the rapid growth in the number of known exoplanets. While the detection of exoplanets is challenging conventional views of planet formation, it has also created opportunities for new observational methods to detect and characterize habitability and bio-signatures. The study of life on Earth has revealed surprising constraints on the limits of life with the discovery of extremophiles capable of surviving in near-freezing, near-boiling, nonaqueous, or high-radiation environments. This interdisciplinary course involves topics in astronomy, planet formation, and biology.

AST 1113. Astronomy for Educators. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1023](#) or [MAT 1073](#). This is a one-semester introductory survey course on modern astronomy, specially designed for education majors. During the semester, students will develop course materials for classroom instruction appropriate for K-12 education. Correcting common misconceptions in astronomy and current teaching strategies will be discussed to help students master the course material and become effective teachers.

AST 3001. Undergraduate Astronomy Seminar. (1-0) 1 Credit Hour.

Prerequisite: Completion of or concurrent enrollment in AST 3003 or consent of instructor. Designed for physics and astronomy majors. Discussions about current astronomical research, with different topics emphasized each semester. May be repeated twice for credit when the topics vary. Offered on a credit/no-credit basis only.

AST 3013. Fundamentals of Astronomy. (3-0) 3 Credit Hours.

Prerequisites: [PHY 1963](#) (or PHY 1923) and [MAT 1224](#) (or [MAT 1193](#) and [STA 1403](#)) completed with a grade of “C-” or better. This is a one-semester introductory survey course on modern astronomy for science and engineering majors. Students need to be comfortable with solving problems and using math as a tool to help master the course material. Students concerned about their problem-solving and math skills should consider taking [AST 1013](#) instead, which is intended for non-science majors. Among the topics covered are the celestial sphere, basic orbit theory, stellar parameters, binary stars and light curves, and basic introduction to stellar spectral classification. (Formerly AST 2063. Credit cannot be earned for both AST 3093 and AST 2063.).

AST 3023. Introduction to Astrophysics. (3-0) 3 Credit Hours.

Prerequisites: [AST 3013](#) and [PHY 2103](#) or consent of instructor. Topics include an introduction to stellar structure and evolution, stellar atmospheres, collapsed stars, galactic structure, introduction to cosmology, etc. (Formerly AST 3003 and PHY 4003. Credit cannot be earned for more than one of the following: AST 3003, [AST 3023](#) or PHY 4003.).

AST 3033. Observational Techniques in Astronomy. (3-0) 3 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in [AST 3023](#) or consent of instructor. Properties of stars and starlight; principles of radiation; interpretation of stellar spectra. Observational techniques such as photometry, spectroscopy, telescopes and detectors; variable stars; binary stars. In addition to classical visual observations, topics span the electromagnetic spectrum, including radio, infrared, X-ray, and gamma-ray measurements in astronomy.

AST 3043. Astrochemistry. (3-0) 3 Credit Hours.

Prerequisite: [AST 3023](#) or consent of instructor. An interdisciplinary course that explores astrochemistry: the study of molecules in space. Where are they? How did they get there? What roles do they play in controlling or influencing astrophysical processes? The chemistry of interstellar molecules is one of modern astronomy’s best tools for probing the processes of star and planet formation. Organic molecules formed in space and delivered to Earth’s primordial surface may have contributed to the origin of terrestrial life. Through a combination of observational spectroscopy and imaging, theoretical modeling

and controlled laboratory studies, the secrets of the cosmic chemical cauldron are beginning to be unlocked. This course involves readings in astronomy, chemistry, and biology.

AST 3103. Observational Astronomy Laboratory. (0-6) 3 Credit Hours.

Prerequisite: Completion of, with a grade of “C-” or better, or concurrent enrollment in [AST 3033](#) or consent of instructor. An introduction to practical observational techniques in astronomy designed for physical science students. Topics include basic observational techniques and modern instrumentation in astronomy including astrophotography, photometry, and spectroscopy of solar system, stellar and deep-space objects. Under the supervision of the course instructor, the students will use the 0.4-m telescope and other instrumentation on the campus observatory.

AST 3303. Introduction to Galactic and Extragalactic Astronomy. (3-0) 3 Credit Hours.

Prerequisite: [AST 3023](#) or consent of instructor. Topics include the Milky Way Galaxy and its constituents and the Local Group, morphology and properties of galaxies, Dark Matter, galaxy clusters, structure and evolution of galaxies including interactions and mergers, active galactic nuclei, gravitational lensing, and quasars.

AST 4203. Stellar Astrophysics. (3-0) 3 Credit Hours.

Prerequisite: [AST 3023](#) or consent of instructor. Topics include properties and evolution of stars, stellar atmospheres, stellar spectra, nuclear reactions, stellar models, equations of state, radiative transfer, nucleosynthesis in stars, supernovae, and degenerate stars.

AST 4303. Solar System Astrophysics. (3-0) 3 Credit Hours.

Prerequisite: [AST 3023](#) or consent of instructor. Modern studies of the solar system, including properties of the planets and smaller bodies, and the origin of planetary systems. Topics include the solar system, its formation, structure, and evolution; orbital dynamics, surfaces, interiors, atmospheres, magnetospheres, and other properties of the sun, the planets and their satellites; comets and asteroids; origin of planetary systems; extra-solar systems. (Formerly titled “The Solar System.”).

AST 4953. Special Studies in Astronomy. (3-0) 3 Credit Hours.

Prerequisites: [AST 3023](#) and consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor’s degree.

Bicultural Bilingual Studies (BBL)

BBL 2003. Language, Culture, and Society. (3-0) 3 Credit Hours. (TCCN = ANTH 2351)

The interdisciplinary study of language in its cultural and social contexts, with emphasis on linguistically diverse communities. Topics include language and ethnicity, language and gender, language and social class, language acquisition, oral and written language, and language variation and change. May be applied toward the Core Curriculum requirement in Social and Behavioral Sciences.

BBL 2023. Latino Cultural Expressions. (3-0) 3 Credit Hours.

An introductory overview of Hispanic visual, performing, and folk arts from their origins in the Iberian peninsula, through the later blending of cultures and their parallelism during revolutionary periods, to contemporary Latino expressions in the United States. (Same as [MAS 2023](#). Credit cannot be earned for both [BBL 2023](#) and [MAS 2023](#).)

BBL 2033. Multiculturalism in the Southwest. (3-0) 3 Credit Hours.

A panoramic study of the concept of culture and the social dynamics of exchange among those ethnic groups that determine the multicultural milieu of the Southwest. Examination of cultural differences and similarities among all peoples of the region and the role of multiculturalism in politics, education, economics, religion, and everyday life. (Same as [MAS 2033](#). Credit Cannot be earned for both [BBL 2033](#) and [MAS 2033](#).)

BBL 2243. Globalizing the Local: Bilingual Families, Communities, and Schools. (3-0) 3 Credit Hours. (TCCN = ANTH 2351)

This course examines the interrelatedness among families, communities, and schools in supporting the achievement of Latina/o bilingual children. Taking a local approach to a global phenomenon—preparing bilingual/multilingual children in an increasingly interconnected world, this course explores how historical, political, and social factors influence access to a quality education. Issues pertaining to cultural transmission and maintenance of transnational ties will also be addressed. May be applied toward the Core Curriculum requirement in Social and Behavioral Sciences.

BBL 3013. Language Analysis and Bilingualism. (3-0) 3 Credit Hours.

Survey of concepts in descriptive and contrastive linguistics; analysis of language contact phenomena, including cross-linguistic transfer, language alternation, and bilingualism. Offered in Spanish and English.

BBL 3023. Mexican American Culture. (3-0) 3 Credit Hours.

A survey of Mexican American cultural distinctiveness in the areas of biculturalism, cultural production, and social organization. Topics may include family and kinship, folklore, health, language, music, and religion.

BBL 3033. Mexican Americans in the Southwest. (3-0) 3 Credit Hours.

Historical foundations of the United States–Mexico biculturalism in the Southwest. An examination of the historical forces that created and shaped the Mexican American people as a bicultural community. Attention is given to Mexican American contributions in arts, economics, literature, and politics. (Same as [MAS 3033](#). Credit cannot be earned for both [BBL 3033](#) and [MAS 3033](#).)

BBL 3043. Social Psychological Considerations in Mexican American Communities. (3-0) 3 Credit Hours.

A cross-cultural and social psychological study of human development, interethnic communication, stereotyping, learning styles, or other topics relevant to the bicultural setting. (Same as [MAS 3043](#). Credit cannot be earned for both [BBL 3043](#) and [MAS 3043](#).)

BBL 3053. Foundations of Bilingual Studies. (3-0) 3 Credit Hours.

Investigation of the philosophies and theories of schooling in bilingual societies, with focus on language policy and the sociological, psychological, and legal aspects involved. A minimum of six hours of field experience is required. (Formerly BBL 4023. Credit cannot be earned for both [BBL 3053](#) and BBL 4023.)

BBL 3133. Language Development in Bilinguals. (3-0) 3 Credit Hours.

A study of bilingual language development in its social and cultural contexts. Emphasis on factors affecting successful bilingual language development in schools and communities.

BBL 3143. Children's Literature for Bilingual Learners. (3-0) 3 Credit Hours.

Designed to familiarize students with oral and written children's literature in bilingual programs. Focus is on bilingual students' affective, linguistic, and literacy needs through appropriate instruction with

authentic literature. Emphasis on Mexican American cultural experiences as well as universal themes. Taught in Spanish and English. Field experience required.

BBL 3403. Cultural and Linguistic Diversity in a Pluralistic Society. (3-0) 3 Credit Hours.

Examination of sociolinguistic and sociocultural principles central to culturally diverse settings, including the classroom. Topics include educational equity, segregated schooling, the achievement gap, hegemony, and social dominance theory. Various pedagogical practices will be explored to identify culturally inclusive responses. Fifteen hours of field experience are required. Field experience required.

BBL 4003. Spanish for Bilingual Instructional Delivery. (3-0) 3 Credit Hours.

Designed to improve the Spanish proficiencies of bilingual classroom teachers. Study of the grammar, writing conventions, and vocabulary for effective communication and instructional delivery in a formal bilingual classroom setting. Taught in Spanish.

BBL 4013. Advanced Spanish for Bilingual Teaching and Learning. (3-0) 3 Credit Hours.

Prerequisite: [BBL 4003](#) or departmental permission. Advanced study of formal academic Spanish for future bilingual educators. Extensive practice in reading and creating authentic didactic materials, instructional delivery, and effective communication with Spanish-speaking parents and community members. Taught in Spanish.

BBL 4033. Assessment, Learning, and Motivation in Bicultural-Bilingual Classrooms. (3-0) 3 Credit Hours.

Prerequisites: Admission to a Bilingual Generalist Teacher Certification Program; [BBL 3053](#), [RDG 3823](#), and successful completion of the ALPS (Assessment of Language Proficiency in Spanish) sequence. Must be taken concurrently with [BBL 4063](#), [BBL 4073](#), and [BBL 4403](#) for Bilingual Generalist EC–6 Teacher Certification majors. Must be taken concurrently with [BBL 4063](#) and [BBL 4073](#) for Bilingual Generalist 4–8 Teacher Certification majors. A survey of learning and motivation theory and examination of evaluation and assessment procedures in bicultural-bilingual settings, including formal and informal assessment of language proficiency and learning for instructional purposes. The appropriate use of standardized tests with language minority populations will be included. Field experience is required. Taught in Spanish and English.

BBL 4063. Bilingual Approaches to Content-Based Learning. (3-0) 3 Credit Hours.

Prerequisites: Admission to a Bilingual Generalist Teacher Certification Program; [BBL 3053](#), [RDG 3823](#), and successful completion of the ALPS (Assessment of Language Proficiency in Spanish) sequence. Must be taken concurrently with [BBL 4033](#), [BBL 4073](#), and [BBL 4403](#) for Bilingual Generalist EC–6 Teacher Certification majors. Must be taken concurrently with [BBL 4033](#) and [BBL 4073](#) for Bilingual Generalist 4–8 Teacher Certification majors. An investigation of appropriate first language usage in bilingual classrooms, focusing on the different content areas, appropriate terminology for native language instruction, and the study of languages distribution strategies. Field experience required. Taught in Spanish.

BBL 4073. Language Arts in a Bicultural-Bilingual Program. (3-0) 3 Credit Hours.

Prerequisites: Admission to a Bilingual Generalist Teacher Certification Program; [BBL 3053](#), [RDG 3823](#), and successful completion of the ALPS (Assessment of Language Proficiency in Spanish) sequence. Must be taken concurrently with [BBL 4033](#), [BBL 4063](#), and [BBL 4403](#) for Bilingual Generalist EC–6 Teacher Certification majors. Must be taken concurrently with [BBL 4033](#) and [BBL 4063](#) for Bilingual Generalist 4–8 Teacher Certification majors. An examination of theories, instructional strategies, texts and materials for biliteracy development in the elementary bilingual classroom. Emphasis on the integrated use of listening, speaking, reading, and writing in content area teaching. Field experience required. Taught in Spanish.

BBL 4353. Approaches to Teaching Science EC–6. (2-2) 3 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program; [BBL 3053](#), [IDS 2403](#), [IDS 2413](#), [IDS 3201](#), and [IDS 3211](#). A study of pedagogical approaches, materials, and resources designed to support children's meaningful exploration, discovery, and construction of basic concepts and skills in EC–Grade 6. Emphasis in the course will be on the interrelatedness of science in the daily lives of students, unifying concepts and processes common to all sciences, development of effective learning environments for science both inside and outside of the classroom, planning and implementation of inquiry-based science lessons, assessment of student learning, and the use of an integrated approach to teaching. Restricted course; advisor code required for registration. Field experiences required. (Same as [C&I 4353](#). Credit cannot be earned for both [BBL 4353](#) and [C&I 4353](#).)

BBL 4403. Approaches to Teaching Mathematics EC–6. (3-0) 3 Credit Hours.

Prerequisites: Admission to Bilingual Generalist EC–6 Teacher Certification Program; [BBL 3053](#), [RDG 3823](#), and successful completion of the ALPS (Assessment of Language Proficiency in Spanish) sequence. Must be taken concurrently with [BBL 4033](#), [BBL 4063](#), and [BBL 4073](#) for Bilingual Generalist EC–6 Teacher Certification majors. This course involves the study of instructional methods and materials that support diverse children's meaningful exploration, discovery, and development of basic concepts and skills in mathematics from EC–Grade 6. Emphasizing a constructivist approach to the teaching and learning of mathematics, this course also advances the use of technology to facilitate mathematics understanding. Attention will be given to understanding the interrelatedness of mathematics and other content areas, creating effective learning environments, planning and implementing lesson plans to meet the differentiated needs of a wide variety of learners, and assessing student learning in mathematics. Restricted course; advisor code required for registration. Field experiences required. (Same as [C&I 4403](#). Credit cannot be earned for both [BBL 4403](#) and [C&I 4403](#).)

BBL 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, and the Department Chair in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

BBL 4953. Special Studies in Bilingual and Bicultural Studies. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. To apply credit earned in [BBL 4953](#) toward a minor, consent of the academic advisor in the COEHD Advising and Certification Center is required.

Biology (BIO)

BIO 1033. Drugs and Society. (3-0) 3 Credit Hours. (TCCN = PHED 1346)

An examination of licit and illicit drugs and their biosocial effects. Topics include pharmacology of alcohol, stimulants, hallucinogens, addiction, and abuse.

BIO 1053. Introductory Microbiology. (3-0) 3 Credit Hours. (TCCN = BIOL 2320)

Prerequisite: [BIO 1233](#) or [BIO 1404](#). A general study of microorganisms, their characteristics, isolation, growth, and importance in nature, industry, public health, and human disease. (Formerly AHS 1053. Credit cannot be earned for both [BIO 1053](#) and AHS 1053. [BIO 1053](#) cannot substitute for [BIO 3713](#).)

BIO 1061. Introductory Microbiology Laboratory. (0-3) 1 Credit Hour. (TCCN = BIOL 2120)

Prerequisites: [BIO 1233](#) or [BIO 1404](#), and completion of or concurrent enrollment in [BIO 1053](#). Course provides basic microbiology lab skills and procedures, with emphasis on the growth, identification, and control of microbes of concern to health-care professionals. Immunodeficient and pregnant students must contact the Coordinator, Microbiology Teaching Labs, for additional instructions prior to the class start date. (Formerly AHS 1061. Credit cannot be earned for both [BIO 1061](#) and AHS 1061. [BIO 1061](#) cannot substitute for [BIO 3722](#).)

BIO 1122. Laboratory Investigations in Biology. (0-6) 2 Credit Hours. (TCCN = BIOL 1106)

Prerequisite: Completion of or concurrent enrollment in [BIO 1233](#) or [BIO 1404](#). Introduction to the tools, techniques, and topics of modern experimental biology. (Formerly BIO 1212. Credit cannot be earned for both [BIO 1122](#) and BIO 1212.)

BIO 1233. Contemporary Biology I. (3-0) 3 Credit Hours. (TCCN = BIOL 1308)

This is the first course in a two-part introduction to the science of biology for non-majors. This course focuses on the chemical basis of life, principles of inheritance, principles of evolution and biodiversity. May be applied toward the Core Curriculum requirement in Life and Physical Sciences. May not be applied to a B.S. degree in Biology or B.S. degree in Microbiology and Immunology.

BIO 1243. Contemporary Biology II. (3-0) 3 Credit Hours. (TCCN = BIOL 1309)

This is the second course in a two-part introduction to the science of biology for non-majors. This course focuses on evolution, animal and plant physiology, and ecology. May be applied toward the Core Curriculum requirement in Life and Physical Sciences. May not be applied to a B.S. degree in Biology or the B.S. degree in Microbiology and Immunology.

BIO 1404. Biosciences I. (4-0) 4 Credit Hours. (TCCN = BIOL 1306)

Prerequisite: Completion of or concurrent enrollment in one of the following: [STA 1053](#), [MAT 1023](#), [MAT 1033](#), [MAT 1073](#), or higher. This is the first course in a two-part introduction to the science of biology for students majoring in biology or interested in pre-health professions. Topics include biochemistry, cell biology, genetics and molecular biology. The course includes a mandatory one-hour recitation per week. May be applied toward the Core Curriculum requirement in Life and Physical Sciences. (Formerly BIO 1113 and BIO 1203. Credit cannot be earned for both [BIO 1404](#) and BIO 1113 or BIO 1203.)

BIO 1413. Biosciences II. (3-0) 3 Credit Hours. (TCCN = BIOL 1307)

Prerequisite: [BIO 1404](#). This is the second course in a two-part introduction to the science of biology for students majoring in biology or interested in pre-health professions. Topics include evolutionary biology, biotic diversity, plant structure and function, and ecology. May be applied toward the Core Curriculum

requirement in Life and Physical Sciences. (Formerly BIO 1143 and BIO 1223. Credit cannot be earned for both [BIO 1413](#) and BIO 1143 or BIO 1223 or [ES 2013](#).)

BIO 1511. Biomedical Research as a Career. (1-0) 1 Credit Hour.

Intended for science majors of any discipline, this course is designed to introduce students to career options in the biosciences, particularly biomedical research. Students will explore the opportunities available in research and learn what they can do now to successfully launch a future career as a scientist.

BIO 1882. Introduction to Health Professions. (2-0) 2 Credit Hours.

This course is designed to provide an overview of careers in the health professions. Medical terminology, professional roles and concepts, career opportunities, and specialties within each profession will be discussed. (Formerly AHS 1883. Credit cannot be earned for both [BIO 1882](#) and AHS 1883.)

BIO 2003. Biology of Human Reproduction. (3-0) 3 Credit Hours.

An in-depth look at human reproductive anatomy, physiology, and behavior. Topics to be considered include anatomy, sex differentiation, neuroendocrine physiology, conception and development, birth control, and sexually transmitted diseases. (Formerly BIO 1023. Credit cannot be earned for both [BIO 2003](#) and BIO 1023.)

BIO 2043. Nutrition. (3-0) 3 Credit Hours. (TCCN = BIOL 1322)

Prerequisite: [BIO 1233](#) or [BIO 1404](#). In-depth study of nutrient classes in foods: their ingestion, digestion, absorption and utilization by the human body. Clinical consequences of nutrient deficiency or excess, and Medical Nutrition Therapy to complement management of disease. (Formerly AHS 2043. Credit cannot be earned for both [BIO 2043](#) and AHS 2043.)

BIO 2083. Human Anatomy. (3-0) 3 Credit Hours. (TCCN = BIOL 2301)

Prerequisite: [BIO 1233](#) or [BIO 1404](#). Systemic anatomy of the human organism. Includes cell biology, histology, and gross anatomy of major organ systems. (Formerly AHS 2083. Credit cannot be earned for both [BIO 2083](#) and AHS 2083.)

BIO 2091. Human Anatomy Laboratory. (0-3) 1 Credit Hour. (TCCN = BIOL 2101)

Prerequisites: [BIO 1233](#) or [BIO 1404](#), and completion of or concurrent enrollment in [BIO 2083](#). The study of human anatomical systems using dissection of representative organisms. (Formerly AHS 2091. Credit cannot be earned for both [BIO 2091](#) and AHS 2091.)

BIO 2103. Human Physiology. (3-0) 3 Credit Hours. (TCCN = BIOL 2302)

Prerequisite: [BIO 1233](#) or [BIO 1404](#). Human physiological processes will be examined at the chemical, cellular, tissue and organ system levels. (Formerly AHS 2103. Credit cannot be earned for both [BIO 2103](#) and AHS 2103. [BIO 2103](#) cannot substitute for [BIO 3413](#).)

BIO 2111. Human Physiology Laboratory. (0-3) 1 Credit Hour. (TCCN = BIOL 2102)

Prerequisites: [BIO 1233](#) or [BIO 1404](#), and completion of or concurrent enrollment in [BIO 2103](#). Lab based investigations of system physiological processes with emphasis on humans. (Formerly AHS 2111. Credit cannot be earned for both [BIO 2111](#) and AHS 2111. [BIO 2111](#) cannot substitute for [BIO 3422](#).)

BIO 2313. Genetics. (3-0) 3 Credit Hours. (TCCN = BIOL 2316)

Prerequisites: [BIO 1413](#) and completion or concurrent enrollment in one of the following: [MAT 1093](#) (or higher) or [STA 1053](#). Concurrent enrollment in [BIO 2322](#) is recommended. Principles governing transmission of hereditary factors in plants and animals, with emphasis on molecular, biochemical, and population genetics.

BIO 2322. Genetics Laboratory. (1-4) 2 Credit Hours.

Prerequisites: [BIO 1122](#) and [BIO 1413](#), and completion or concurrent enrollment in [BIO 2313](#), and in one of the following: [MAT 1093](#) (or higher) or [STA 1053](#). A practical introduction to genetic problem solving that focuses on experiments with model organisms using classic, biochemical and molecular biological techniques. This laboratory includes a lecture component.

BIO 3003. Introduction to Marine Ecology. (3-0) 3 Credit Hours.

Prerequisites: [BIO 1122](#) and [BIO 1413](#). An introduction to the study of marine ecology with an emphasis on the physio-chemical and biological factors that determine biodiversity and the affect the biology and distribution of marine organisms. Topics covered include functional biology, biodiversity, ecology and conservation of organisms in marine environments.

BIO 3013. Introduction to Clinical Medicine and Pathology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 1404](#). Introduction to concepts of human disease, diagnosis, and underlying pathology. (Formerly titled "Introductory Pathology.").

BIO 3063. Invertebrate Biology. (3-0) 3 Credit Hours.

Prerequisites: [BIO 1122](#) and [BIO 1413](#). A comprehensive study of the invertebrates that aims to 1) examine the biodiversity of invertebrates in their mode of behavior, physiology, genetics and ecology, 2) understand the functional morphology of invertebrate phyla and their evolutionary relationships, and 3) appreciate the importance of invertebrates in ecosystems.

BIO 3123. Comparative Vertebrate Anatomy. (3-0) 3 Credit Hours.

Prerequisite: [BIO 1413](#). Concurrent enrollment in BIO 3132 is recommended. A comparative analysis of developmental and adult anatomy of vertebrates (including human). Emphasis is placed on phylogenetic relationships between form, function and evolution. (Formerly BIO 2123. Credit cannot be earned for both BIO 2123 and [BIO 3123](#).)

BIO 3163. Histology and Cytology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#). Concurrent enrollment in [BIO 3172](#) is recommended. The cytological and histological aspects of cellular organization.

BIO 3172. Histology and Cytology Laboratory. (0-6) 2 Credit Hours.

Prerequisites: [BIO 2313](#) and completion of or concurrent enrollment in [BIO 3163](#). Microscopic study of tissues and organs. Basic techniques to prepare tissues will be studied.

BIO 3213. Animal Behavior. (3-0) 3 Credit Hours.

Prerequisite: [BIO 1413](#) or consent of instructor. A detailed study of animal behaviors and their biological determinants.

BIO 3263. The Woody Plants. (2-3) 3 Credit Hours.

Prerequisite: Junior or senior status: a minimum of 60 semester credit hours. A study of the woody plants emphasizing the characteristics of family, genus, and species. Includes identification of the common woody plants. Leaf, stem, and flower morphology, anatomy, and collecting techniques. Lecture, laboratory, and fieldwork will be included as part of the course.

BIO 3273. Biology of Flowering Plants. (2-3) 3 Credit Hours.

Prerequisite: Junior or senior status: a minimum of 60 semester credit hours. A study of the wildflowers of Texas emphasizing identification of the more common wildflowers, as well as family characteristics, flower anatomy, plant morphology, and plant-collecting techniques will be included. Lecture, laboratory, and fieldwork will be included as part of the course.

BIO 3283. Principles of Ecology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 1413](#). Concurrent enrollment in [BIO 3292](#) is recommended for biology majors. A study of the interaction of organisms with their environment, with focus on ecological principles, adaptations of organisms, environmental pollution, and principles of conservation.

BIO 3292. Principles of Ecology Laboratory. (0-6) 2 Credit Hours.

Prerequisites: [BIO 1413](#) and completion of or concurrent enrollment in [BIO 3283](#). A field-oriented course emphasizing modern ecological techniques, including examinations of plant and animal populations and measurement of selected chemical and physical parameters.

BIO 3323. Evolution. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#). A discussion of theories and possible mechanisms for evolutionary changes at various levels of organization.

BIO 3333. Plants and Society. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#). The importance of plants and plant-derived products to human health and well being through the provision of food, pharmaceuticals, and other important natural products. (Formerly BIO 2343. Credit cannot be earned for both [BIO 3333](#) and BIO 2343.).

BIO 3343. Plant Cell Biology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#). A comprehensive study of the molecular structures and functions of plant cells and their integration into the whole plant system. (Formerly titled "Plant Sciences.").

BIO 3413. Advanced Physiology. (3-0) 3 Credit Hours.

Prerequisites: [BIO 2313](#) and [MAT 1193](#). Concurrent enrollment in [BIO 3422](#) is also recommended. This course is designed to develop the skills and competencies needed by students to understand the dynamic physiological processes underlying the maintenance of homeostatic balance in animals. Topics to be covered include endocrine, neural, muscular, cardiopulmonary and renal physiology. ([BIO 2103](#) or BIO 3153 cannot substitute for [BIO 3413](#).).

BIO 3422. Advanced Physiology Laboratory. (0-6) 2 Credit Hours.

Prerequisites: [BIO 2313](#), one of the following: [MAT 1093](#) (or higher) or [STA 1053](#) and completion or concurrent enrollment in [BIO 3413](#). Basic understanding of the physiological processes in living systems employing methods and instruments of biological research. ([BIO 2111](#) cannot substitute for [BIO 3422](#).).

BIO 3433. Neurobiology. (3-0) 3 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in [BIO 3413](#). Concurrent enrollment in [BIO 3442](#) is recommended. Anatomy and physiology of nervous systems; the mechanisms of neuronal functions.

BIO 3442. Neurobiology Laboratory. (0-6) 2 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in [BIO 3433](#). A laboratory course emphasizing principles presented in [BIO 3433](#).

BIO 3513. Biochemistry. (3-0) 3 Credit Hours.

Prerequisites: [CHE 2603](#) and [CHE 2612](#); [BIO 2313](#) and [CHE 3673](#) are highly recommended. Concurrent enrollment in [BIO 3522](#) is recommended. Introduction to biochemistry: amino acids, protein structure, enzymes, lipids, metabolism, nucleic acid structure, bioenergetics, and carbohydrates. (Credit cannot be earned for both [BIO 3513](#) and [CHE 4303](#).).

BIO 3522. Biochemistry Laboratory. (1-4) 2 Credit Hours.

Prerequisites: [CHE 2603](#) and [CHE 2612](#), and completion of or concurrent enrollment in [BIO 3513](#). Basic biochemical laboratory techniques: Protein assay, centrifugation, protein purification, chromatography, electrophoresis, western blotting, and enzyme kinetics. This laboratory includes a lecture component.

BIO 3533. FAME-Biophysics. (3-0) 3 Credit Hours.

This course is only open to students who are participating in the FAME Program. Biophysics is an algebra-based introduction to the science of physics with an emphasis on the life sciences and the practice of medicine. Topics include mechanics, fluids, sounds, and electromagnetism and their biomedical applications.

BIO 3543. FAME-Behavioral Health. (3-0) 3 Credit Hours.

This course is only open to students who are participating in the FAME Program. This course is designed to introduce students to the challenges and opportunities of treating patients with mental illness. Students will learn key ethical principles, differential diagnosis, and pharmacological and psychotherapeutic interventions for managing serious mental illnesses including schizophrenia, bipolar disorder, depression, and anxiety disorders. Students will also learn how to conduct a psychiatric interview and prepare a new patient intake including patient history, mental status exam, assessment, and plan.

BIO 3553. FAME-Geriatrics. (3-0) 3 Credit Hours.

This course is only open to students who are participating in the FAME Program. Using interdisciplinary perspectives, students will learn about medical and psychosocial aspects of aging including physiological, societal, social, physical, and psychological changes as they relate to the aging process, geriatric health care, palliative care and end of life care. Hands-on educational experiences will involve interaction with healthy elders, clinical rotations at hospital consult services, long term care communities and hospice care. All activities will be case-based, interactive and will have an online learning component.

BIO 3563. FAME-Maternal Health/Pediatrics. (3-0) 3 Credit Hours.

This course is only open to students who are participating in the FAME Program. This course is designed to provide an overview and historical perspective in the evolution of maternal health and pediatrics as fields of practice in medicine. Topics discussed will include public health and policy, representations of the field in the arts, literature and media, and the development of careers in pediatric medicine. Opportunities for interactive community and clinically based experiences will be incorporated in the coursework.

BIO 3573. FAME-Obesity/Nutrition. (3-0) 3 Credit Hours.

This course is only open to students who are participating in the FAME Program. Students will explore the physiological, socio-behavioral, public health and philosophical implications of obesity and nutrition through acute and preventive medicine perspectives.

BIO 3583. FAME-Cardiovascular Disease/Diabetes. (3-0) 3 Credit Hours.

This course is only open to students who are participating in the FAME Program. Students will explore the genetic, biologic, physiologic, cultural, and economic implications of cardiovascular disease through didactic sessions, group projects, self study and direct patient contact.

BIO 3593. FAME-Cancer. (3-0) 3 Credit Hours.

This course is only open to students who are participating in the FAME Program. Students will explore the historical, genetic, biologic, social, ethical, legal and economic implications of cancer, its predisposing factors and treatments. This will be accomplished through readings, didactic sessions, group projects, self study, and clinical contact with patients and cancer center health care providers.

BIO 3613. The Biology of Aging. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#). The biological principles of human life and health; changes that occur with aging and their implications for the lives of students and their families.

BIO 3623. Neuropsychopharmacology. (3-0) 3 Credit Hours.

Prerequisites: [BIO 1122](#) and [BIO 1413](#); [BIO 3433](#) is recommended. A study of the pharmacology of drugs that affect the function of the central nervous system. Topics include drug-receptor interactions, drugs of abuse, and drugs used to treat mental illness.

BIO 3663. Human Embryology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#). Development of the human embryo from fertilization to the birth of the fetus. The origin of various tissues and organs will be followed during development. Environmental and genetic factors that can alter development will be discussed.

BIO 3713. Microbiology. (3-0) 3 Credit Hours.

Prerequisites: [BIO 1122](#) and [BIO 1413](#). Concurrent enrollment in [BIO 2313](#) and [BIO 3722](#) is recommended. A comprehensive study of microorganisms, including their composition, morphology, growth, metabolism, classification, ecology, and significance in disease. ([BIO 1053](#) cannot substitute for [BIO 3713](#). Credit cannot be earned for both [BIO 3713](#) and [ES 3103](#).)

BIO 3722. Microbiology Laboratory. (0-6) 2 Credit Hours.

Prerequisites: [BIO 1122](#) and [BIO 1413](#), and completion of or concurrent enrollment in [BIO 3713](#). Basic microbiology techniques with emphasis on microscopy; cell staining and characterization; species isolation techniques; bacterial cultivation, nutrition, and physical requirements; and the physical and chemical control of microbes. Immunodeficient and pregnant students must contact the Coordinator, Microbiology Teaching Labs, for additional instructions prior to the class start date. ([BIO 1061](#) cannot substitute for [BIO 3722](#). Credit cannot be earned for both [BIO 3722](#) and [ES 3112](#).)

BIO 3743. Bacteriology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 3713](#); [BIO 3722](#) is recommended. A study of the phylogeny of prokaryotes; structure and function of prokaryotic cells; ecology and physiological diversity of prokaryotes; growth and control of microorganisms; genetics of bacteria and bacteriophages; bacteria as agents of disease; antibacterials and other chemotherapeutics; human applications of microbiology, microbial genomics and principles of microbial biotechnology.

BIO 3813. Cell Biology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#); [BIO 3513](#) is recommended. Concurrent enrollment in [BIO 3822](#) is recommended. A study of cellular molecules and metabolic processes; synthesis and regulation of macromolecules; differential gene expression; membranes and organelles; cytoskeleton; cell cycle and growth of normal and neoplastic cells.

BIO 3822. Cell Biology Laboratory. (1-4) 2 Credit Hours.

Prerequisites: [BIO 2313](#) and either [BIO 2322](#) or [CHE 1131](#), and completion of or concurrent enrollment in [BIO 3813](#). A study of the microscopic, biochemical and molecular approaches used to investigate cellular structure and function, including the principles involved in the techniques, their practical application, and analysis of the data generated. This laboratory includes a lecture component.

BIO 3913. Molecular Biology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#); [BIO 3513](#) is recommended. A study of nucleotides, DNA, replication, recombination, RNA, transcription, genetic code, translation, genomes, and chromosomes.

BIO 3933. Principles of Cancer Biology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 1413](#); [BIO 3813](#) is recommended. A comprehensive study of the molecular mechanisms responsible for cellular and organismal function including: nucleic acid structure, replication, repair and recombination of DNA, transcription (RNA), RNA processing, translation (proteins), regulation of gene expression, organization of genomes and chromosomes, epigenetics, and related scientific methods and approaches.

BIO 4033. Conservation Biology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 3283](#). The class topics will include studying the nature of the biosphere, threats to its integrity, and ecologically sound responses to these threats. Also included will be the origin and preservation of biotic diversity, how the rich variety of plant and animal life around us arose, how it has been maintained by natural processes, and how we can prevent its destruction.

BIO 4053. Wildlife Biology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 3283](#). An introduction to wildlife biology and management including ecological principles dealing with ecosystems, natural communities, and populations. The importance of animal behavior, the availability of food, cover, wildlife diseases, predators, hunting, and trapping will be included. Field studies will allow students to observe and apply classroom topics.

BIO 4063. Ornithology. (2-3) 3 Credit Hours.

Prerequisites: [BIO 1122](#) and [BIO 1404](#). A course covering various aspects of the biology of birds, including anatomy, physiology, systematics, evolution, behavior, ecology, and biogeography. Field trips will be included.

BIO 4073. Law, Ethics, and the Life Sciences. (3-0) 3 Credit Hours.

Prerequisite: Junior or senior status: a minimum of 60 semester credit hours. Current societal issues which require an understanding of biology (e.g., stem cell research, assisted suicide, abortion, reproductive options, global warming, Intelligent Design, etc.) are considered.

BIO 4143. Developmental Biology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#). Concurrent enrollment in [BIO 4152](#) is recommended. Overview of developmental biology focusing on the origins of classical concepts as well as modern molecular approaches. Emphasis will be placed on the mechanisms underlying developmental processes using both invertebrate and vertebrate examples. Subjects include axis formation, induction, morphogenesis, embryonic pattern formation, cell differentiation, and organogenesis. (Formerly BIO 3143. Credit cannot be earned for both [BIO 4143](#) and BIO 3143.)

BIO 4152. Developmental Biology Laboratory. (0-6) 2 Credit Hours.

Prerequisites: [BIO 2313](#) and [BIO 2322](#), and completion of or concurrent enrollment in [BIO 4143](#). Laboratory applications of concepts presented in [BIO 4143](#). (Formerly BIO 3152. Credit cannot be earned for both [BIO 4152](#) and BIO 3152.)

BIO 4233. Field Biology. (3-0) 3 Credit Hours.

Prerequisite: Junior or senior status: a minimum of 60 semester credit hours, or consent of instructor. Concurrent enrollment in [BIO 4241](#) is recommended. A study of the natural history of plants and animals in their native environment. Techniques for the identification of birds, mammals, reptiles, amphibians, insects, and the dominant flowering plants will be discussed.

BIO 4241. Field Biology Laboratory. (0-3) 1 Credit Hour.

Prerequisite: Junior or senior status: a minimum of 60 semester credit hours, or consent of instructor. Concurrent enrollment in [BIO 4233](#) is recommended. A field-oriented course offering the opportunity for

practical experience observing, collecting, and identifying Texas plants and animals. (Same as [ES 4111](#). Credit cannot be earned for both [BIO 4241](#) and [ES 4111](#).)

BIO 4453. Endocrinology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 1413](#). Molecular, cellular and physiological effects of hormones in health and disease. Topics include molecular mechanisms of hormone action in reproductive physiology, growth and development as well as defects in hormonal regulation underlying clinically important syndromes (e.g., diabetes, hypertension, osteoporosis and cancer).

BIO 4473. Advanced Clinical Medicine and Pathology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 3013](#). Advanced concepts of human disease, diagnosis, and underlying pathology.

BIO 4483. Medical Mycology. (3-0) 3 Credit Hours.

Prerequisites: [BIO 3713](#) and [BIO 3722](#). Comprehensive study of causative agents, pathogenesis, and treatment of human fungal diseases.

BIO 4523. Intermediary Metabolism. (3-0) 3 Credit Hours.

Prerequisites: [BIO 3513](#) and [BIO 3522](#). A detailed consideration of metabolic pathways and energy metabolism and their regulation.

BIO 4583. The Computational Brain. (3-0) 3 Credit Hours.

Prerequisite: [BIO 3433](#). Principles of cellular neurophysiology and neuroanatomy are used to explore the computational operations performed by neurons and networks of neurons.

BIO 4643. Medicinal Plants. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#); [BIO 3513](#) is recommended. Ethnobotanical, biochemical and pharmacological aspects of some of our most important plant-derived drugs.

BIO 4723. Virology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#); [BIO 3513](#) is recommended. Introduction to the molecular, genetic, and biological properties of viruses. Course will cover the basic concepts of virus structure, replication, virus/host interactions, pathogenesis, and evolution.

BIO 4743. Immunology. (3-0) 3 Credit Hours.

Prerequisites: [BIO 2313](#) and [BIO 3713](#). Concurrent enrollment in BIO 4752 is recommended. A study of the properties of antigens and antibodies and current concepts of humoral and cell-mediated immunity and the cells involved.

BIO 4751. Immunology Laboratory. (0-3) 1 Credit Hour.

Prerequisites: [BIO 3713](#) and [BIO 3722](#), and completion or concurrent enrollment in [BIO 4743](#). Laboratory applications of principles presented in [BIO 4743](#). (Formerly BIO 4752. Credit cannot be earned for both [BIO 4751](#) and BIO 4752.)

BIO 4763. Parasitology. (3-0) 3 Credit Hours.

Prerequisites: [BIO 1122](#) and [BIO 1413](#). A study of the animal parasites of medical and veterinary importance, with emphasis on their epidemiology, life cycles, pathology, and control.

BIO 4773. Plant-Microbe Interactions. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#) and [BIO 3713](#). The study of molecular and cellular aspects of the interaction between plants and microorganisms in the environment, such as mycorrhizae, pathogenic fungi,

Agrobacterium, pathogenic bacteria and plant viruses. Topics include microbial virulence, signaling, gene expression, and disease resistance in plants.

BIO 4783. Microbial Genetics and Physiology. (3-0) 3 Credit Hours.

Prerequisite: [BIO 2313](#) and [BIO 3713](#). A study of the genetic, physiological and molecular processes that influence gene transfer, pathogenesis, and drug resistance related to bacteria, fungi, and viruses.

BIO 4813. Brain and Behavior. (3-0) 3 Credit Hours.

Prerequisites: [BIO 1122](#) and [BIO 1413](#). Basic physiological functions of the brain and how they relate to behavior.

BIO 4823. Cognitive Neuroscience. (3-0) 3 Credit Hours.

Prerequisite: Junior or senior status: a minimum of 60 semester credit hours; [BIO 3433](#) (or [PSY 3103](#)) is recommended. The biological foundations of mental phenomena, including perception, attention, learning, memory, language, motor control, and executive function, as well as functional specialization, development and plasticity, through various methodologies.

BIO 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisite: Permission in writing (form available) from the instructor, an undergraduate advisor in the College of Sciences Undergraduate Advising Center, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but no more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. Only 6 semester credit hours of [BIO 4911-3](#), [BIO 4923](#) and [BIO 4991-3](#), in any combination, can be taken as BIO electives. Additional research hours of these courses may be taken as free electives, for a maximum of 12 research hours being applied to the bachelor's degree.

BIO 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisite: Permission in writing (form available) from the instructor, an undergraduate advisor in the College of Sciences Undergraduate Advising Center, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but no more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. Only 6 semester credit hours of [BIO 4911-3](#), [BIO 4923](#) and [BIO 4991-3](#), in any combination, can be taken as BIO electives. Additional research hours of these courses may be taken as free electives, for a maximum of 12 research hours being applied to the bachelor's degree.

BIO 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisite: Permission in writing (form available) from the instructor, an undergraduate advisor in the College of Sciences Undergraduate Advising Center, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but no more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. Only 6 semester credit hours of [BIO 4911-3](#), [BIO 4923](#) and [BIO 4991-3](#), in any combination, can be taken as BIO electives. Additional research hours of these courses may be taken as free electives, for a maximum of 12 research hours being applied to the bachelor's degree.

BIO 4923. Laboratory Research: Biology Concentrations. (0-0) 3 Credit Hours.

Permission in writing (form available in the Biology Department Office) from the faculty mentor, the student's advisor, the Department Chair, and the Dean of the College. Supervised laboratory research mentored by a faculty member engaged in active research within the student's designated area of

concentration. May be repeated for credit, but no more than 6 semester credit hours will apply to a bachelor's degree. Only 6 semester credit hours of [BIO 4911-3](#), [BIO 4923](#) and [BIO 4991-3](#), in any combination, can be taken as BIO electives. Additional research hours of these courses may be taken as free electives, for a maximum of 12 research hours being applied to the bachelor's degree.

BIO 4951. Special Studies in Biology. (1-0) 1 Credit Hour.

An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

BIO 4952. Special Studies in Biology. (2-0) 2 Credit Hours.

An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

BIO 4953. Special Studies in Biology. (3-0) 3 Credit Hours.

An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

BIO 4981. Senior Seminar in Microbiology and Immunology. (1-0) 1 Credit Hour.

Prerequisite: Senior status, a minimum of 90 semester credit hours. This course is only open to seniors in the Microbiology and Immunology degree program. Students will learn how to interpret the scientific literature and to organize and present scientific research findings as reported in the current literature. May be repeated for credit. The grade report for the course is either "CR" (satisfactory performance) or "NC" (unsatisfactory performance).

BIO 4991. Honors Research. (0-0) 1 Credit Hour.

Enrollment limited to biology majors who are members of the Honors College or who are pursuing College of Sciences Honors, and who are in their last two semesters of study. Approval by the Honors College or College Honors Committee is required. Supervised research and preparation of an Honors Thesis. May be repeated for credit with approval, but no more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. Only 6 semester credit hours of [BIO 4911-3](#), [BIO 4923](#) and [BIO 4991-3](#), in any combination, can be taken as BIO electives. Additional research hours of these courses may be taken as free electives, for a maximum of 12 research hours being applied to the bachelor's degree.

BIO 4992. Honors Research. (0-0) 2 Credit Hours.

Enrollment limited to biology majors who are members of the Honors College or who are pursuing College of Sciences Honors, and who are in their last two semesters of study. Approval by the Honors College or College Honors Committee is required. Supervised research and preparation of an Honors Thesis. May be repeated for credit with approval, but no more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. Only 6 semester credit hours of [BIO 4911-3](#), [BIO 4923](#) and [BIO 4991-3](#), in any combination, can be taken as BIO electives. Additional research hours of these courses may be taken as free electives, for a maximum of 12 research hours being applied to the bachelor's degree.

BIO 4993. Honors Research. (0-0) 3 Credit Hours.

Enrollment limited to biology majors who are members of the Honors College or who are pursuing College of Sciences Honors, and who are in their last two semesters of study. Approval by the Honors College or College Honors Committee is required. Supervised research and preparation of an Honors

Thesis. May be repeated for credit with approval, but no more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. Only 6 semester credit hours of [BIO 4911-3](#), [BIO 4923](#) and [BIO 4991-3](#), in any combination, can be taken as BIO electives. Additional research hours of these courses may be taken as free electives, for a maximum of 12 research hours being applied to the bachelor's degree.

Biomedical Engineering (BME)

BME 1002. Introduction to Biomedical Engineering. (2-0) 2 Credit Hours.

Prerequisites: A grade of "C-" or better in [BIO 1404](#), [CHE 1103](#), and [MAT 1214](#), and concurrent enrollment in [CHE 1113](#), [MAT 1224](#), [PHY 1943](#), and [PHY 1951](#). This course is an introduction to the interdisciplinary field of biomedical engineering. Topics covered include core biomedical engineering areas such as Biomechanics, Biomaterials and Bioimaging.

BME 2103. Physiology for Biomedical Engineering. (3-1) 3 Credit Hours.

Prerequisites: Major in Biomedical Engineering and a grade of "C-" or better in [BME 1002](#) and [CHE 1113](#). Fundamental principles of general and organs systems physiology, including composition and concentration of cellular and other body fluids, types of transport (e.g., diffusion, membrane transporters), energy (thermodynamics, metabolism), enzymes, feedback control, and membrane potentials with engineering applications and mathematical modeling. This course includes a 3 hour lecture and a 1 hour recitation.

BME 2114. Cellular Biology for Biomedical Engineering. (3-4) 4 Credit Hours.

Prerequisites: Major in Biomedical Engineering and a grade of "C-" or better in [BME 2103](#) and [CHE 1113](#). Introduction to cell structure and function, energy conversions, protein sorting, signaling, cytoskeleton, cell adhesion, cell cycle, and mammalian genetics. A laboratory component will focus on techniques and procedures commonly used in cell and molecular biology with bioengineering applications. This class includes a 3 hour lecture and a 4 hour laboratory.

BME 2203. Biomechanics I. (3-1) 3 Credit Hours.

Prerequisites: A grade of "C-" or better in [EGR 2323](#) and [PHY 1963](#), and concurrent enrollment in [BME 2114](#) and [BME 2211](#). Introduction to the fundamental engineering mechanics with focus on the human body. This course includes a 3 hour lecture and a 1 hour recitation.

BME 2211. Biomedical Engineering Laboratory I. (0-4) 1 Credit Hour.

Prerequisites: A grade of "C-" or better in [EGR 2323](#), [PHY 1963](#), and [STA 2303](#), and concurrent enrollment in [BME 2203](#) and [BME 2403](#). A biomedical engineering lab in biomechanics and biomaterials. This lab-based course will emphasize on the synthesis and characterization of mechanical properties as well as physical and chemical properties of biomaterials.

BME 2403. Biomaterials I. (3-1) 3 Credit Hours.

Prerequisites: A grade of "C-" or better in [BME 2103](#) and [EGR 2323](#) and concurrent enrollment in [BME 2114](#) and [BME 2211](#). Introduction to the fundamental science of natural and synthetic biomaterials used for repairing human tissues and organs. Topics include crystal structures, phase diagrams, and properties of materials. This course includes a 3 hour lecture and a 1 hour recitation.

BME 3013. Clinical Internship in Biomedical Engineering. (0-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 2114](#), [BME 2203](#), and [BME 2403](#). This course will introduce students to the clinical environment, interacting with clinicians on current clinical problems and engineering approaches.

BME 3022. Biomedical Engineering Technology and Product Development. (2-0) 2 Credit Hours.

Prerequisite: A grade of “C-” or better in [BME 3013](#). This course will introduce students to current biomedical technologies and product development. (Formerly BME 3023. Credit cannot be earned for both [BME 3022](#) and BME 3023.).

BME 3033. Biomedical Engineering Internship. (0-0) 3 Credit Hours.

Prerequisite: A grade of “C-” or better in [BME 3022](#). Internship with a biomedical industry. May be repeated for credit but no more than 3 semester credit hours will apply to a bachelor’s degree.

BME 3041. Biomedical Engineering Research. (0-0) 1 Credit Hour.

Prerequisite: Consent of instructor. Advanced laboratory practice and introduction to biomedical engineering research. This course may be counted as one of the courses to satisfy one of the BME tracks. May be repeated for credit but no more than 3 semester credit hours will apply towards a bachelor’s degree in Biomedical Engineering.

BME 3042. Biomedical Engineering Research. (0-0) 2 Credit Hours.

Prerequisite: Consent of instructor. Advanced laboratory practice and introduction to biomedical engineering research. This course may be counted as one of the courses to satisfy one of the BME tracks. May be repeated for credit but no more than 3 semester credit hours will apply towards a bachelor’s degree in Biomedical Engineering.

BME 3043. Biomedical Engineering Research. (0-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Advanced laboratory practice and introduction to biomedical engineering research. This course may be counted as one of the courses to satisfy one of the BME tracks. May be repeated for credit but no more than 3 semester credit hours will apply towards a bachelor’s degree in Biomedical Engineering.

BME 3203. Biomechanics II: Cardiovascular. (3-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 2203](#) and [BME 2211](#). Continuation of fundamental biomechanics to include elasticity, viscoelasticity, deformation, stress analysis, blood flow in the systemic and pulmonary circulation, and fluid-structure interaction.

BME 3303. Bioinstrumentation. (3-1) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 2114](#), [BME 2203](#), [EGR 2323](#), and PHY 1923, and concurrent enrollment in [BME 3311](#). Fundamental principles of bioinstrumentation used in clinical and research measurements will be covered. Topics include: principles of transducer operation, amplifiers and signal processing, recording and display. This course includes a 3 hour lecture and a 1 hour recitation.

BME 3311. Biomedical Engineering Laboratory II. (0-4) 1 Credit Hour.

Prerequisites: A grade of “C-” or better in [BME 2114](#), [BME 2211](#), and [STA 2303](#), and concurrent enrollment in [BME 3303](#). A biomedical engineering lab in bioinstrumentation. This course will involve the design and testing of hardware and software for acquiring and analyzing biological signals.

BME 3403. Biomaterials II. (1-5) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 2211](#) and [BME 2403](#). This course will emphasize materials used in medical applications, including modifications and characterization techniques. This course includes a 1 hour lecture and a 5 hour laboratory.

BME 3413. Biocompatibility of Materials: Tissue-Biomaterial Interaction. (3-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 2211](#) and [BME 2403](#). This course is an introduction to biocompatibility with special emphasis on the interaction of cells and tissues with biomaterials. Blood composition and blood-material interactions, responses of the inflammatory and immune systems to biomaterials, the process of wound healing, protein structure and interactions with material surfaces, and the mechanisms of cell interactions with extracellular matrix components as well as cell/tissue responses to implant materials are reviewed in detail. Case studies of cardiovascular and orthopaedic implants are discussed to illustrate that selection of biocompatible materials is a key aspect of implant design and a crucial choice for the success of various biomedical applications (e.g., tissue engineering and biotechnology) which require regeneration of tissues.

BME 3503. Nanomaterials and Nanobiotechnology. (3-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 2211](#) and [BME 2403](#). This course will introduce an overview of nanomaterials and nanotechnology development. Topics may include biocompatible nanomaterials, microfabrication, microfluidics, lab-on-a-chip, and applications in biomedical engineering. (Formerly titled “Fundamentals of Nanobiotechnology.”).

BME 3703. Biotransport Phenomena. (3-1) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 2114](#), [BME 3303](#), [EGR 2323](#) and PHY 1923, and concurrent enrollment in [BME 3711](#). This course introduces the concepts of quantitative modeling of biological systems with respect to mass, momentum and energy transport. We will study the use of conservation laws to model cardiopulmonary, renal, and thermal systems of the human physiology, and also apply these principles to design artificial and extracorporeal devices, drug delivery systems for pharmacokinetic analysis. This course includes a 3 hour lecture and a 1 hour recitation.

BME 3711. Biomedical Engineering Laboratory III. (0-4) 1 Credit Hour.

Prerequisites: A grade of “C-” or better in [BME 2114](#), [BME 3303](#), and [STA 2303](#), and concurrent enrollment in [BME 3703](#). A biomedical engineering lab in biotransport phenomena. Experiments related to mass, momentum, and energy conservation in biological systems such as measurements of apparent viscosity in microcirculation, oxygen diffusivity and thermal conductivity.

BME 4203. Biomechanics III. (3-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 3203](#). Topics may include elasticity, viscoelasticity, deformation, stress analysis, strain measurement, and stress and strain in organs. Tissues covered may include heart, blood vessels, cartilage, and bone.

BME 4213. Tissue Mechanics. (3-0) 3 Credit Hours.

Prerequisite: A grade of “C-” or better in [BME 2203](#). Topics may include biomechanics characterization, modeling, and properties of regenerating tissues ranging from bone, cartilage, tendons, ligaments, skin, adipose tissue, nerves, bladder, eye, and pulmonary and cardiovascular tissues.

BME 4293. Topics in Biomechanics. (3-0) 3 Credit Hours.

Prerequisites: Senior status with a major in Biomedical Engineering and a grade of “C-” or better in [BME 3203](#). Specific topics in biomechanics. May be repeated for credit when topics vary, but not more than 6 semester credit hours will apply to a bachelor’s degree.

BME 4403. Molecular Techniques for Cell-Biomaterials Interactions. (2-4) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 2403](#). Advanced molecular techniques for characterizing cell-biomaterials interactions will be taught. Current understanding of topics in cell receptors and signaling mechanisms with application for biomaterial design will be emphasized. Topics will include receptor-ligand communication, methods of identification and quantification, and pathways involved for cell to material stress response. This course includes a 2 hour lecture and a 4 hour laboratory.

BME 4423. Tissue Engineering. (3-0) 3 Credit Hours.

Prerequisite: A grade of “C-” or better in [BME 2403](#). This course is an introduction to the current status of, practice, and advances in tissue engineering, the biomedical engineering discipline that applies science and technology to develop replacements for damaged and/or diseased tissues of the body. The course focuses on fundamental aspects of new tissue formation, specifically, cells, biomaterials, biochemical and biophysical stimuli. Applications in bone, cartilage, skin, and vascular tissues are reviewed in detail. Strategies which are used to address current challenges, pursue emerging opportunities and explore new directions are discussed.

BME 4483. Topics in Biomaterials. (3-0) 3 Credit Hours.

Prerequisite: Senior status with a major in Biomedical Engineering and a grade of “C-” or better in [BME 3403](#). Specific topics in biomaterials. May be repeated for credit when topics vary, but not more than 6 semester credit hours will apply to a bachelor’s degree.

BME 4493. Topics in Tissue Engineering. (3-0) 3 Credit Hours.

Prerequisite: Senior status with a major in Biomedical Engineering and a grade of “C-” or better in [BME 4423](#). Specific topics in tissue engineering. May be repeated for credit when topics vary, but not more than 6 semester credit hours will apply to a bachelor’s degree.

BME 4503. Biosensors. (3-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 3503](#). Basics to biological detection and in-depth view of device design and performance analyses. Topics may include optical, electrochemical, acoustic, piezoelectric, and nanobiosensors.

BME 4603. Biophotonics. (3-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 3303](#). This course will introduce the fundamental principles of biophotonics and will focus on their applications to address critical issues in the frontier of biomedical science and technology. Topics may include fundamentals of light interactions with molecules, cells, and tissues, optical imaging, optical biosensing, flow cytometry, photodynamic therapy, laser tweezers and laser surgery, and nanobiotechnology.

BME 4613. Biomedical Imaging. (3-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 4603](#). This course will examine, from a systems perspective, the techniques used in a variety of medical imaging modalities, which include x-ray imaging, computed tomography, magnetic resonance imaging, nuclear medicine, ultrasound imaging, and photoacoustic imaging. The fundamental principles and engineering underlying each imaging modality will be discussed and a performance analysis of each system will be examined.

BME 4623. Biomedical Optics. (3-0) 3 Credit Hours.

Prerequisite: A grade of “C-” or better in [BME 3303](#). This course will introduce the fundamental principles of modern and classical optics and their applications for biomedical research. State-of-the-art topics on cutting-edge research in the area of optics and lasers in medicine and biology will be covered.

BME 4703. Biomedical Engineering Thermodynamics. (3-1) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 3703](#) and [EGR 2323](#). This course introduces the basics of engineering thermodynamics and applications in biomedical engineering. The course covers first and second laws, properties of pure substances and mixtures, phase rule, phase and chemical equilibria, and an introduction to statistical thermodynamics. This course includes a 3 hour lecture and a 1 hour recitation.

BME 4713. Cellular Engineering. (3-0) 3 Credit Hours.

Prerequisites: A grade of “C-” or better in [BME 3703](#). This course focuses on using engineering skills and principles in the analysis and design of cellular functions. The emphasis will be on protein biochemistry, cell metabolism, signaling and adhesion.

BME 4793. Topics in Cellular Engineering. (3-0) 3 Credit Hours.

Prerequisites: Senior status with a major in Biomedical Engineering and a grade of “C-” or better in [BME 4713](#). Specific topics in cellular engineering. May be repeated for credit when topics vary, but not more than 6 semester credit hours will apply to a bachelor’s degree.

BME 4803. Fundamental Computational Bioengineering. (3-0) 3 Credit Hours.

Prerequisites: Major in Biomedical Engineering and a grade of “C-” or better in [BME 2114](#) and [EGR 2323](#). This course will include fundamental knowledge and skills of mathematical modeling, computer simulation and visualization, with applications in biomedical engineering.

BME 4903. Senior BME Design I. (3-0) 3 Credit Hours.

Prerequisite: Senior status with a major in Biomedical Engineering and a grade of “C-” or better in BME 3023 and [STA 2303](#). Development of project proposals and presentation of conceptual designs. Industrial collaboration and/or faculty sponsorship of these projects is encouraged.

BME 4913. Senior BME Design II. (3-0) 3 Credit Hours.

Prerequisite: Senior status with a major in Biomedical Engineering and a grade of “C-” or better in [BME 4903](#). Continuation of the development of an instructor-approved design project, testing of the design project, and presentation of the findings. Industrial cooperation or faculty sponsorship of projects is encouraged.

Chemistry (CHE)

CHE 1004. Chemistry for Allied Health Sciences. (3-3) 4 Credit Hours.

Introduction to atomic structure, chemical bonding, stoichiometry, states of matter, inorganic chemical reactions, and acids and bases. The course has a laboratory component to introduce general chemical laboratory techniques, principles, and methods to reinforce lecture topics. For majors in occupational therapy, prenursing, and dental hygiene. May not be applied to a major or minor in chemistry, biology, or clinical laboratory sciences. (Formerly CHE 1003 and CHE 1011. Credit cannot be earned for both CHE 1003 and [CHE 1004](#)).

CHE 1014. Elementary Organic and Biochemistry. (3-3) 4 Credit Hours.

Prerequisite: A grade of “C-” or better in CHE 1003 (previous catalog) or [CHE 1004](#). A survey of the structures and reactions of some important functional groups of organic chemistry, and the relationship of these functional groups to the chemistry of lipids, carbohydrates, nucleic acids, and proteins. May not be applied to a major or minor in chemistry. Laboratory examination of the properties of some simple organic and biological chemicals; topics include solubility, crystallization, organic reactions, titration,

enzyme action, sugars, and vitamins which will directly reinforce lecture topics. (Formerly CHE 1013 and CHE 1203. Credit can be earned for only ONE of the following: CHE 1013 or [CHE 1014](#) or CHE 1203.).

CHE 1033. Chemistry in Our Daily Lives: A Pathway. (3-0) 3 Credit Hours. (TCCN = CHEM 1305)

An introduction to essential chemical principles including atomic structure, organic and inorganic compounds, types of chemical reactions, and elementary stoichiometry, among others. The interpretation and evaluation of case studies will be used to develop fundamental knowledge and skills. For nonscience majors only. This course requires a fair amount of writing. May apply toward the Core Curriculum requirement in Life and Physical Sciences.

CHE 1073. Basic Chemistry. (3-0) 3 Credit Hours. (TCCN = CHEM 1305)

Prerequisite: Grade of "C-" or better in [MAT 1073](#) or concurrent enrollment. A one-semester preparatory course covering some basic concepts of inorganic chemistry, atomic-molecular structure, and related mathematics. May not be applied to a B.S. or B.A. in Chemistry.

CHE 1103. General Chemistry I. (3-0) 3 Credit Hours. (TCCN = CHEM 1311)

Prerequisites: Passing grade on Chemistry Placement Examination or grade of "C-" or better in [CHE 1073](#), and completion of [MAT 1073](#) with a grade of "C-" or better. An introduction to descriptive inorganic chemistry and atomic-molecular structure, including such fundamental concepts as the periodic system of elements, valency, chemical bonding, reactions and reaction mechanisms, stoichiometry, equilibria, acids and bases, thermochemistry, molecular-kinetic theory, and states of matter. Concurrent enrollment in [CHE 1121](#) is recommended. Credit cannot be earned for both [CHE 1103](#) and [CHE 1143](#)).

CHE 1113. General Chemistry II. (3-0) 3 Credit Hours. (TCCN = CHEM 1312)

Prerequisite: A grade of "C-" or better in [CHE 1103](#) or the equivalent. A continuation of [CHE 1103](#). Elementary inorganic and physical chemistry; topics include solutions, electrolytes, oxidation-reduction reactions, reaction trends, coordination chemistry, basic thermodynamics, chemical kinetics, electrochemistry, and nuclear chemistry. Primarily for science majors. Credit cannot be earned for more than one of the following: [CHE 1113](#), [CHE 1153](#), or CHE 1303.).

CHE 1120. General Chemistry I Laboratory. (0-0) 0 Credit Hours.

Prerequisite: A grade of "C-" or better or concurrent enrollment in [CHE 1103](#) (or [CHE 1143](#)). An introduction to chemical problem solving and the basic operations of the chemical laboratory, and a survey of inorganic chemical reactions. This course consists of problem sessions, lecture-demonstrations, and/or laboratory experience. Laboratory to accompany [CHE 1103](#) and [CHE 1143](#). This laboratory includes a lecture component. (Formerly CHE 1122. Credit cannot be earned for both [CHE 1121](#) and CHE 1122.).

CHE 1121. General Chemistry I Laboratory. (1-4) 1 Credit Hour. (TCCN = CHEM 1111)

Prerequisite: A grade of "C-" or better or concurrent enrollment in [CHE 1103](#) (or [CHE 1143](#)). An introduction to chemical problem solving and the basic operations of the chemical laboratory, and a survey of inorganic chemical reactions. This course consists of problem sessions, lecture-demonstrations, and/or laboratory experience. Laboratory to accompany [CHE 1103](#) and [CHE 1143](#). This laboratory includes a lecture component. (Formerly CHE 1122. Credit cannot be earned for both [CHE 1121](#) and CHE 1122.).

CHE 1131. General Chemistry II Laboratory. (1-4) 1 Credit Hour. (TCCN = CHEM 1112)

Prerequisites: A grade of "C-" or better in [CHE 1103](#) and [CHE 1121](#), and a grade of "C-" or better or concurrent enrollment in [CHE 1113](#) (or [CHE 1153](#)). Techniques of qualitative and quantitative chemical analysis, illustrated primarily via inorganic chemical systems and their reactions. Laboratory to accompany [CHE 1113](#) and [CHE 1153](#). This laboratory includes a lecture component. (Formerly CHE

1312 and CHE 1132. Credit cannot be earned for more than one of the following: [CHE 1131](#), CHE 1132 or CHE 1312.).

CHE 1143. Principles of Chemistry I. (3-0) 3 Credit Hours. (TCCN = CHEM 1311)

Prerequisites: A score of 60% or higher on the Chemistry Placement Examination, or a grade of “B-” or better in [CHE 1073](#) and a grade of “B-” or better in [MAT 1073](#), or admission through the Honors College. The first of a two-part introduction to the chemical sciences for chemistry majors and other students interested in the chemical sciences. An introduction to chemical reactions and atomic-molecular structure, including chemical formulas and stoichiometry, the periodic system of elements, electrons in atoms, valency, chemical bonding, states of matter, solutions, chemical equilibrium, and acids and bases. (Same as [CHE 1103](#). Credit cannot be earned for both [CHE 1103](#) and [CHE 1143](#).).

CHE 1153. Principles of Chemistry II. (3-0) 3 Credit Hours. (TCCN = CHEM 1312)

Prerequisites: A grade of “C-” or better in [CHE 1143](#) or a grade of “B-” or better in [CHE 1103](#). A continuation of [CHE 1143](#) for chemistry majors and other students interested in the chemical sciences. Topics include oxidation-reduction reactions, solubility, coordination complexes, thermochemistry and thermodynamics, electrochemistry, chemical kinetics, and nuclear chemistry. (Same as [CHE 1113](#). Credit cannot be earned for both [CHE 1113](#) and [CHE 1153](#).).

CHE 2603. Organic Chemistry I. (3-0) 3 Credit Hours. (TCCN = CHEM 2323)

Prerequisite: A grade of “C-” or better in [CHE 1113](#) (or [CHE 1153](#)). An elementary study of structure, stereochemistry, reactions, and reaction mechanisms associated with organic compounds. Primarily for chemistry, premed, and science majors. Discussion and practice of problems amplifying and clarifying the course. (Formerly CHE 2203, CHE 2204, and CHE 2604. Credit cannot be earned for more than one of the following: CHE 2203, CHE 2204, [CHE 2603](#), or CHE 2604.).

CHE 2612. Organic Chemistry I Laboratory. (1-4) 2 Credit Hours. (TCCN = CHEM 2223)

Prerequisites: A grade of “C-” or better or concurrent enrollment in [CHE 1131](#) and [CHE 2603](#). The first of two semesters of organic chemistry laboratory. Qualitative analysis and determination of the physical constants of organic compounds. Separation, identification, and elementary synthesis of organic compounds. Laboratory techniques—crystallization, distillation, chromatographic and spectroscopic techniques (IR, NMR, MS)—are emphasized. This laboratory includes a lecture component. (Formerly CHE 2242. Credit cannot be earned for both [CHE 2612](#) and CHE 2242.).

CHE 2803. Quantitative Topics for Chemists. (3-0) 3 Credit Hours.

Prerequisite: A grade of “C-” or better in [MAT 1224](#). This course is intended for students majoring in chemistry and serves as a prerequisite for the introductory courses in physical chemistry. Topics include: power series, linear algebra, determinants, matrices, vector spaces, multi-variable calculus (partial differentiation, multiple integrals), complex variables, ordinary differential equations, numerical analysis, and numerical methods in integration, probability, statistics, regression methods and symbolic programming. (Formerly CHE 2802. Credit cannot be earned for both CHE 2802 and [CHE 2803](#)).

CHE 3214. Analytical Chemistry. (2-5) 4 Credit Hours.

Prerequisites: A grade of “C-” or better in [CHE 1113](#) (or [CHE 1153](#)) and [CHE 1131](#). Topics in quantitative analysis including wet chemical and basic instrumental analysis; gravimetric, volumetric, electrochemical and spectrophotometric determinations combined with error analysis; fundamentals of chemical separations; applications of stoichiometry and chemical equilibria to design efficient analytical protocols. (Formerly CHE 3103 and CHE 3213. Credit cannot be earned for more than one of the following: CHE 3103, CHE 3213, or [CHE 3214](#).).

CHE 3464. Descriptive Inorganic Chemistry. (3-3) 4 Credit Hours.

Prerequisites: A grade of "C-" or better in [CHE 1113](#) (or [CHE 1153](#)) and [CHE 1131](#). Corequisite: [CHE 2603](#) recommended. The basic principles of inorganic chemistry applied to the properties, reactions, and periodicity of inorganic elements and compounds. Includes the synthesis and characterization of inorganic compounds and the use of specialized laboratory techniques. (Formerly CHE 3264. Credit cannot be earned for both [CHE 3464](#) and CHE 3264.).

CHE 3643. Organic Chemistry II. (3-0) 3 Credit Hours.

Prerequisite: A grade of "C-" or better in [CHE 2603](#). Continuing study of fundamentals of structure, reactions, and reaction mechanisms of phosphorus and sulfur; polyfunctional organic compounds. A continuation of [CHE 2603](#). (Formerly CHE 2303 and CHE 2623. Credit cannot be earned for more than one of the following: CHE 2303, CHE 2623, or [CHE 3643](#).).

CHE 3652. Organic Chemistry II Laboratory. (1-4) 2 Credit Hours.

Prerequisites: Grades of "C-" or better in [CHE 2603](#) and [CHE 2612](#). Quantitative and continuing qualitative study of organic reactions and molecular structure through functional group interactions and spectroscopic techniques. Simple and multistep syntheses of organic compounds. A continuation of [CHE 2612](#). This laboratory includes a lecture component. (Formerly CHE 2342 and CHE 2632. Credit cannot be earned for more than one of the following: CHE 2342, CHE 2632 or [CHE 3652](#).).

CHE 3673. Organic Chemistry II with Biological Applications. (3-0) 3 Credit Hours.

Prerequisite: A grade of "C-" or better in [CHE 2603](#). Continuing study of fundamentals of structure, mechanism, and reactivity including those in aqueous media and complex biological macromolecules. A continuation of [CHE 2603](#) with emphasis in topics relevant to biology. Chemistry B.S. majors may not substitute this course for [CHE 3643](#). Credit cannot be earned for more than one of the following: CHE 2303, CHE 2623, [CHE 3643](#), or [CHE 3673](#).).

CHE 3804. Physical Chemistry I and Laboratory. (3-3) 4 Credit Hours.

Prerequisites: A grade of "C-" or better in [CHE 1113](#) (or [CHE 1153](#)), [CHE 1131](#), [CHE 2803](#), [PHY 1963](#) and [PHY 1971](#). The laws of thermodynamics; free energy and chemical potential; ideal and nonideal gases; equilibria; solutions; kinetic theory of gases; kinetics. Laboratory study of selected physicochemical principles and methods to reinforce lecture topics. Data acquisition, data analysis, and report writing are stressed. (Formerly CHE 3204 and CHE 3803/3811. Credit cannot be earned for more than one of the following: CHE 3204, CHE 3803/3811, or [CHE 3804](#).) (Formerly titled "Thermodynamics and Kinetics.").

CHE 3824. Physical Chemistry II and Laboratory. (3-3) 4 Credit Hours.

Prerequisites: A grade of "C-" or better in [CHE 3804](#), [PHY 1963](#) and [PHY 1971](#). Introduction to atomic and molecular quantum chemistry; group theory; electronic, rotational, vibrational, and electronic spectroscopies; and statistical mechanics including ensembles and their use in deriving thermodynamic properties using quantum level information. Laboratory study of selected physicochemical principles and methods to reinforce lecture topics. Data acquisition, data analysis, and report writing are stressed. (Formerly CHE 3224 and CHE 3823/3831. Credit cannot be earned for more than one of the following: CHE 3224, CHE 3823/3831, or [CHE 3824](#).) (Formerly titled "Quantum Mechanics, Spectroscopy, and Statistical Mechanics.").

CHE 3854. Basic Biophysical Chemistry. (3-3) 4 Credit Hours.

Prerequisites: A grade of "C-" or better in [CHE 2603](#), [MAT 1214](#), [PHY 1963](#) (or [PHY 1623](#)), and [PHY 1971](#) (or [PHY 1631](#)). The primary goal of basic biophysical chemistry is to help students develop a fundamental understanding of the physical principles that drive biological processes, particularly as applied to proteins. Topics covered include protein structure, molecular thermodynamics, structure

simulation, basic statistical mechanics, quantum mechanics and spectroscopy. This course cannot be used as an upper-division chemistry elective by students pursuing a B.S. in Chemistry.

CHE 4213. Instrumental Analysis. (2-5) 3 Credit Hours.

Prerequisites: A grade of "C-" or better in [CHE 3214](#) and [CHE 3652](#). Grade of "C-" or better or concurrent enrollment in [CHE 3824](#) (or [CHE 3854](#)). The physical and chemical principles of modern instrumental techniques used for chemical analysis. Topics include emission, absorption, magnetic resonance, and FTIR spectroscopies, mass spectrometry, and chromatography. The use of spectrometric and chromatographic instrumentation in the separation, identification, and quantitation of compounds in chemical systems. (Formerly CHE 4103. Credit cannot be earned for both [CHE 4213](#) and CHE 4103.).

CHE 4303. Biochemistry. (3-0) 3 Credit Hours.

Prerequisite: A grade of "C-" or better in [CHE 3643](#). Structure and function relationships of biologically important molecules; energy production, storage and utilization; amino acids, nucleic acids, peptides and proteins; intermediary metabolism; lipids and membranes. (Formerly CHE 4503. Credit cannot be earned from both [CHE 4303](#) and CHE 4503. Credit cannot be earned for both [CHE 4303](#) and [BIO 3513](#). [BIO 3513](#) cannot be taken as a chemistry elective.).

CHE 4463. Inorganic Chemistry. (3-0) 3 Credit Hours.

Prerequisites: A grade of "C-" or better in [CHE 3464](#), and completion of or concurrent enrollment in [CHE 3804](#) or [CHE 3854](#). A study of the structure, bonding, and properties of inorganic compounds; acid-base theory, crystalline state, coordination chemistry, and other advanced topics. (Formerly CHE 4263. Credit cannot be earned for both [CHE 4463](#) and CHE 4263.).

CHE 4473. Bioinorganic Chemistry. (3-0) 3 Credit Hours.

Prerequisites: Grades of "C-" or better in [CHE 3464](#), [CHE 3804](#) (or [CHE 3854](#)), and either [CHE 4303](#) or [CHE 4463](#) (or concurrent enrollment in either [CHE 4303](#) or [CHE 4463](#)), or consent of instructor. Study of the functions, reaction sites, mechanisms, molecular architecture, and medicinal aspects of metal ions in biological systems, including bioorganometallic compounds. A discussion of the experimental techniques will be included.

CHE 4623. Chemistry of Heterocyclic Compounds. (3-0) 3 Credit Hours.

Prerequisite: A grade of "C-" or better in [CHE 3643](#) or consent of instructor. The chemistry of nitrogen, oxygen, and sulfur heterocycles. Five- and six-membered ring systems with one or more heteroatoms. Applications in the field of synthetic drugs. (Formerly CHE 4403. Credit cannot be earned for both [CHE 4623](#) and CHE 4403.).

CHE 4673. Physical Organic Chemistry. (3-0) 3 Credit Hours.

Prerequisite: A grade of "C-" or better in [CHE 3643](#), or consent of instructor. The study of the relation between structure of carbon compounds and their reactivity and properties: molecular orbital theory and its applications to aromaticity and pericyclic reactions, stereochemistry and conformational analysis, thermodynamic and kinetic data, linear free energy relationships, isotope effects, and catalysis. (Formerly titled "Physical Organic Chemistry.").

CHE 4853. Computational Chemistry. (3-0) 3 Credit Hours.

Prerequisite: A grade of "C-" or better in [CHE 3824](#) or consent of instructor. The application of molecular mechanical, molecular orbital, and density functional methods to problems of molecular structure, property, reactivity, and spectroscopy.

CHE 4883. Introduction to Mass Spectrometry. (2-3) 3 Credit Hours.

Prerequisite: A grade of "C-" or better in [CHE 3804](#) (or [CHE 3854](#)), or consent of instructor. The basic principles of interpreting mass spectra and how they are produced. The effect the method of ion production has on the observed mass spectra, and the theory and operation of various types of mass spectrometers will be covered. The basic theory of ion-molecule reactions and principles and practice of biological mass spectrometry and other advanced topics will be presented. (Formerly CHE 4383. Credit cannot be earned for both [CHE 4883](#) and CHE 4383.)

CHE 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College in which this course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CHE 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College in which this course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CHE 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College in which this course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CHE 4923. Special Project in Chemistry. (0-0) 3 Credit Hours.

Prerequisite: Consent of Department Chair (form available in department office). A special laboratory research or library readings project under the direction of a faculty member that results in a report. Limited to science majors in their final year of undergraduate study.

CHE 4953. Special Studies in Chemistry. (3-0) 3 Credit Hours.

Prerequisites: Upper-division standing and consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CHE 4971. Proseminar. (0-3) 1 Credit Hour.

Prerequisite: A grade of "C-" or better in [CHE 3643](#). Oral reports on current publications in chemistry and chemical technology using important chemical reference materials and periodicals. May be repeated for credit, but not more than 2 semester credit hours may be applied toward the degree.

CHE 4993. Honors Research. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for College Honors during their last two semesters; approval by the College Honors Committee. Supervised research and preparation of an honors thesis. May be repeated only once with approval.

Chinese (CHN)

CHN 1014. Elementary Chinese I. (3-2) 4 Credit Hours. (TCCN = CHIN 1411)

Fundamentals of Chinese offering the opportunity to develop basic listening, speaking, reading, and writing skills. Introduction of Chinese characters and Chinese culture. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

CHN 1024. Elementary Chinese II. (3-2) 4 Credit Hours. (TCCN = CHIN 1412)

Prerequisite: [CHN 1014](#), an equivalent, an appropriate placement test score, or consent of instructor. Fundamentals of Chinese offering the opportunity to develop basic speaking, listening, reading, and writing skills. Further study of Chinese characters and Chinese culture.

CHN 2013. Intermediate Chinese I. (3-1) 3 Credit Hours. (TCCN = CHIN 2311)

Prerequisite: [CHN 1024](#), an equivalent, an appropriate placement test score, or consent of instructor. Continued opportunity to develop listening, speaking, reading, and writing skills through structural analysis of the Chinese language. Continued exposure to Chinese culture.

CHN 2023. Intermediate Chinese II. (3-1) 3 Credit Hours. (TCCN = CHIN 2312)

Prerequisite: [CHN 2013](#), an equivalent, an appropriate placement test score, or consent of instructor. Continued opportunity to develop listening, speaking, reading, and writing skills through structural analysis of the Chinese language. Continued exposure to Chinese culture.

Civil Engineering (CE)

CE 1301. Introduction to Civil Engineering. (1-0) 1 Credit Hour.

Prerequisites or concurrent enrollment: [MAT 1093](#) and [WRC 1013](#). Engineering as a career, engineering ethics, and approaches to engineering problem formulation and solution using principles of design and decision making.

CE 2103. Civil Engineering Measurements. (2-3) 3 Credit Hours.

Prerequisites or concurrent enrollment: [MAT 1214](#) and [CE 1301](#). Principles of measurement and error analysis; application of equipment to acquire, analyze, and control data in civil engineering systems; and introduction to plane surveying.

CE 2633. Environmental Engineering. (3-0) 3 Credit Hours.

Prerequisites: [CE 1301](#) and [CHE 1103](#). Principles, analysis, and design related to environmental monitoring, protection, and remediation systems. Topics include environmental quality and legislation, modeling, water treatment, wastewater treatment, solid and hazardous waste management, air and noise pollution, and radioactive waste management.

CE 3103. Mechanics of Solids. (2-3) 3 Credit Hours.

Prerequisites: [EGR 2103](#) and [MAT 1224](#). Internal forces and deformations in solids; stress, strain, and their relations; stresses and deflections in beams column theory and analysis; and engineering applications.

CE 3113. Structural Analysis. (3-0) 3 Credit Hours.

Prerequisite: [CE 3103](#). Forces and deflections in structural systems; considers stationary and moving loads and exact and approximate methods.

CE 3173. Numerical Methods. (3-0) 3 Credit Hours.

Prerequisite: [EGR 2323](#). Use of computing languages (Matlab and Visualbasic) and numerical methods in solving civil and environmental engineering problems. Techniques for computer solution of linear and nonlinear simultaneous equations; eigenvalues; finite differences; numerical integration; numerical solutions to ordinary differential equations. Case studies in various civil engineering areas.

CE 3213. Reinforced Concrete Design. (2-3) 3 Credit Hours.

Prerequisites or concurrent enrollment: [CE 3113](#) and [CE 3243](#). Ultimate strength theory and design for reinforced concrete members.

CE 3233. Steel Design. (2-3) 3 Credit Hours.

Prerequisites or concurrent enrollment: [CE 3113](#) and [CE 3243](#). Analysis and design of steel tension members, beams, columns, and bolted or welded connections.

CE 3243. Properties and Behavior of Engineering Materials. (2-3) 3 Credit Hours.

Prerequisites: [CE 3103](#) and [STA 2303](#). Structure, properties, and behavior of engineering materials; measurement and analysis of material properties and behavior. Laboratory exercises illustrate typical material behavior and selected principles of mechanics.

CE 3413. Geotechnical Engineering and Applications. (2-3) 3 Credit Hours.

Prerequisite: [CE 3103](#). Prerequisites or concurrent enrollment: [CE 3173](#) and [GEO 4023](#). Exploration, sampling, and in-situ measurements; laboratory testing; review of fundamental properties of soil and rock; flow-through porous media; the effective stress principle and computation of in-situ stress distributions; shear strength of soils and one-dimensional consolidation settlement; introduction to slope stability.

CE 3603. Fluid Mechanics. (2-3) 3 Credit Hours.

Prerequisites: [EGR 2103](#) and [EGR 2513](#). Fluid properties, fluid statics concepts, equations of fluid flow in pipes and open channels, and flow-through porous media.

CE 4013. Civil Engineering Systems Analysis. (3-0) 3 Credit Hours.

Prerequisite: [EGR 3713](#). Technical elective course. Systems approach to optimization and problem solving; operations research applications in civil engineering; mathematical modeling and analysis techniques including linear programming, dynamic programming, decision analysis and use of software to solve linear and nonlinear programming problems. (Formerly CE 3713. Credit cannot be earned for both [CE 4013](#) and CE 3713.)

CE 4103. Advanced Steel Design. (3-0) 3 Credit Hours.

Prerequisite: [CE 3233](#). Technical elective course. Connection design, welded and bolted, moment-resistant connections, plate girders, column stability, bracing design, and seismic design of frames.

CE 4123. Highway Engineering. (3-0) 3 Credit Hours.

Prerequisites: [CE 2103](#) and [CE 3243](#). General characteristics of highway design; horizontal and vertical alignment, cross-sections, earthwork, drainage, and pavement; and economic analysis.

CE 4133. Advanced Reinforced Concrete. (3-0) 3 Credit Hours.

Prerequisite: [CE 3213](#). Technical elective course. Torsion design, design of stairs, bending of curved elements, biaxial loads on columns, slenderness effects, joint design, yield line theory, two-way slab systems, strut-and-tie methods, seismic detailing, relationship between research and building code.

CE 4153. Prestressed Concrete. (3-0) 3 Credit Hours.

Prerequisite: [CE 3213](#). Technical elective course. Design of statically determinate and indeterminate structures, estimation of prestress loss, flexure and shear strength, deflections and stress control, composite construction, and continuous span theory.

CE 4253. Introduction to Masonry and Timber Design. (2-3) 3 Credit Hours.

Prerequisites or concurrent enrollment: [CE 3113](#) and [CE 3243](#). Technical elective course. Design philosophy and methodology for masonry and timber structures. Flexure design, axial load design, and shear design of basic masonry and timber components. (Formerly CE 3253. Credit cannot be earned for both [CE 4253](#) and CE 3253.).

CE 4293. Geographic Information Systems (GIS). (3-0) 3 Credit Hours.

Prerequisite: [CE 2103](#) or [GEO 4023](#). Technical elective course. Introduces vector, raster and tabular concepts, emphasizing the vector approach. Topics include: spatial relationships, map features, attributes, relational database, layers of data, data ingesting, digitizing from maps, projections, output, applications, and availability of public data sets. Focus will be placed on spatial/temporal data analyses using digitized maps and database information in an area of Civil Engineering specialization.

CE 4303. Hydrometeorology. (3-0) 3 Credit Hours.

Prerequisite: [CE 3603](#). Technical elective course. The main objective of this course is to familiarize the student with topics related to local and global distribution of freshwater. Conceptualizations of the water balance/budget are developed using principles of physical hydrology and meteorology. Emphasis will be on recent research and modern methods for data analysis and modeling. Real-life events and phenomena will be discussed. In addition to the text, material will be presented from other sources. Guest instructors will give presentations on some case studies.

CE 4313. Computer-Aided Design in Civil Engineering. (3-0) 3 Credit Hours.

Prerequisites: CE 1403, [CE 2103](#), and [CE 3603](#). Organization and programming of civil engineering problems for computer solutions; application of computer-aided design in civil engineering.

CE 4403. Advanced Characterization of Highway Materials. (3-0) 3 Credit Hours.

Prerequisite: [CE 3243](#). Technical elective course. Basic and advanced level of the fundamentals of material response to static and repeated loading; emphasis on the deformation and fatigue behavior of asphalt mixtures, constitutive modeling for mixtures, microstructure characterization for mixtures, nondestructive testing of pavements, asphalt binder characterization, unbound materials (base and sub-base materials) evaluation and characterization.

CE 4453. Transportation Engineering. (3-0) 3 Credit Hours.

Prerequisite: [CE 4123](#). Technical elective course. Study of the Highway Capacity Manual, traffic stream parameters and relationships, analytical techniques in traffic engineering such as capacity analysis, queuing theory, and traffic simulation. Design and operation of advanced traffic management systems including signalization, real-time motorist information, urban incident management, and ITS concepts. (Formerly CE 4233. Credit cannot be earned for both [CE 4453](#) and CE 4233.).

CE 4463. Foundation Engineering. (3-0) 3 Credit Hours.

Prerequisite: [CE 3413](#). Technical elective course. Shallow and deep foundations including: footings, slabs on-grade, cofferdams, sheet-pile walls, drilled shafts, piles and retaining walls. (Formerly CE 4413. Credit cannot be earned for both [CE 4463](#) and CE 4413.).

CE 4543. Project Design and Construction Management. (3-0) 3 Credit Hours.

Prerequisites: [CE 3113](#), [EGR 3713](#), [CE 3213](#) or [CE 3233](#). Civil Engineering design process, project specifications, and construction management. Topics covered include design process/practices, project proposals, pricing, specifications, bidding strategies, project management/scheduling and project financing. The course forms the student teams for [CE 4813](#) Civil Engineering Design and identifies projects. Students are trained on how to write Request for Proposals (RFPs) for the identified projects and how to write engineering consulting proposals in reply to the RFP. Students are also trained on how to present proposals to a panel of senior engineers at the end of the semester. Course must be taken the semester prior to taking [CE 4813](#). (Formerly CE 3543. Credit cannot be earned for both CE 3543 and [CE 4543](#).)

CE 4603. Water Resources Engineering. (3-0) 3 Credit Hours.

Prerequisites: [CE 2633](#) and [CE 3603](#). Corequisite: [CE 4633](#). Analysis and design of surface and subsurface water resource facilities. Design of water supply, wastewater collection, and storm water systems.

CE 4613. Environmental Chemistry. (3-0) 3 Credit Hours.

Prerequisite: [CE 4633](#). Technical elective course. This course explores the chemistry of the environment, the chemistry underlying environmental problems and solutions to environmental problems. Emphasis is placed on thermodynamics and kinetics of reaction cycles; sources, sinks and transport of chemical species; and quantitation of chemical species. Examples are selected from the chemistry of natural and contaminated air, water, and soil.

CE 4633. Water and Wastewater Treatment. (2-3) 3 Credit Hours.

Prerequisites: [CE 2633](#) and [CE 3603](#). The application of chemical, biochemical, and physical processes to water treatment, wastewater treatment, and pollution control. (Formerly CE 3633. Credit cannot be earned for both CE 3633 and [CE 4633](#).)

CE 4723. Hydraulic Systems Design. (3-0) 3 Credit Hours.

Prerequisite: [CE 3603](#). Technical elective course. Analysis and design of water resource systems; dam and reservoir design for recharge, flood control, and water supply and demand forecasting, optimization of multi-objective systems, and allocations planning and management.

CE 4733. Applied Hydrology. (3-0) 3 Credit Hours.

Prerequisite: [CE 3603](#). Technical elective course. Hydrologic cycle, precipitation, hydrologic abstractions, surface runoff; unit hydrographs; synthetic hydrographs; peak discharge relationships; flood frequency analysis; flood and reservoir routing; and groundwater hydrology. (Formerly CE 3723. Credit cannot be earned for both [CE 4733](#) and CE 3723.)

CE 4813. Civil Engineering Design. (3-0) 3 Credit Hours.

Prerequisites: [CE 3213](#) or [CE 3233](#), [CE 3413](#), [CE 3603](#) and [CE 4543](#). Opportunity to apply design skills to execution of an open-ended integrated civil engineering design project, including field and laboratory investigations, numerical and scale modeling, design, and formal oral and written presentation of results. Considers safety, reliability, environmental, economic, and other constraints, as well as ethical and social impacts. Students must take the FE (Fundamentals of Engineering) exam during the semester they take this course. Students that pass the FE exam during their last semester of study qualify for a Professional Alumni Award.

CE 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair and Dean of the College. Independent reading, research, discussion, and/or writing

under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

CE 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair and Dean of the College. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

CE 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair and Dean of the College. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

CE 4953. Special Studies in Civil Engineering. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

Classics (CLA)

CLA 1114. Basic Individualized Instruction. (0-0) 4 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 8 hours of basic individualized instruction will apply to a bachelor's degree.

CLA 2013. Introduction to Ancient Greece. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. Introduction to the civilization and cultural achievements of ancient Greece, including history, religion, philosophy, literature, and art. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

CLA 2023. Introduction to Ancient Rome. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. Introduction to the civilization and cultural achievements of ancient Rome, including history, religion, philosophy, literature, and art. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

CLA 2033. Introduction to Classical Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. Introductory study of selected works of ancient Greek and Roman authors, with emphasis on epic, drama, satire, and lyric. May be applied toward the Core Curriculum requirement in Creative Arts.

CLA 2113. Intermediate Individualized Instruction. (0-0) 3 Credit Hours.

Prerequisites: Successful completion of [LAT 1114](#) or [GRK 1114](#) or equivalent. Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under

the direction of a faculty member. May be repeated for credit, but not more than 6 hours of intermediate individualized instruction will apply to a bachelor's degree.

CLA 2323. Classical Mythology. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. Critical survey of secular and religious classical mythology; attention to the use of myth in ancient literature and the functions of myth in historical, cultural, and cross-cultural contexts. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

CLA 2953. Topics for the Study of the Ancient Mediterranean. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. Organized course offering introductory and broad examinations of topics important for the study of the Ancient Mediterranean world that are not covered during typical course offerings. Topics cover social and cultural history, etymology, and the art and archaeology of the Ancient Mediterranean. May be repeated for credit when topics vary.

CLA 3023. Classical Myths and Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy and Culture. Critical examination of ancient Greek and Roman myths and their functions in literary texts and ancient societies; attention to current theories and methodologies of mythic analysis.

CLA 3053. Topics in Classical Genres. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. Consideration of texts selected to illustrate the structural and conceptual properties of a given genre in the classical world, e.g., comedy, epic, or tragedy. May be repeated for credit when topics vary.

CLA 3063. Topics in the Art and Architecture Topics in the Art and Architecture. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. A study of one or more themes, periods, traditions, or archaeological sites in the art and architecture of the ancient Greek and Roman world. May be repeated for credit when topics vary.

CLA 3123. Cultural Issues in Classical Antiquity. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. Examination of issues in ancient Greek and Roman power relations and social differences as reflected in classical literature and historical material. Coverage of such topics as slavery, attitudes towards barbarians, gender, and intergenerational strife. May be repeated for credit when topics vary.

CLA 3513. Topics in Classical History. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. An examination of selected events, trends, and transformations in the history of ancient Greece and ancient Rome. May be repeated for credit when topics vary.

CLA 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 hours of independent study, regardless of discipline, will apply to a bachelor's degree.

CLA 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading,

research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 hours of independent study, regardless of discipline, will apply to a bachelor's degree.

CLA 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 hours of independent study, regardless of discipline, will apply to a bachelor's degree.

CLA 4953. Special Studies in Classics. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies courses may be repeated for credit when the topics vary, but not more than 6 hours, regardless of discipline, will apply to a bachelor's degree.

CLA 4973. Senior Seminar in Classics. (3-0) 3 Credit Hours.

Prerequisite: 12 upper-division credit hours in Classics or approved upper-division courses in other disciplines. Undergraduate capstone experience for students in the Classics emphasis and minor, open to eligible students from other disciplines in their junior or senior year. The seminar focuses on the development of research methodologies for the study of the ancient world. Subject varies with instructor, but the course will emphasize a combination of historical, linguistic, archaeological and anthropological approaches, reflecting the interdisciplinary nature of contemporary Classical Studies. May be repeated once for credit when topics vary. (Formerly titled "Seminar for Classics Majors.").

CLA 4991. Honors Thesis. (0-0) 1 Credit Hour.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee. Supervised research and preparation of an Honors Thesis for the purpose of earning Classical Studies Honors. May be repeated once with advisor approval.

CLA 4992. Honors Thesis. (0-0) 2 Credit Hours.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee. Supervised research and preparation of an Honors Thesis for the purpose of earning Classical Studies Honors. May be repeated once with advisor approval.

CLA 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee. Supervised research and preparation of an Honors Thesis for the purpose of earning Classical Studies Honors. May be repeated once with advisor approval.

Communication (COM)

COM 1043. Introduction to Communication. (3-0) 3 Credit Hours. (TCCN = SPCH 1311)

Prerequisite: [WRC 1013](#). Introduction to the fundamental processes of human communication, with emphasis on contexts such as interpersonal, group, and organizational communication. Emphasis is given to those skills that promote oral proficiency.

COM 1053. Business and Professional Speech. (3-0) 3 Credit Hours. (TCCN = SPCH 1321)

Prerequisite: [WRC 1013](#). Examination of the basic communication process through oral channels with practical applications for business. Emphasis is on techniques of business and professional presentation,

including components of message strategies, nonverbal communication, multimedia support, and persuasive speaking. Oral presentations with written components required.

COM 2113. Public Speaking. (3-0) 3 Credit Hours. (TCCN = SPCH 1315)

Prerequisite: [WRC 1013](#). Theory and practice of speaking in formal settings. Emphasis on preparation, adaptation, and delivery of oral and visual presentations, as well as written analysis of historical speeches. May be applied toward the Core Curriculum requirement in the Component Area Option.

COM 2123. Oral Interpretation. (3-0) 3 Credit Hours. (TCCN = SPCH 2341)

Prerequisites: [WRC 1013](#) and [WRC 1023](#). Study of verbal and nonverbal communication, especially for aesthetic purposes, and of the dramaturgical skills that relate to the performing arts. Emphasis is given to those skills that promote oral proficiency.

COM 2343. Introduction to Mass Communication. (3-0) 3 Credit Hours. (TCCN = COMM 1307)

Prerequisites: [WRC 1013](#) and [WRC 1023](#). Critical examination of how the mass media interact with individuals and social groups. Exploration of media industries, products, and processes from various disciplinary perspectives.

COM 2433. Editing. (3-0) 3 Credit Hours.

Prerequisite: [ENG 2413](#). Principles and applications of production editing and technical editing, including evaluation and revision of style, tone, and organization of documents. Practice in use of editing symbols and copy marking. (Same as [ENG 2433](#). Credit cannot be earned for both [COM 2433](#) and [ENG 2433](#).)

COM 2733. Introduction to Communication Technologies. (3-0) 3 Credit Hours.

Prerequisites: [WRC 1013](#) and [WRC 1023](#). Overview of media and networks used for entertainment and information distribution, storage, and retrieval. Emphasis on the interrelationships among technology, economics, policy, society, and culture.

COM 2801. Forensic Activities. (1-0) 1 Credit Hour. (TCCN = SPCH 2144)

Prerequisite: Consent of instructor. Opportunity to study the preparation and presentation of oral argument or speaking in competitive situations. May be repeated for credit.

COM 3023. Foundations of Communication. (3-0) 3 Credit Hours.

Prerequisites: [WRC 1013](#) and [WRC 1023](#). Acquaints students with a range of disciplinary areas of study in communication. Addresses how communication influences our understandings of and in various social contexts and, in turn, how these understandings affect communicative choices. Addresses basic strategies and technologies used for information access, retrieval, and processing. Required of and restricted to pre-Communication students, or students majoring or minoring in Communication.

COM 3073. Conduct of Communication Inquiry. (3-0) 3 Credit Hours.

Prerequisite: [COM 3023](#). Introduction to basic research methods as they apply to communication inquiry. Issues include applications of quantitative and qualitative research designs, descriptive and inferential statistics, and interpretation and critical evaluation of findings. Required of and restricted to pre-Communication students, or students majoring or minoring in Communication.

COM 3083. Language and Communication Theory. (3-0) 3 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in [COM 3023](#). Overview of theories of language and communication. Focuses on understanding how language and communication affect individual and social action. Required of and restricted to pre-Communication students, or students majoring or minoring in Communication.

COM 3113. Argumentation and Debate. (3-0) 3 Credit Hours.

Prerequisite: [COM 1043](#), [COM 1053](#), or [COM 2113](#). Offers the opportunity to train in the preparation, construction, and critical analysis of argumentation. Exercises in oral communication in adversarial situations.

COM 3243. Persuasion. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as a Communication major. Theory and practice of influencing attitudes, beliefs, opinions, and actions. Emphasis on critical evaluation of persuasive messages and design of persuasive campaigns.

COM 3253. Rhetorical Communication Analysis. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as a Communication major. Study of classical and contemporary rhetorical theory. Critical evaluation of communication messages and techniques of delivery.

COM 3383. Interpersonal Communication.. (3-0) 3 Credit Hours.

Prerequisite: [COM 1053](#) or [COM 3023](#). Theory and research of communication in personal and professional settings. The course stresses the social context of communication and emphasizes skills, knowledge, and motivation of verbal and nonverbal interaction. (Same as [MGT 3253](#). Credit cannot be earned for both [COM 3383](#) and [MGT 3253](#).)

COM 3393. Communication for Health Professionals. (3-0) 3 Credit Hours.

Prerequisite: [COM 1043](#), [COM 1053](#) or [COM 3023](#). Overview of the many ways in which health and illness affects and are affected by communication, emphasizing the interplay between communication, culture, identity, and relationships. This course introduces multiple communication issues relevant to the ways in which individuals negotiate health and illness including: contested meanings of health; the social construction of health and illness; how individuals experience and enact health; the influence on health interactions of social systems, culture and identity, social media, and organizational culture. Particular attention is paid to communicative influences on patient-provider interaction.

COM 3413. Digital Media Production I. (3-0) 3 Credit Hours.

Prerequisites: [COM 3023](#), [ENG 2413](#), and enrollment as a Communication major. Introduction to issues and practices in the design of online information. Emphasis on writing and design practices in the context of various online information genres, including writing for the World Wide Web. Other topics may include hypertext theory and interactive design. (Formerly titled "Writing for New Media.").

COM 3523. Public Relations. (3-0) 3 Credit Hours.

Prerequisites: [COM 3023](#), and enrollment as a Communication Major. Introduction to principles and practices of public relations. Some attention to public relations within multicultural communities.

COM 3533. Writing for Public Relations. (3-0) 3 Credit Hours.

Prerequisites: [COM 3523](#) and [ENG 2413](#). Exposure to techniques and skills associated with writing for public relations to create internal and external documents, such as news releases, reports, newsletters, feature stories, and brochures. Designed to enable students to become competent and versatile writers for a variety of publics. (Formerly COM 3513. Credit cannot be earned for both COM 3513 and [COM 3533](#).)

COM 3553. Intercultural Communication. (3-0) 3 Credit Hours.

Prerequisites: [COM 3023](#), and completion of or concurrent enrollment in [COM 3083](#). Examination of differences in communication that arise from cultural and/or ethnic diversity. Emphasis on the verbal and nonverbal communicative patterns, conflict management, and decision-making processes of diverse cultures.

COM 3563. International Communication. (3-0) 3 Credit Hours.

Prerequisites: [COM 3023](#), and completion of or concurrent enrollment in [COM 3083](#). Examination of issues, conditions, and processes relating to world media systems. Consideration of theoretical and practical perspectives in key domains of interaction such as political economy, social development, and technology.

COM 3623. Commercial Publications. (3-0) 3 Credit Hours.

Prerequisites: [COM 3023](#), [ENG 2413](#), and enrollment as a Communication major. Theory and practice of commercial writing and desktop publishing. Includes discussion of document design, principles of layout, and typography.

COM 3633. Professional Presentation. (3-0) 3 Credit Hours.

Prerequisite: [COM 1043](#), [COM 1053](#), or [COM 2113](#). Fundamentals of professional presentations including information exchange, problem solving, and persuasive proposals. Emphasis on the integration of oral presentation with written, graphic, and other media materials.

COM 3883. Small Group Communication. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as a Communication major. Theory and research in the communication processes of small groups. Emphasis on analysis of transactions in social and task-oriented groups.

COM 3893. Organizational Communication. (3-0) 3 Credit Hours.

Prerequisite: [COM 1053](#) or [COM 3023](#). Theory and research in organizational communication. Examination of the barriers to effective organizational communication; group communication and decision making; information flows through the formal and informal networks of organizations, and the means of evaluating organizational communication effectiveness. (Same as [MGT 3123](#). Credit cannot be earned for both [COM 3893](#) and [MGT 3123](#).)

COM 4383. Relational Communication. (3-0) 3 Credit Hours.

Prerequisites: [COM 3383](#), and enrollment as a Communication major. Examination of the transactional processes involved in the creation, maintenance, and termination of personal relationships. Analysis of current research and theories concerning the role and effects of communicating in friendship, marriage, and family relationships.

COM 4413. Topics in Communication. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as a Communication major. Intensive study of one or more specific issues in communication (e.g., contexts, theoretical perspectives, and/or research methods). May be repeated once for credit when topics vary.

COM 4523. Case Studies in Public Relations. (3-0) 3 Credit Hours.

Prerequisites: [COM 3073](#), [COM 3523](#), and [COM 3533](#). Advanced study of public relations functions, principles, and practices using local, regional, and national organizations as examples.

COM 4533. Public Relations Planning and Campaigns. (3-0) 3 Credit Hours.

Prerequisites: [COM 3623](#) and [COM 4523](#). Application of public relations principles to the planning and production of messages and campaigns. Students will be expected to produce and carry out a public relations campaign within the community. This course fulfills the College of Liberal and Fine Arts Signature Experience.

COM 4723. Digital Media Production II. (3-0) 3 Credit Hours.

Prerequisites: [COM 2433](#), [COM 3413](#), and [COM 3623](#) or consent of instructor. Theory and application of digital production formats, such as Web animation, digital photo production or digital film. May be repeated once for credit when topics vary. This course fulfills the College of Liberal and Fine Arts Signature Experience.

COM 4813. Theory and Practice of Social Interaction. (3-0) 3 Credit Hours.

Prerequisites: Enrollment as a Communication major and senior standing. Advanced study of one or more specific topics in social interaction, such as relational communication, intergroup communication, family communication, health communication, and/or conflict. This course fulfills the College of Liberal and Fine Arts Signature Experience.

COM 4911. Independent Study in Communication. (0-0) 1 Credit Hour.

Prerequisite: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

COM 4912. Independent Study in Communication. (0-0) 2 Credit Hours.

Prerequisite: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

COM 4913. Independent Study in Communication. (0-0) 3 Credit Hours.

Prerequisite: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

COM 4933. Internship in Communication. (0-0) 3 Credit Hours.

Prerequisites: Enrollment as a Communication major, senior standing, and consent of instructor. Supervised field experience in Communication. May be repeated once for credit, but only 3 semester credit hours may be counted toward major requirements. This course fulfills the College of Liberal and Fine Arts Signature Experience.

COM 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: Enrollment limited to candidates for graduation with University Honors. Supervised research and preparation of an honors thesis. May be repeated once with advisor approval.

Comparative Studies-Humanities (CSH)

CSH 1103. Literary Masterpieces of Western Culture I. (3-0) 3 Credit Hours. (TCCN = ENGL 2332)

Representative masterworks of Western literature in translation. An examination of major texts from antiquity to the Renaissance that have shaped and expressed Western cultural traditions. Situation of literary works in the context of the development of civilization. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

CSH 1113. Literary Masterpieces of Western Culture II. (3-0) 3 Credit Hours. (TCCN = ENGL 2333)

Representative masterworks of Western literature in translation. An examination of major texts from the Renaissance to the present that have shaped and expressed Western cultural traditions. Situation of literary works in the context of the development of civilization. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

CSH 1213. Topics in World Cultures. (3-0) 3 Credit Hours. (TCCN = HUMA 2323)

Introductory overview of a specific culture or cultural area as revealed through the diversity of its heritage. Includes topics such as Hispanic, Francophone, German, Slavic, Judaic, Latin, Oriental, or African culture. All readings are from English language or translated materials. May be repeated for credit when topics vary. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

CSH 2113. The Foreign Film. (3-0) 3 Credit Hours.

An introduction to film as art and cultural expression. Emphasis on cinematic techniques, national traditions, genres, and the distinctive features of film as a humanistic medium. Films drawn from Latin America, Asia, Africa, and/or Europe. May be repeated for credit when topics vary. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

CSH 2313. Introduction to Literary Studies. (3-0) 3 Credit Hours.

Prerequisite: [WRC 1023](#) or the equivalent. Offers the opportunity to develop an awareness of literature and the skills with which to approach and understand it. Examination of individual national traditions and the interrelationship of all literary traditions. Emphasis on the nature of genre, period, and style. (Formerly CSH 3313. Credit cannot be earned for both [CSH 2313](#) and CSH 3313.).

CSH 3023. Studies in Comparative Literature. (3-0) 3 Credit Hours.

Prerequisite: [WRC 1023](#) or the equivalent. Comparative investigation of foreign literature. Topics may include study of a genre, period, or motif, or comparison of authors across different languages. All readings are in English translation. May be repeated for credit when topics vary.

CSH 3823. Advanced Topics in World Cultures. (3-0) 3 Credit Hours.

Prerequisite: [WRC 1023](#) or the equivalent. Comparative investigation of foreign cultures. Topics may include various combinations and aspects of Hispanic, Francophone, German, Slavic, Judaic, Latin or Oriental cultures. All readings are in English translation. May be repeated for credit when topics vary.

Computer Science (CS)

CS 1023. Cultural Implications of the Information Society. (3-0) 3 Credit Hours. (TCCN = COSC 1300)

This course offers an examination of the modern information society and the influences of technological advances on society and culture. The emphasis is on information and its management from ethical, social, and legal perspectives. Students will make extensive use of the World Wide Web. May be applied toward the core curriculum requirement in World Society and Issues.

CS 1033. Microcomputer Applications. (3-0) 3 Credit Hours.

Study of the uses of the computer and the organization and visualization of data. Topics will be selected from library searching, networking, e-mail, spreadsheets, databases, authoring packages, multimedia and hypertext applications, presentation graphics, and legal/ethical issues. May not be applied toward a major in computer science. (Formerly CS 2083. Credit cannot be earned for both [CS 1033](#) and CS 2083.).

CS 1063. Introduction to Computer Programming I. (3-0) 3 Credit Hours. (TCCN = COSC 1336)

Prerequisite: [MAT 1073](#) or the equivalent. An introduction to computer programming using a modern object-oriented computer language. Topics include assignment, decisions, loops, methods and arrays using objects.

CS 1073. Introductory Computer Programming for Scientific Applications. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1073](#) or the equivalent. Introductory programming. Data representation, problem-solving methods, algorithm development and implementation, arrays and list structures, searching and sorting. May not be applied toward a major in computer science.

CS 1143. Web Design. (3-0) 3 Credit Hours.

Prerequisite: Computer literacy. Introduction to the process of planning, designing, and building a Web site. Concepts required to design and build interactive Web sites, including page design using XHTML, tables, CSS, and JavaScript. Design tools will be used to design and maintain Web sites.

CS 1153. Game Programming. (3-0) 3 Credit Hours.

Prerequisite: Computer literacy. Introduction to game design and programming. Common practices used in the video game industry today will also be introduced. Students will learn the basics of creating a PC game through lecture material, hands-on laboratories, and a final project in which the students will build a simple game.

CS 1173. Data Analysis and Visualization using MATLAB. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1023](#). Introduction to computation for data analysis and visualization using MATLAB. Programming concepts including functions, scripting, loops and logic, handling of vectors and structured data are explored in the context of working with and plotting real data. May be applied toward the Core Curriculum requirement in the Component Area Option. (Formerly titled "Computation for Scientists and Engineers.").

CS 1711. Introduction to Computer Programming II Recitation. (1-0) 1 Credit Hour. (TCCN = COSC 1437)

Prerequisite: [CS 1063](#). Concurrent enrollment in [CS 1713](#) is required. Recitation to accompany [CS 1713](#). (Formerly titled "Introduction to Computer Science Recitation.").

CS 1713. Introduction to Computer Programming II. (3-0) 3 Credit Hours. (TCCN = COSC 1437)

Prerequisite: [CS 1063](#). Concurrent enrollment in [CS 1711](#) is required. Extended programming concepts including multidimensional arrays, pointers, dynamic memory allocation/deallocation and recursion. Problem solving methods, algorithm development and implementation. (Formerly titled “Introduction to Computer Science.”).

CS 2073. Computer Programming with Engineering Applications. (3-0) 3 Credit Hours. (TCCN = ENGR 2304)

Prerequisites: [MAT 1214](#) and completion of or concurrent enrollment in [MAT 1224](#). Algorithmic approaches to problem solving and computer program design for engineers. Engineering and mathematically-oriented problem sets will be emphasized, including nonnumeric applications. Searching, sorting, linked lists, and data typing will be introduced. May not be applied toward a major in computer science.

CS 2121. Data Structures Recitation. (1-0) 1 Credit Hour. (TCCN = COSC 2436)

Prerequisites: [CS 1711](#) and [CS 1713](#). Concurrent enrollment in [CS 2123](#) is required. Recitation to accompany [CS 2123](#). (Formerly CS 1721. Credit cannot be earned for both [CS 2121](#) and CS 1721.).

CS 2123. Data Structures. (3-0) 3 Credit Hours. (TCCN = COSC 2436)

Prerequisites: [CS 1711](#) and [CS 1713](#). Concurrent enrollment in [CS 2121](#) is required. Abstract data structures (stacks, queues, lists, trees), recursion, sorting, and searching. Implementation of data structures using explicit memory management, and introduction to abstract data type design and encapsulation. (Formerly CS 1723. Credit cannot be earned for both [CS 2123](#) and CS 1723.).

CS 2153. Game Design. (3-0) 3 Credit Hours.

Prerequisites: [CS 1153](#). This course builds upon the lessons learned in [CS 1153](#) Game Programming to examine in more detail the design and development of electronic games. The fundamentals of game design and development of electronic games. The fundamentals of game design will be examined in detail and the students will be responsible for building a game using a popular game engine.

CS 2233. Discrete Mathematical Structures. (3-0) 3 Credit Hours. (TCCN = MATH 2405)

Prerequisites: [CS 1711](#), [CS 1713](#), and [MAT 1214](#). Survey and development of theoretical tools suitable for describing algorithmic applications. Propositional and predicate calculus, proofs, induction, order notation, recurrences and discrete structures. (Formerly 3233. Credit cannot be earned for both [CS 2233](#) and CS 3233.).

CS 3333. Mathematical Foundations of Computer Science. (3) 3 Credit Hours.

Prerequisites: [CS 1711](#), [CS 1713](#), and [MAT 1224](#). Survey and development of mathematical and statistical tools suitable for describing algorithmic applications. Vectors, matrices, combinatorics, probability and statistical models.

CS 3341. Analysis of Algorithms Recitation. (1-0) 1 Credit Hour.

Prerequisites: [CS 2121](#), [CS 2123](#), [CS 2233](#), and [CS 3333](#). Concurrent enrollment in [CS 3343](#) is required. Recitation to accompany [CS 3343](#).

CS 3343. Analysis of Algorithms. (3-0) 3 Credit Hours.

Prerequisites: [CS 2121](#), [CS 2123](#), [CS 2233](#), and [CS 3333](#). Concurrent enrollment in [CS 3341](#) is required. Analysis of the performance of algorithms; discussion of programming techniques and data structures used in the writing of effective algorithms.

CS 3421. Systems Programming Recitation. (1-0) 1 Credit Hour.

Prerequisites: [CS 2121](#) and [CS 2123](#). Concurrent enrollment in [CS 3423](#) is required. Recitation to accompany [CS 3423](#). (Formerly CS 2411. Credit cannot be earned for both [CS 3421](#) and CS 2411.).

CS 3423. Systems Programming. (3-0) 3 Credit Hours.

Prerequisites: [CS 2121](#) and [CS 2123](#). Concurrent enrollment in [CS 3421](#) is required. A study of systems-level programming in a specific system (at present, Unix). Focus on concepts and tools to support the construction of systems programs. (Formerly CS 2413. Credit cannot be earned for both [CS 3423](#) and CS 2413.).

CS 3433. Principles of Computer and Information Security. (3-0) 3 Credit Hours.

Prerequisites: [CS 3421](#) and [CS 3423](#). An introduction to the protection of computer systems and networks. Topics will include authentication, access controls, malicious software, formal security methods, firewalls, intrusion detection, cryptography and information hiding, risk management, computer forensics, and ethics.

CS 3443. Application Programming. (3-0) 3 Credit Hours.

Prerequisites: [CS 2121](#) and [CS 2123](#). Advanced application development in a current object-oriented language. Introduction to the software life cycle, best programming practices, and modern development tools.

CS 3723. Programming Languages. (3-0) 3 Credit Hours.

Prerequisites: [CS 2233](#) and [CS 3443](#). An introduction to high-level procedural, functional, and object-oriented programming languages, their theoretical foundations, organization, and implementation. Topics include formal syntax, compilers and interpreters, type systems, scoping and activation records, control structures, and data abstraction.

CS 3731. Operating Systems Recitation. (1-0) 1 Credit Hour.

Prerequisites: [CS 3421](#), [CS 3423](#), [CS 3443](#), [CS 3841](#), and [CS 3843](#). Concurrent enrollment in [CS 3733](#) is required. Recitation to accompany [CS 3733](#).

CS 3733. Operating Systems. (3-0) 3 Credit Hours.

Prerequisites: [CS 3421](#), [CS 3423](#), [CS 3443](#), [CS 3841](#), and [CS 3843](#). Concurrent enrollment in [CS 3731](#) is required. An introduction to the functions and major techniques of a modern multiprogramming operating system. Includes exposure to the fundamentals of processor management, process synchronization, memory management, and peripheral management.

CS 3743. Introduction to Database Systems. (3-0) 3 Credit Hours.

Prerequisites: [CS 2233](#), [CS 3421](#), and [CS 3423](#). Study of fundamentals of database systems. Topics include basic concepts, various data models, database design, storage systems, indexing and hashing, database application design and implementation, and commercially available database systems.

CS 3773. Software Engineering. (3-0) 3 Credit Hours.

Prerequisite: [CS 3443](#). Introduction to different aspects of software engineering with the concentration on processes, methods, and tools for developing reliable software-centered systems. Study of software development process models, project management, a variety of modeling notations, requirement analysis, architecture design methods, and testing techniques.

CS 3793. Introduction to Artificial Intelligence. (3-0) 3 Credit Hours.

Prerequisites: [CS 3341](#) and [CS 3343](#). Discussion of theorem-proving by machine; includes computational linguistics, psychological modeling, and computer games.

CS 3841. Computer Organization Recitation. (1-0) 1 Credit Hour.

Prerequisites: [CS 2121](#) and [CS 2123](#). Concurrent enrollment in [CS 3843](#) is required. Recitation to accompany [CS 3843](#). (Formerly CS 2731. Credit cannot be earned for both [CS 3841](#) and CS 2731.).

CS 3843. Computer Organization. (3-0) 3 Credit Hours.

Prerequisites: [CS 2121](#) and [CS 2123](#). Concurrent enrollment in [CS 3841](#) is required. Organization of a computer system is introduced at block diagram level. Programming in assembly language and understanding the macroarchitecture of a computer is emphasized. Fundamentals of digital systems are introduced and the designs of various components used are investigated. (Formerly CS 2733. Credit cannot be earned for both [CS 3843](#) and CS 2733.).

CS 3851. Computer Architecture Recitation. (1-0) 1 Credit Hour.

Prerequisites: [CS 3421](#), [CS 3423](#), [CS 3841](#), and [CS 3843](#). Concurrent enrollment in [CS 3853](#) is required. Recitation to accompany [CS 3853](#). (Formerly CS 4751. Credit cannot be earned for both [CS 3851](#) and CS 4751.).

CS 3853. Computer Architecture. (3-0) 3 Credit Hours.

Prerequisites: [CS 3421](#), [CS 3423](#), [CS 3841](#), and [CS 3843](#). Concurrent enrollment in [CS 3851](#) is required. Instruction set architecture, datapath and control unit design, advanced computer arithmetic, pipelining, memory hierarchy and I/O subsystem, performance issues. (Formerly CS 4753. Credit cannot be earned for both [CS 3853](#) and CS 4753.).

CS 3873. Computer Networks. (3-0) 3 Credit Hours.

Prerequisites: [CS 3841](#) and [CS 3843](#). Network architecture, TCP/IP protocol suite, routing, data-link layer protocols, medium access control protocols, error detection and recovery, local area networks, wireless and mobile networks. (Formerly CS 4873. Credit cannot be earned for both [CS 3873](#) and CS 4873.).

CS 4213. Computing for Bioinformatics. (3-0) 3 Credit Hours.

Prerequisite: [CS 1173](#) or another programming course. Emphasizes computing tasks common in bioinformatics: variables, flow control, input/output, strings, pattern matching, arrays, hash tables, functions, access to databases, and parsing data from queries for common bioinformatics tasks. SQL, XML, and BioPerl. May not be applied to the 24 hours of required electives for computer science majors, but may be included for a computer science minor.

CS 4313. Automata, Computability, and Formal Languages. (3-0) 3 Credit Hours.

Prerequisites: [CS 3341](#) and [CS 3343](#). Discussion of abstract machines (finite state automata, pushdown automata, and Turing machines), formal grammars (regular, context-free, and type 0), and the relationship among them.

CS 4353. Unix and Network Security. (3-0) 3 Credit Hours.

Prerequisite: [CS 3433](#). A technical survey of the fundamentals of computer and information security. Issues include cryptography, authentication, attack techniques at both the OS and network level, defense techniques, intrusion detection, scan techniques and detection, forensics, denial of service techniques and defenses, libpcap, libdnet and libnet programming.

CS 4363. Cryptography. (3-0) 3 Credit Hours.

Prerequisites: [CS 3341](#), [CS 3343](#), and [CS 3433](#). A course in pure and applied cryptography, with emphasis on theory. Topics may include conventional and public-key cryptosystems, signatures, pseudo-random sequences, hash functions, key management, and threshold schemes.

CS 4383. Computer Graphics. (3-0) 3 Credit Hours.

Prerequisites: [CS 2121](#), [CS 2123](#), [CS 3341](#), and [CS 3343](#). An introduction to two- and three-dimensional generative computer graphics. Display devices, data structures, mathematical transformations, and algorithms used in picture generation, manipulation, and display.

CS 4393. User Interfaces. (3-0) 3 Credit Hours.

Prerequisite: [CS 3443](#). Study of advanced user interface issues. User interface design, human factors, usability, GUI programming models, and the psychological aspects of human-computer interaction.

CS 4413. Web Technologies. (3-0) 3 Credit Hours.

Prerequisites: [CS 3421](#) and [CS 3423](#). Fundamentals of Web and component technology: markup languages, layout design, client and server side programming, database and Web integration.

CS 4593. Topics in Computer Science. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Advanced topics in an area of computer science. May be repeated for credit when topics vary.

CS 4633. Simulation. (3-0) 3 Credit Hours.

Prerequisites: [CS 3341](#) and [CS 3343](#). Design, execution, and analysis of simulation models, discrete event simulation techniques, input and output analysis, random numbers, and simulation tools and languages.

CS 4713. Compiler Construction. (3-0) 3 Credit Hours.

Prerequisites: [CS 3341](#), [CS 3343](#), [CS 3841](#), and [CS 3843](#). An introduction to implementation of translators. Topics include formal grammars, scanners, parsing techniques, syntax-directed translation, symbol table management, code generation, and code optimization. (Formerly titled "Compiler Writing.").

CS 4723. Software Validation and Quality Assurance. (3-0) 3 Credit Hours.

Prerequisite: [CS 3443](#). Study of software validation techniques. Introduction to static analysis and software testing approaches (functional testing, structural testing, integration testing and regression testing). Overview of test planning and test case design. Review of topics in quality assurance.

CS 4733. Project Management. (3-0) 3 Credit Hours.

Prerequisite: [CS 3443](#). Introduction to principles and best practices for software project management. Topics include software process models, capability maturity model, metrics, cost estimation, software project planning, risk management, software configuration management, people management, and software management CASE tools.

CS 4743. Applied Software Engineering. (3-0) 3 Credit Hours.

Prerequisite: [CS 3443](#). Introduction to principles and best practices for the development of software systems. Application of software engineering knowledge of process models, methods, and tools to the design, implementation, and testing of team-based software products.

CS 4763. Multimedia Systems. (3-0) 3 Credit Hours.

Prerequisites: [CS 3731](#) and [CS 3733](#). Multimedia hardware capabilities. Sound and video generation and editing. Multimedia applications development and toolkits. Analysis of operational characteristics of multimedia systems.

CS 4773. Object-Oriented Systems. (3-0) 3 Credit Hours.

Prerequisite: [CS 3443](#). An introduction of principles and methodologies of good software design. Study of object-oriented concepts and techniques, encapsulation, inheritance mechanisms, polymorphism, and

programming in one or more object-oriented languages. Examination of design patterns that provide reusable solutions to problems in object-oriented design.

CS 4823. Introduction to Parallel Programming. (3-0) 3 Credit Hours.

Prerequisites: [CS 3341](#), [CS 3343](#), [CS 3421](#), and [CS 3423](#). Parallel programming concepts (partitioning, synchronization and communication, programming models-shared memory based and message based), programming tools and languages, performance issues.

CS 4833. Embedded Systems. (3-0) 3 Credit Hours.

Prerequisites: [CS 3341](#), [CS 3343](#), [CS 3731](#), [CS 3733](#), [CS 3851](#), and [CS 3853](#). Concepts and design principles of embedded systems. Microprocessor and hardware architecture, sensors and actuators, basic feedback control theory. Real-time scheduling, programming in embedded systems.

CS 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CS 4933. Internship in Computer Science. (0-0) 3 Credit Hours.

Prerequisites: Junior or senior standing, an overall 2.5 grade point average, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Sciences. The opportunity for a semester-long work experience in a private business or public agency in a computer science-related position. Not more than 3 semester credit hours of [CS 4933](#), and not more than a total of 6 semester credit hours of [CS 4933](#) and independent study courses may count toward the Bachelor of Science degree in Computer Science. The grade report for this course is either "CR" (satisfactory participation in the internship) or "NC" (unsatisfactory participation in the internship).

CS 4953. Special Studies in Computer Science. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CS 4993. Honors Research. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for College Honors during their last two semesters; approval by the College Honors Committee. Supervised research and preparation of an honors thesis. May be repeated once with approval.

Construction Science & Management (CSM)

CSM 2113. Construction Materials and Methods. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as an Architecture, Interior Design, or Construction Science and Management major or permission of instructor. Introduction to materials, methods, equipment and sequences of the construction process including structural elements, components, and assemblies.

CSM 2143. Construction Materials and Testing. (3-0) 3 Credit Hours.

Prerequisites: [CSM 2113](#), [PHY 1943](#), and enrollment as a Construction Science and Management major or permission of instructor. Analysis of materials and methods used in the design and construction

process with a particular emphasis on quality control, quality assurance, and testing including soils, concrete, steel, masonry, and wood.

CSM 2323. Construction Documents. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Introduction to construction documents and applicable software for use in communicating building design intentions to field personnel, including an understanding of how to interpret, explain, quantify and use construction documents to bid, construct and manage construction projects.

CSM 2333. Construction Culture and History. (3-0) 3 Credit Hours.

History of construction and building technologies in Western and non-Western cultures. Emphasis on work traditions, graphical illustrations, social and political concerns.

CSM 3011. Construction Industry Contemporary Issues. (1-0) 1 Credit Hour.

Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Exploration of various professional options and specialties across the construction industry, professional ethics and introduction to professional societies. Must be taken on a credit/no-credit basis.

CSM 3113. Construction Surveying. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Practical applications of surveying, including distance, grade and angular measurements, surveying equipment and its application to construction layout and control, surveying documentation and field work. (Formerly CSM 3111. Credit Cannot be earned for both [CSM 3113](#) and CSM 3111.).

CSM 3123. Technical Communication. (3-0) 3 Credit Hours.

Prerequisites: [MAT 1033](#) or [MAT 1073](#) and enrollment as a Construction Science and Management major or permission of instructor. Visualization, interpretation and communication of graphical geometry in construction design and engineering; graphical analysis of problems; plan reading; computer aided design, and fundamentals of information modeling software; introduction to common quantitative tools in construction.

CSM 3143. Structures I. (3-0) 3 Credit Hours.

Prerequisites: [PHY 1943](#) and enrollment as a Construction Science and Management major or permission of instructor. Introduction to the physical principles that govern classical statics and strengths of materials through the design of concrete, timber, and steel components of structures.

CSM 3621. Construction Safety I. (1-0) 1 Credit Hour.

Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Introduction to safety and safety programs, workers' compensation, OSHA organization and structure, safety policies, standards, and record keeping. Emphasis on communication and job-site safety ethics and management.

CSM 4013. Construction Estimating I. (3-0) 3 Credit Hours.

Prerequisites: [CSM 2113](#) and [CSM 3123](#). Introduction to estimating procedures for buildings related to quantity surveying, cost of materials and labor, life-cycle costs, and applicable software. (Formerly ARC 4013. Credit cannot be earned for both [CSM 4013](#) and ARC 4013.).

CSM 4023. Construction Estimating II. (2-2) 3 Credit Hours.

Prerequisites: [CSM 2143](#) and [CSM 4013](#). Continuation of [CSM 4013](#) with emphasis on pricing work, subcontracting, and bidding strategies utilizing applicable software. (Formerly ARC 4023. Credit cannot be earned for both [CSM 4023](#) and ARC 4023.).

CSM 4143. Structures II. (3-0) 3 Credit Hours.

Prerequisite: [CSM 3143](#). Analysis and design of structural members in steel, reinforced concrete, reinforced masonry and their relationship to design and construction.

CSM 4513. Project Management. (3-0) 3 Credit Hours.

Prerequisite: [CSM 3123](#). Introduction to project management of the construction process and integration with allied professions. Introduction to applicable software. (Formerly ARC 4613. Credit cannot be earned for both [CSM 4513](#) and ARC 4613.).

CSM 4523. Project Planning and Scheduling. (2-2) 3 Credit Hours.

Prerequisite: [CSM 4513](#). Continuation of [CSM 4513](#) with emphasis on scheduling and project delivery methods utilizing applicable software. (Formerly ARC 4623. Credit cannot be earned for both [CSM 4523](#) and ARC 4623.) (Formerly titled “Construction Management II.”).

CSM 4533. Building Information Modeling for Construction Management. (2-2) 3 Credit Hours.

Prerequisite: [CSM 3123](#). Introduction to techniques used in development and management of Building Information Models. Emphasis on constructability and management.

CSM 4613. Sustainable Building Practice. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Ethics and application of environmental sustainability practice in building construction. Introduction to U.S. Green Building Council LEED program standards, methods, and procedures as applied to construction documents interpretation and construction.

CSM 4623. Construction Safety. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Development and management of safety programs, worker’s compensation, OSHA compliance, safety policies, standards, and record keeping.

CSM 4633. Construction Law. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Legal and ethical aspects of construction contracts, bonds, insurance, and bidding. Owner, architect, contractor, and subcontractor relationships.

CSM 4643. Mechanical, Electrical and Plumbing Systems. (2-2) 3 Credit Hours.

Prerequisite: [CSM 4533](#) or permission of instructor. Building systems with an emphasis on design, installation and control of heating, ventilation and cooling, plumbing and drainage, electrical, fire and lightning protection systems.

CSM 4713. Construction Capstone. (2-2) 3 Credit Hours.

Prerequisites: [CSM 4523](#), [CSM 4023](#), [CSM 4633](#), and [CSM 4643](#). Senior capstone project emphasizing integration of the design and construction processes. Project delivery systems, project development, estimating, scheduling and project controls of various types of construction projects.

CSM 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor’s degree.

CSM 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor's degree.

CSM 4916. Independent Study. (0-0) 6 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor's degree.

CSM 4931. Summer Internship. (0-0) 1 Credit Hour.

Prerequisites: [CSM 2323](#), [CSM 3011](#), CSM 3111, and [CSM 3621](#). This is a full-time, on-site, construction work experience. Supervision by qualified construction manager and intern mentor to prepare the intern for building construction management functions. Instructor prior approval of details for individual work experience required. Must be repeated for credit and taken in consecutive five-week summer sessions.

CSM 4932. Internship. (0-0) 2 Credit Hours.

Prerequisites: [CSM 2323](#), [CSM 3011](#), CSM 3111, and [CSM 3621](#). This is a part-time, on-site, construction work experience. Supervision by qualified construction manager and intern mentor to prepare the intern for building construction management functions. Instructor prior approval of details for individual work experience required.

CSM 4933. Summer Internship. (0-0) 3 Credit Hours.

Prerequisite: [CSM 4623](#).

CSM 4943. Internship I. (0-0) 3 Credit Hours.

Prerequisite: [CSM 4623](#). This is a part-time, on-site, construction work experience during fall or spring semesters. Supervision by qualified construction manager and intern mentor to prepare the intern for building construction management functions. Instructor prior approval of details for individual work experience required.

CSM 4946. Internship II. (0-0) 6 Credit Hours.

Prerequisite: [CSM 4623](#). This is a full-time, on-site, construction work experience during fall or spring semesters. Supervision by qualified construction manager and intern mentor to prepare the intern for building construction management functions. Instructor prior approval of details for individual work experience required.

CSM 4951. Special Studies in Construction Science and Management. (1-0) 1 Credit Hour.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 3 hours for [CSM 4951](#), 6 hours for [CSM 4953](#), or 12 hours for [CSM 4956](#), regardless of discipline, will apply to a bachelor's degree.

CSM 4953. Special Studies in Construction Science and Management. (0-6) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 3 hours for [CSM 4951](#), 6 hours for [CSM 4953](#), or 12 hours for [CSM 4956](#), regardless of discipline, will apply to a bachelor's degree.

CSM 4956. Special Studies in Construction Science and Management. (0-12) 6 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 3 hours for [CSM 4951](#), 6 hours for [CSM 4953](#), or 12 hours for [CSM 4956](#), regardless of discipline, will apply to a bachelor's degree.

Counseling (COU)**COU 2103. Personal Career Planning and Occupational Exploration. (3-0) 3 Credit Hours.**

Exploration of career/life planning as a process with a focus on issues and obstacles that can impact an individual's career choices. Knowledge of career development theories and decision-making models, current national and state-specific labor market trends, career and occupational resources will be presented. Course will include opportunities for self-assessment and career assessment results, including interest, personality, values clarification inventories and skills identification as they relate to occupational choices. Recommended for undecided/undeclared majors.

COU 3103. Helping Skills. (3-0) 3 Credit Hours.

This course is designed to create an understanding of the helping relationship. Basic communication/counseling techniques (such as active listening, responding, and interviewing) for facilitating helping relationship skills are developed.

Criminal Justice (CRJ)**CRJ 1113. The American Criminal Justice System. (3-0) 3 Credit Hours. (TCCN = CRIJ 1301)**

Philosophy and history of criminal justice in America; examination of criminal justice agencies operating as an interacting system: police and security agencies, courts, and corrections.

CRJ 2153. Nature of Crime and Justice. (3-0) 3 Credit Hours. (TCCN = CRIJ 1307)

A multidisciplinary survey of theories of crime causation and social control. Major topics covered include: theory construction, theory-methods, symmetry, evaluating theory, theoretical integration, and applied criminology.

CRJ 2213. Introduction to Policing. (3-0) 3 Credit Hours. (TCCN = CRIJ 2328)

An introduction to American policing organizations (public and private), history of policing, modern community policing practices, and important trends in law enforcement.

CRJ 2513. Introduction to Corrections. (3-0) 3 Credit Hours. (TCCN = CRIJ 2313)

A study of the history, philosophy, and practice of corrections in America. Theories and practices of incarceration; legal and administrative issues surrounding imprisonment and the death penalty. (Formerly titled "Corrections: Theory and Practice.").

CRJ 2813. Introduction to Courts and the Legal System [TCCN: CRIJ 1306]. (3-0) 3 Credit Hours. (TCCN = CRIJ 1306)

Examines state and federal American court systems, their powers, remedies, limitations, and procedures; and the contributions of courts to governance.

CRJ 3013. Research Design and Analysis in Criminal Justice. (3-0) 3 Credit Hours.

Prerequisite: Completion of 3 hours of college-level mathematics or statistics. Provides students with an opportunity to be knowledgeable consumers of criminal justice research. Provides an overview of principles of scientific inquiry, research designs, and statistical concepts and techniques. Introduction to interpretation of data analysis and preparation of research reports.

CRJ 3213. Managing Criminal Justice Organizations. (3-0) 3 Credit Hours.

Examines bureaucratic, political and other characteristics of justice organizations through a review of theories of public administration and organizational behavior. Applies theories to problems and policies encountered in managing criminal justice agencies.

CRJ 3233. Introduction to Forensic Science. (3-0) 3 Credit Hours.

Enrollment limited to upper-division criminal justice majors. This course will expose students to the nature of physical evidence and its part in our criminal justice system, an introduction to basic scientific and legal principles involved with the utilization of physical evidence, and exposure to specific items of physical evidence to include their components, manufacture, methods of analysis, and value in case work.

CRJ 3533. Probation, Parole and Intermediate Sanctions. (3-0) 3 Credit Hours.

History, philosophy, and practice of community supervision of offenders. Examination of various intermediate punishments including boot camps, intensive probation supervision, electronic monitoring, restitution, and community service.

CRJ 3563. Juvenile Justice. (3-0) 3 Credit Hours.

Examination of the history of adolescence and the development of the juvenile justice system. An in-depth study of police, courts and corrections as applied to youth. Consideration of youth as both offenders and victims. Topics include child abuse, youth gangs, waiver/transfer of youth to the adult court and juvenile offending.

CRJ 3573. Restorative Justice. (3-0) 3 Credit Hours.

Provides students with a detailed study of the principles and practices of restorative justice aimed at creating a just peace within a community, a just public order for the community, vindication for victims and opportunities for accountability and restoration to offenders.

CRJ 3613. Legal Research and Writing. (3-0) 3 Credit Hours.

Detailed study of theory and practice of legal research. Development and refinement of legal writing techniques. (Same as [LGS 3013](#). Credit cannot be earned for both [CRJ 3613](#) and [LGS 3013](#).)

CRJ 3623. Substantive Criminal Law. (3-0) 3 Credit Hours.

Jurisprudential philosophy and case study of common law and statutory crimes. Includes functions and development of substantive criminal law, elements of specific offenses, and defenses.

CRJ 3633. Trial and Evidence. (3-0) 3 Credit Hours.

Issues and problems of proof in civil and criminal trials, admissibility, examining witnesses, constitutional considerations, and exclusionary rules.

CRJ 3713. Ethics in Criminal Justice Practice. (3-0) 3 Credit Hours.

Survey of major schools of ethics theory; sources of ethical and philosophical foundations for criminal justice functions; common quandaries confronting officers, supervisors, and executives in justice organizations. Examines the role of criminal justice within modern civil societies.

CRJ 4123. Investigations. (3-0) 3 Credit Hours.

Examination of the investigative process. Focus on the history, structure, and success rates of investigation units, theories of investigation, and the information that is used to produce case clearances. (Formerly titled "Concepts of Investigations.").

CRJ 4303. Victimology. (3-0) 3 Credit Hours.

This course will familiarize students with victimology concepts, theories, and literature as a field of study within criminology. Topics may include nature and incidence of victimization, victim and offender relationships, victim justice, victim rights and services. Consideration may be given to responses to victims with special needs and crime prevention strategies. (Formerly titled "Victims and the Justice System.").

CRJ 4403. Race, Ethnicity, and Criminal Justice. (3-0) 3 Credit Hours.

This course examines experiences of racial and ethnic groups in the criminal justice system. Topics include: the nature and extent of overrepresentation by racial and ethnic minorities as justice system clients, culture-specific crime and victimization patterns, research evidence and theoretical explanations for these patterns. (Formerly CRJ 4313. Credit cannot be earned for both [CRJ 4403](#) and CRJ 4313.).

CRJ 4413. Contemporary Police Practices. (3-0) 3 Credit Hours.

A survey of leading research-based law enforcement practices for crime prevention and problem solving.

CRJ 4443. Special Topics in Policing and Crime Prevention. (3-0) 3 Credit Hours.

Considers special topics in policing and crime prevention not ordinarily evaluated in depth in other courses, such as comparative policing systems, personnel issues, police civil and criminal liabilities, job satisfaction and stress, diversity issues, ethics, police use of force, and future of policing. May be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CRJ 4453. Drugs and Crime. (3-0) 3 Credit Hours.

An overview of the scope and role of drugs in society and the relationship between illicit substances and crime. Leading theories of drug use and enforcement will be surveyed. Major topics include: the social construction of drug issues, the war on drugs, drug control policy, and the function of drugs in popular cultural mediums. Contemporary topics to be examined include: asset forfeiture, the confidential informant role in drug enforcement, drug ethnography, corrections-based substance abuse treatment, and drug enforcement strategies.

CRJ 4463. Gender and Crime. (3-0) 3 Credit Hours.

This course examines gender differences in criminal offending and victimization. Topics also include traditional and gender-specific theories offered to explain female involvement in crime, the experience of female victims and offenders in the criminal justice system, and women working in the criminal justice system. (Formerly CRJ 4313. Credit cannot be earned for both [CRJ 4463](#) and CRJ 4313.).

CRJ 4523. Special Topics in Forensic Science. (3-0) 3 Credit Hours.

In-depth examination and analysis of issues in forensic science beyond topics covered in [CRJ 3233](#) Introduction to Forensic Science. May be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CRJ 4563. Special Topics in Juvenile Justice. (3-0) 3 Credit Hours.

Considers special and contemporary topics in juvenile justice not ordinarily considered in other courses. May be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CRJ 4613. Supervising the Correctional Client. (3-0) 3 Credit Hours.

Examines the components of effective supervision of correctional clients, including risk and needs assessment. Provides skills for successful face-to-face encounters with correctional clients. Study of service delivery programs tailored to the specific needs of the correctional clients.

CRJ 4633. Constitutional Criminal Procedure. (3-0) 3 Credit Hours.

A procedurally oriented discussion of criminal law, including law of arrest, search and seizure, preliminary examination, bail, the grand jury, indictment and information, arraignment, trial, and review.

CRJ 4653. White Collar Crime. (3-0) 3 Credit Hours.

Study of the theory, nature, scope, and impact of occupational, political, and organizational/corporate crime. Comparison of white collar crime to street crime. Examination of the structural foundations for these types of crimes and current and future systems for control of white collar crimes.

CRJ 4663. Special Topics in Corrections. (3-0) 3 Credit Hours.

Considers special topics in corrections not ordinarily evaluated in depth in other courses, such as the death penalty, special correctional populations, and correctional administration. May be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. (Formerly titled "Special Topics in Corrections and Juvenile Justice.").

CRJ 4833. Violent Crime. (3-0) 3 Credit Hours.

Examination of various forms of violence including homicide, robbery, assault and rape. Discussion of major theories of violent personal behavior and examination of historical and current data on violent crime. Consideration of rates of violent crime, how these rates have changed, and factors that contribute to violent crimes.

CRJ 4843. Study Abroad: International Criminal Justice. (3-0) 3 Credit Hours.

Prerequisite: Permission of instructor. A lecture/seminar course associated with a study abroad program related to the study of cross-cultural differences in crime and applications of criminal justice systems and practice. Involves international travel and field trips. May be repeated for credit when the destination country varies.

CRJ 4853. Sex Crimes and the Law. (3-0) 3 Credit Hours.

Examination of the nature and etiology of the major categories of sexual offending and overview of contemporary justice system responses.

CRJ 4863. Special Topics in Legal Issues and Adjudication. (3-0) 3 Credit Hours.

Considers special topics in courts and adjudication not ordinarily evaluated in depth in other courses, such as judicial administration, specialized courts, judicial intervention and emerging areas of criminal law. May be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CRJ 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

CRJ 4933. Internship in Criminal Justice. (0-0) 3 Credit Hours.

Prerequisites: [CRJ 2153](#), [CRJ 3213](#), and [CRJ 3623](#); consent of academic advisor and Internship Coordinator. Supervised experience in an administrative setting that provides the opportunity to integrate theory and practice in justice-related agencies. May be repeated for credit in a subsequent semester when agency setting varies, but not more than 6 semester credit hours will apply to a bachelor's degree.

CRJ 4953. Special Studies in Criminal Justice. (3-0) 3 Credit Hours.

An organized course offering the opportunity for specialized study not normally or not often available as part of regular course offerings. May be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

CRJ 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for Honors in Criminal Justice during the last two semesters; completion of honors examination and approval by the honors program coordinator. Supervised research and preparation of an honors thesis. May be repeated once with advisor's approval.

Curriculum and Instruction (C&I)**C&I 4203. Models of Teaching in the Content Areas of the Secondary School. (3-0) 3 Credit Hours.**

Prerequisites: Admission to the Teacher Certification Program, [EDP 3203](#), and [EDU 2103](#). Prior or concurrent enrollment in [EDP 4203](#) is required. (Not required for music majors.) Study of curricular, instructional, and management approaches to subject areas taught in the secondary schools. Emphasis on developing instructional and curricular strategies that are effective in teaching content areas. Course will address special population of students, application of instructional media, technology, and classroom management for the content areas. This course may be offered in multiple sections according to subject-matter emphasis. Not offered in the summer. Restricted course; advisor code required for registration. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4646](#) Student Teaching: Grades 8-12. This course must be completed with a grade of "C-" or better for it to serve as a prerequisite for [C&I 4716](#) Student Teaching: All Level EC-12. Field experience required.

C&I 4213. Approaches to Teaching Music. (3-0) 3 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program, [EDP 3203](#), and [EDU 2103](#). Designed to provide preservice music teachers with the necessary knowledge and skills to prepare for successfully planning, implementing, and evaluating music instruction. Field experience required.

C&I 4303. Approaches to Teaching Social Studies Incorporating Language Arts and Fine Arts EC-6. (2-2) 3 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program, [C&I 4353](#), [C&I 4403](#), [ECE 4203](#), and [RDG 3823](#). Concurrent enrollment in [ECE 4143](#) and [RDG 4833](#) is required. May not be taken concurrently with [C&I 4353](#), [C&I 4403](#), [ECE 4203](#) or [RDG 3823](#). A study of methods, materials, and processes for teaching social studies incorporating the language arts and fine arts. Topics include the effective implementation of social studies curriculum, instruction, assessment and evaluation from EC-grade 6. Special emphasis is placed on integrating the various social sciences through thematic teaching. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4616](#) Student Teaching: Early Childhood-Grade 6. Restricted course; advisor code required for registration. Field experience required.

C&I 4353. Approaches to Teaching Science EC–6. (2-2) 3 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program, [ECE 3143](#), [ECE 3313](#), and [ECE 3603](#). Concurrent enrollment in [C&I 4403](#), [ECE 4203](#) and [RDG 3823](#) is required. A study of pedagogical approaches, materials, and resources designed to support children’s meaningful exploration, discovery, and construction of basic concepts and skills in EC–Grade 6. Emphasis in the course will be on the interrelatedness of science in the daily lives of students, unifying concepts and processes common to all sciences, development of effective learning environments for science both inside and outside of the classroom, planning and implementation of inquiry-based science lessons, assessment of student learning, and the use of an integrated approach to teaching. This course must be completed with a grade of "B-" or better for students to enroll in Block C courses. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4616](#) Student Teaching: Early Childhood–Grade 6. Restricted course; advisor code required for registration. Field experience required. (Same as [BBL 4353](#). Credit cannot be earned for both [C&I 4353](#) and [BBL 4353](#).)

C&I 4403. Approaches to Teaching Mathematics EC–6. (2-2) 3 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program, [ECE 3143](#), [ECE 3313](#), and [ECE 3603](#). Concurrent enrollment in [C&I 4353](#), [ECE 4203](#) and [RDG 3823](#) is required. This course involves the study of instructional methods and materials that support diverse children’s meaningful exploration, discovery, and development of basic concepts and skills in mathematics from EC–Grade 6. Emphasizing a constructivist approach to the teaching and learning of mathematics, this course also advances the use of technology to facilitate mathematics understanding. Attention will be given to understanding the interrelatedness of mathematics and other content areas, creating effective learning environments, planning and implementing lesson plans to meet the differentiated needs of a wide variety of learners, and assessing student learning in mathematics. This course must be completed with a grade of "B-" or better for students to enroll in Block C courses. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4616](#) Student Teaching: Early Childhood–Grade 6. Restricted course; advisor code required for registration. Field experience required. (Same as [BBL 4403](#). Credit cannot be earned for both [C&I 4403](#) and [BBL 4403](#).)

C&I 4433. Approaches to Teaching Science–Grades 4–8. (3-0) 3 Credit Hours.

Prerequisites: Must be admitted to the Teacher Certification Program. Concurrent enrollment in [C&I 4443](#), [C&I 4603](#), [C&I 4623](#), and [RDG 3533](#) in semester prior to student teaching. Study of curricula, instructional, and management approaches to teaching science grades 4–8. This course emphasizes a constructivist approach in developing inductive and inquiry teaching methods. Special emphasis is placed on the integration of technology in diverse learning environments. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8.. (Formerly C&I 4413. Credit cannot be earned for more than one of the following: BBL 4433, C&I 4413, or [C&I 4433](#).)

C&I 4443. Approaches to Teaching Mathematics–Grades 4–8. (3-0) 3 Credit Hours.

Prerequisites: Must be admitted to the Teacher Certification Program. Concurrent enrollment in [C&I 4433](#), [C&I 4603](#), [C&I 4623](#) and [RDG 3533](#) in semester prior to student teaching. Study of curricula, instructional, and management approaches to teaching mathematics grades 4–8. This course emphasizes a constructivist approach to the teaching of mathematics, including the use of technology in diverse learning environments. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8. (Formerly C&I 4423. Credit cannot be earned for more than one of the following: BBL 4443, C&I 4423, or [C&I 4443](#).)

C&I 4543. Approaches to Teaching Social Studies–Grades 4–8. (3-0) 3 Credit Hours.

Prerequisites: Must be admitted to the Teacher Certification Program. Concurrent enrollment in [C&I 4553](#), [C&I 4603](#), [C&I 4623](#), , and [RDG 3533](#) in semester prior to student teaching. This course

emphasizes student-centered curricula that meet the needs of diverse students in grades 4–8. Preservice teachers examine models of teaching and learning to develop the knowledge, values, and experiential bases necessary for effective teaching. Students will demonstrate proficiency by creating lesson plans that specifically address the 4th–8th grade Social Studies standards as well as integrate other content, incorporate technology, and address diversity. This course must be completed with a grade of “B–” or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8. (Formerly C&I 4513. Credit cannot be earned for both [C&I 4543](#) and C&I 4513.).

C&I 4553. Approaches to Service-Learning in Social Studies–Grades 4–8. (3-0) 3 Credit Hours.

Prerequisites: Must be admitted to the Teacher Certification Program. Concurrent enrollment in [C&I 4443](#), [C&I 4543](#), [C&I 4603](#), [C&I 4623](#), and [RDG 3533](#) in semester prior to student teaching. This course examines the philosophy, methodology, and components of service-learning. Service-learning is the engagement of students in activities designed to address or meet a community need, where students learn how their service makes a difference to themselves and in the lives of the service recipients, and where learning is intentionally linked to academics. Students will design a service-learning project having social studies as the focus. This course must be completed with a grade of “B–” or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8. (Formerly C&I 4523. Credit cannot be earned for both [C&I 4553](#) and C&I 4523.).

C&I 4603. Mathematics and Science Approaches and Classroom Management Strategies–Grades 4–8. (3-0) 3 Credit Hours.

Prerequisites: Must be admitted to the Teacher Certification Program. Concurrent enrollment in [C&I 4433](#), [C&I 4443](#), [C&I 4623](#), and [RDG 3533](#) in semester prior to student teaching for Grades 4–8 Mathematics/Science Certification Option; Concurrent enrollment in [C&I 4543](#), [C&I 4553](#), [C&I 4623](#), and [RDG 3533](#) for Grades 4–8 Language Arts/Reading/Social Studies Certification Option Concurrent enrollment in [C&I 4433](#), [C&I 4443](#), [C&I 4543](#), [C&I 4623](#) for Grades 4–8 Generalist Certification Option. Preservice teachers will design developmentally appropriate mathematics and science curriculum, instruction, and assessment. Preservice teachers will also identify effective classroom management strategies. This course must be completed with a grade of “B–” or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8. (Credit cannot be earned for both [C&I 4603](#) and BBL 4603.).

C&I 4616. Student Teaching: Early Childhood–Grade 6. (0-0) 6 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program; completion of all requirements for admission to the EC–6 student teaching semester, and completion of 21 semester credit hours of Professional Education: [C&I 4303](#), [C&I 4353](#), [C&I 4403](#), [ECE 4143](#), [ECE 4203](#), [RDG 3823](#), and [RDG 4833](#). A grade of “B–” or better in [C&I 4303](#), [C&I 4353](#), [C&I 4403](#), [RDG 3823](#), and [RDG 4833](#). A grade of “C–” or better is required for [C&I 4616](#) to be recommended for teacher certification. Individuals must apply to the director of student teaching one semester in advance. Bilingual EC–6 prerequisites: Admission to the Teacher Certification Program; completion of all requirements for admission to the EC–6 student teaching semester, completion of 18 semester credit hours of Professional Education: [BBL 4033](#), [BBL 4063](#), [BBL 4073](#), [BBL 4353](#), [BBL 4403](#), and [RDG 3823](#). Full semester of full-day student teaching in a regular or bilingual EC–grade 6 classroom under the supervision of University faculty. Student teacher will be responsible for planning, implementing, and evaluating instruction in collaboration with the cooperating teacher and in conjunction with the UTSA supervisor. Seminars explore issues in teaching practice.

C&I 4623. Applied Teaching: Grades 4-8. (3-0) 3 Credit Hours.

Prerequisites: Must be admitted to the Teacher Certification Program. Concurrent enrollment in [C&I 4433](#), [C&I 4443](#), [C&I 4603](#), and [RDG 3533](#) for Grades 4–8 Mathematics/Science Certification Option; [C&I 4543](#), 4553, 4603, and [RDG 3533](#) for Grades 4–8 Language Arts/Reading/Social Studies

Certification Option; [C&I 4433](#), [C&I 4443](#), [C&I 4543](#), [C&I 4603](#), and [RDG 3533](#) for Grades 4–8 Generalist Certification Option. This field experience course provides preservice teachers the opportunity to work with students in grades 4-8 in school settings under the supervision of a university instructor. This course must be completed with a grade of “B” or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8.

C&I 4626. Student Teaching: Grades 4–8. (0-0) 6 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program; completion of all requirements to the 4–8 student teaching semester, including all relevant practice TExES examinations, and completion of 24 semester credit hours: C&I 4533, [C&I 4603](#), [EDP 3303](#), [ESL 3063](#), [MAT 1214](#), [RDG 3533](#), [RDG 3633](#), [RDG 3803](#). A grade of “C-” or better is required for the student teaching course to be recommended for teacher certification. Individuals must apply to the director of student teaching one semester in advance. 4–8 Generalist students: A grade of “B-” or better is required for [RDG 3533](#). A grade of “B-” or better is required for C&I 4533 and [C&I 4603](#). 4–8 Mathematics/Science students: The following courses completed with a grade of “B-” or better: [C&I 4433](#), [C&I 4443](#), [C&I 4603](#), [RDG 3523](#), and [RDG 3533](#). 4–8 Language Arts, Reading, and Social Studies students: The following courses completed with a grade of “B-” or better: C&I 4533, [C&I 4543](#), [C&I 4553](#), [RDG 3523](#), [RDG 3533](#), [RDG 3633](#). 4–8 ESL students: Completion of a minimum of 15 semester credit hours of the ESL specialization; and completion of C&I 4533, [ESL 4003](#), [EDU 2103](#), [EDP 3303](#), [EDP 4203](#), or [BBL 5053](#). 4–8 Bilingual students: Completion of all requirements for admission to the Bilingual 4–8 student teaching semester, and completion of 15 semester credit hours of Professional Education: [BBL 4033](#), [BBL 4063](#), [BBL 4073](#), [C&I 4433](#) or [C&I 4443](#), and [C&I 4603](#). Full semester of full-day student teaching in a regular upper elementary/middle school classroom under the supervision of University faculty is required. Student teacher will be responsible for planning, implementing, and evaluating instruction in collaboration with the cooperating teacher and in conjunction with the UTSA supervisor. Seminars explore issues in teaching practice.

C&I 4646. Student Teaching: Grades 8–12. (0-0) 6 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program and the student teaching semester, and completion of [C&I 4203](#), [EDP 3203](#), [EDP 4203](#), and [RDG 3773](#). Can lack no more than 6 hours in content subject matter. A grade of “B-” or better in [C&I 4203](#). A grade of “C-” or better is required for the student teaching course to be recommended for teacher certification. Individuals must apply to the director of student teaching one semester in advance. Full semester of full-day student teaching in grades 8–12. Student teacher will be responsible for planning, implementing, and evaluating instruction in collaboration with the cooperating teacher and in conjunction with the UTSA supervisor. Individuals pursuing a Basic Secondary Certificate, Concentration A, will student teach in the single teaching field for which certification is sought. Individuals with two teaching fields will student teach in their major teaching field. Seminars explore issues in teaching practice.

C&I 4716. Student Teaching: All Level EC–12. (0-0) 6 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program; completion of all requirements for the All-Level student teaching semester. All Level Physical Education students: Completion of [KIN 4203](#) and [KIN 4303](#) with a grade of “C-” or better. A grade of “C-” or better is required for the student teaching course to be recommended for teacher certification. All Level Health Education students: Completion of [C&I 4203](#), and [EDP 3303](#) with a grade of “C-” or better. A grade of “C-” or better is required for the student teaching course to be recommended for teacher certification. Special Education students: All courses required for the degree and certification in All Level special education must be completed prior to student teaching. [SPE 3653](#) and [SPE 4653](#) must be completed with a grade of “B-” or better to serve as prerequisites for [C&I 4716](#). A grade of “C-” or better is required for the student teaching course to be recommended for teacher certification. All Level Music students: Completion of [C&I 4203](#), [C&I 4213](#), [EDP 3203](#), and [RDG 3773](#). A grade of “C-” or better in [C&I 4203](#) and [C&I 4213](#). A grade of “C-” or

better is required for the student teaching course to be recommended for teacher certification. All Level Art students: Completion of all requirements for admission to the student teaching semester, and [C&I 4203](#), [EDU 2103](#), [EDP 3203](#) or [EDP 3303](#), [EDP 4203](#), and [RDG 3523](#) or [RDG 3773](#). A grade of “B-” or better in [C&I 4203](#). A grade of “C-” or better is required for the student teaching course to be recommended for teacher certification. Languages other than English students: Completion of all requirements for admission to the student teaching semester, and [C&I 4203](#), [EDP 3203](#), [EDP 4203](#), and [RDG 3773](#). Can lack no more than 6 hours in content subject matter. A grade of “B-” or better in [C&I 4203](#). A grade of “C-” or better is required for the student teaching course to be recommended for teacher certification. All courses for degree/certification plan must be completed prior to student teaching. Full semester of full-day student teaching in an elementary or middle school setting and in a high school setting (grades 8–12) in the certificate area sought. Student teacher will be responsible for planning, implementing, and evaluating instruction in collaboration with the cooperating teacher and in conjunction with the UTSA supervisor. Meets student teaching requirements for the All-Level certificate. Seminars explore issues in teaching practice. A grade of “C-” or better is required for the student teaching course to be recommended for teacher certification. Individuals must apply to the director of student teaching one semester in advance.

C&I 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) from the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

C&I 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

C&I 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

C&I 4923. Internship in Education. (0-0) 3 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program; a bachelor’s degree; completion of all coursework requirements for the certification program; consent of the COEHD Advising and Certification Center; and consent of the director of student teaching. Internships to be jointly supervised by an employing school district and UTSA. Experiences will relate to the intern as the teacher-of-record in the classroom. May be repeated for credit.

C&I 4926. Internship in Education. (0-0) 6 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program; a bachelor’s degree; completion of all coursework requirements for the certification program; consent of the COEHD Advising and Certification Center; and consent of the director of student teaching. Internships to be jointly supervised by an employing school district and UTSA. Experiences will relate to the intern as the teacher-of-record in the classroom. May be repeated for credit.

Dance (DAN)

DAN 1013. Ballet I. (3-0) 3 Credit Hours.

An introductory course in ballet for those who have no previous ballet experience. Students will learn the format of a ballet class and incorporate ballet terminology with the positions and movements of the body.

DAN 1113. Introduction to Modern Dance. (3-0) 3 Credit Hours.

An introduction to modern dance technique. Students will learn basic modern dance techniques by studying various choreographers and movements throughout the history of modern dance. (Formally MUS 2763. Credit cannot be earned for both [DAN 1113](#) and MUS 2763.).

DAN 2003. Introduction to Dance. (3-0) 3 Credit Hours. (TCCN = DANC 2303)

A survey of various dance styles, including ballet, modern, social, and world dance. Designed to provide the opportunity for students to increase their awareness of dance and how dance informs cultural values.

DAN 2013. Ballet II. (3-0) 3 Credit Hours.

An intermediate course designed for students who have had at least one year of ballet training. Further refinement of technique, alignment, strength, balance, and flexibility will be achieved through barre and centre floor work.

DAN 2113. Modern Dance II. (3-0) 3 Credit Hours.

An intermediate course designed for students who have had at least one year of modern dance experience. Students will refine modern dance technique through floor and centre work, and by studying various movements and styles relevant to current modern dance technique.

DAN 2213. Jazz and Musical Theater Dance. (3-0) 3 Credit Hours.

Introduction to jazz dance techniques with emphasis on how dance is applied in musical theatre. Dance styles will include but are not limited to tap, step, and swing. Students will also study the styles of known musical choreographers such as Bob Fosse and Jerome Robbins while developing performance technique and facial expression. (Formerly MUS 2773. Credit cannot be earned for both [DAN 2213](#) and MUS 2773.).

DAN 2783. Topics in Dance. (3-0) 3 Credit Hours.

Studio dance instruction and survey focused on a genre of dance. May be repeated for credit when topics vary. (Formerly MUS 2783.).

DAN 3013. Ballet III. (3-0) 3 Credit Hours.

An advanced course designed for students who have had at least two years of ballet training. Further refinement of technique, alignment, strength, balance, and flexibility will be achieved through barre and centre floor work.

DAN 3103. History of Dance. (3-0) 3 Credit Hours.

An overview of the history of dance from ancient civilizations through the present. The importance and role of dance within major civilizations and historical periods will be presented. Students will study major dance movements, choreographers, and notable dancers throughout history. (Formerly DAN 2103. Credit cannot be earned for both DAN 2103 and [DAN 3103](#).).

DAN 3113. Modern Dance III. (3-0) 3 Credit Hours.

An advanced course designed for students who have had at least two years of modern dance experience. Further refinement of technique, strength, balance, and flexibility will be achieved through floor and centre work.

Early Childhood (ECE)**ECE 3133. Programs and Policies in Early Childhood Education. (3-0) 3 Credit Hours.**

This course is a survey of historical, philosophical, and sociocultural foundations of early childhood programs and policies. Students will examine past and current trends in early childhood education and their impact on early childhood practices and policies. A variety of early childhood programs-national and international, traditional and culturally responsive, federal and state-funded-will be examined. Early childhood policies and their impact on teachers and students will be discussed at length.

ECE 3143. Child Growth and Development. (3-0) 3 Credit Hours.

Concurrent enrollment in [ECE 3313](#) and [ECE 3603](#) is required. Examination of child development theories (conception through elementary years) within different domains that affect children's development and learning including, physical, cognitive, linguistic, social, and emotional. Emphasis on multicultural theoretical perspectives of child development addressing culturally and linguistically diverse populations and children with atypical patterns of development. Field experience required. (Formerly ECE 2103. Credit cannot be earned for both [ECE 3143](#) and ECE 2103.).

ECE 3313. Play, Creativity, and Learning. (3-0) 3 Credit Hours.

Concurrent enrollment in [ECE 3143](#) and [ECE 3603](#) is required. A study of play theories as they relate to creativity, development, and learning. Will provide early childhood and elementary educators with knowledge and skills necessary to promote and guide children's play as a fundamental learning mechanism within culturally, linguistically, and cognitively diverse classrooms. Emphasis on effective strategies, equipment, materials, and activities that support and encourage children's play and creativity at the early childhood and elementary grades. Field experience required.

ECE 3603. Language and Literacy Acquisition. (3-0) 3 Credit Hours.

Concurrent enrollment in [ECE 3143](#) and [ECE 3313](#) is required. Exploration of theories of language and literacy development in young children with implications for acquisition of language and early literacy concepts for all children. Explores ways that educators can enhance language and literacy development and introduces appropriate, research-based approaches to teach early reading and writing in diverse classroom settings. Field experience required. (Formerly titled "Language and Cognitive Development in EC-4.").

ECE 4103. Guidance of Young Children in Groups. (3-0) 3 Credit Hours.

Study of effective strategies for guiding the social-emotional development and learning of children, including those with special needs, in group settings. Emphasis on classroom management and discipline methods; understanding human interactions and the cultural dynamics of groups; and guiding children in task involvement. Examination of strategies for facilitating cooperative activities and use of materials; the design of effective learning environments; conflict resolution techniques, and strategies for enhancing the inclusion of children with special needs in social and learning contexts. Field experience required.

ECE 4123. Family and Community Resources in Early Childhood. (3-0) 3 Credit Hours.

Study of approaches to family, community, societal, cultural, and ideological support systems in children's growth, learning, and development. Emphasis on how these factors are related in the

permissive-restrictive dimensions of child rearing and socialization in broad perspectives across environmental contexts. Examination of resources and systems to address the special needs of families with children who are “at risk” or have disabilities. Review of technological tools used to locate and compile information on community resources. Field experience required.

ECE 4143. Principles and Practices of Differentiated Education EC–6. (3-0) 3 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program, completion of [C&I 4353](#), [C&I 4403](#), [ECE 4203](#), and [RDG 3823](#). Concurrent enrollment in [C&I 4303](#) and [RDG 4833](#) is required. May not be taken concurrently with [C&I 4353](#), [C&I 4403](#), [ECE 4203](#), and [RDG 3823](#). This course addresses the exploration of culturally responsive instruction for diverse groups of learners with a broad range of abilities, interests, and backgrounds. Identification of theoretical perspectives and principles for differentiated education in early childhood and elementary settings will be explored. Emphasis is on the development of effective instructional planning, supportive learning environments, and flexible teaching practices that accommodate individual needs within group settings. Restricted course; advisor code required for registration. Field experience required.

ECE 4153. Culturally Appropriate Assessment for Infants and Young Children. (3-0) 3 Credit Hours.

Selecting and employing culturally fair assessment and evaluation techniques that are reliable, valid, and developmentally appropriate for infants and young children. Includes the examination of strategies such as developmental checklists, parent interviews, play-based, portfolios, and informal observations for conducting assessment. Using assessment outcomes appropriately for instructional and curricular planning.

ECE 4203. Assessment and Evaluation in EC–6. (3-0) 3 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program, completion of [ECE 3143](#), [ECE 3313](#), and [ECE 3603](#). Concurrent enrollment in [C&I 4353](#), [C&I 4403](#), and [RDG 3823](#). Principles of designing and using assessment and evaluation techniques that are culturally fair, intellectually sound, reliable, dependable, and content-valid for children in EC–grade 6. Emphasis on differentiation among criterion-referenced, norm-referenced, individual, informal, authentic, and group assessments. Review of learning theories and strategies for using assessment data to inform instructional planning, and matching assessment techniques to individual children and learning situations. Restricted course; advisor code required for registration. Field experience required.

ECE 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student’s advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

Economics (ECO)

ECO 2003. Economic Principles and Issues. (3-0) 3 Credit Hours. (TCCN = ECON 1301)

A nontechnical introduction to economic concepts such as scarcity, costs and benefits, supply and demand, trade, employment, and growth, with applications to current economic issues and policies. May not be counted toward a major in economics, but may be counted as a free elective for College of Business students. May be applied toward the core curriculum requirement in Social and Behavioral Sciences. (Formerly titled "Introduction to Political Economy.").

ECO 2013. Introductory Macroeconomics. (3-0) 3 Credit Hours. (TCCN = ECON 2301)

Prerequisite: Placement into a college-level mathematics course. Economic analysis at the national level, including the determination of aggregate income and employment, operation of the domestic and international monetary systems, short-term income fluctuations, and long-term economic growth. May be applied toward the core curriculum requirement in Social and Behavioral Sciences.

ECO 2023. Introductory Microeconomics. (3-0) 3 Credit Hours. (TCCN = ECON 2302)

Prerequisite: Placement into a college-level mathematics course. An introduction to the economic theory of decision making by consumers and business firms; an analysis of the domestic and international market systems and their roles in allocating goods and services; and problems of market failure. May be applied toward the core curriculum requirement in Social and Behavioral Sciences.

ECO 3013. Theory of Price. (3-0) 3 Credit Hours.

Prerequisites: Completion of [ECO 2013](#), [ECO 2023](#), and [MAT 1033](#), or their equivalents, with a grade of "C-" or better. Operations of individual markets, market structure, theory of the firm, theory of production, demand theory, general equilibrium, and welfare economics.

ECO 3033. Economics of Managerial Decisions. (3-0) 3 Credit Hours.

Prerequisites: Completion of [ECO 2013](#), [ECO 2023](#), and [MAT 1033](#), or their equivalents, with a grade of "C-" or better. Managerial economic decisions in firms and related entities. Topics include demand analysis, least-cost production, profit strategy, the influence of various market structures on the firm, advanced issues in pricing, and the impact of the international sector.

ECO 3053. Aggregate Economic Analysis. (3-0) 3 Credit Hours.

Prerequisites: Completion of [ECO 2013](#) and [ECO 2023](#), or their equivalents, with a grade of "C-" or better. Analysis of the measurement, determination, and control of aggregate economic activity; the monetary system in relation to income and employment; short-term income fluctuations; and long-term growth.

ECO 3113. Introduction to Mathematical Economics. (3-0) 3 Credit Hours.

Prerequisites: Completion of [ECO 2013](#), [ECO 2023](#), and [MAT 1033](#), or their equivalents, with a grade of "C-" or better, or consent of instructor, Department Chair, and Dean of the College. Systematic approach to economic analysis using basic mathematical tools; treatment of optimizing behavior with applications to consumer and business firms; emphasis on understanding and application of analytical techniques.

ECO 3123. Introduction to Econometrics and Business Forecasting. (3-0) 3 Credit Hours.

Prerequisites: Completion of [IS 3003](#), [MAT 1033](#), and [STA 1053](#) or [MS 1023](#), or their equivalents, with a grade of "C-" or better, or consent of instructor, Department Chair, and Dean of the College. Measurement in economics and business that strives to mix the development of technique with its application to economic analysis. Major topics include the nature of economic and business data, specific

forms of modeling and forecasting, and the use of microcomputer programs in econometric modeling and forecasting.

ECO 3163. Evolution of Economic Thought. (3-0) 3 Credit Hours.

Prerequisite: Completion of one of the following: [ECO 2003](#), [ECO 2013](#), [ECO 2023](#), or the equivalent, with a grade of “C-” or better, or consent of instructor, Department Chair, and Dean of the College. Development of economic theories, models, and schools of thought from the birth of market economies to the present, with an emphasis on the historical, institutional, and social forces shaping economic thinking and public policy.

ECO 3183. Economic History of the United States. (3-0) 3 Credit Hours.

Prerequisite: Completion of one of the following: [ECO 2003](#), [ECO 2013](#), [ECO 2023](#), or the equivalent, with a grade of “C-” or better, or consent of instructor, Department Chair, and Dean of the College. The growth and development of the American economy from colonial times to the present; emphasis on applying a variety of economic concepts to a topical study of the economic forces that shaped the country’s history.

ECO 3193. International Economics. (3-0) 3 Credit Hours.

Prerequisite: Completion of one of the following: [ECO 2003](#), [ECO 2013](#), [ECO 2023](#), or the equivalent, with a grade of “C-” or better, or consent of instructor, Department Chair, and Dean of the College. Principles of international trade; significance of geographic, economic, social, and political influences; current problems in international trade and payments; tariffs and commercial policy; and the role of international organizations. (Formerly titled “The International Economy.”).

ECO 3213. Economics of Antitrust and Regulation. (3-0) 3 Credit Hours.

Prerequisite: Completion of one of the following: [ECO 2003](#), [ECO 2013](#), [ECO 2023](#), or the equivalent, with a grade of “C-” or better, or consent of instructor, Department Chair, and Dean of the College. Theory and practice of governmental regulation, deregulation, and privatization; economic, legal, and ethical concerns regarding private-sector output; and pricing as influenced by public policy and marketing structure.

ECO 3253. Economics of Public and Social Issues. (3-0) 3 Credit Hours.

Prerequisite: Completion of one of the following: [ECO 2003](#), [ECO 2013](#), [ECO 2023](#), or the equivalent, with a grade of “C-” or better, or consent of instructor, Department Chair, and Dean of the College. A seminar on applying economic reasoning and models to a wide variety of public, ethical, and social issues. Uses advanced techniques in political economy.

ECO 3263. Industrial Organization. (3-0) 3 Credit Hours.

Completion of one of the following: [ECO 2003](#), [ECO 2023](#), or the equivalent, with a grade of “C-” or better. Theory and empirical evidence relating to the structure of American industry and its effect on the firm’s conduct and performance, government policy, and regulation.

ECO 3273. Introduction to Public Sector Economics. (3-0) 3 Credit Hours.

Prerequisite: Completion of one of the following: [ECO 2003](#), [ECO 2023](#), or the equivalent, with a grade of “C-” or better. Role of government in the marketplace; cost-benefit analysis; spending and regulatory alternatives; efficiency and equity analysis of taxes; incentives within government; and public policy issues.

ECO 3283. Labor Economics. (3-0) 3 Credit Hours.

Prerequisite: Completion of one of the following: [ECO 2003](#), [ECO 2013](#), [ECO 2023](#), or the equivalent, with a grade of “C-” or better, or consent of instructor, Department Chair, and Dean of the College.

Theories of wages and employment determination; U.S. labor history, comparative labor movements, and contemporary labor problems.

ECO 4273. Environmental and Resource Economics. (3-0) 3 Credit Hours.

Prerequisite: Completion of one of the following: [ECO 2003](#), [ECO 2023](#), or the equivalent, with a grade of “C-” or better. Economic principles applied to natural resource and environmental problems; relationship of market and nonmarket forces to environmental quality and demands for natural resources; and development of tools for policy analysis.

ECO 4303. Economics of Developing Countries. (3-0) 3 Credit Hours.

Prerequisite: Completion of one of the following: [ECO 2003](#), [ECO 2013](#), or the equivalent, with a grade of “C-” or better, or consent of instructor, Department Chair, and Dean of the College. Specific economic problems of developing countries and national groupings; basic approaches to economic development; major proposals for accelerating development; role of planning; and trade, aid, and economic integration. (Formerly titled “Economic Problems of Developing Countries.”).

ECO 4543. Economics of School System Reform. (3) 3 Credit Hours.

Prerequisite: Completion of one of the following: [ECO 2003](#), [ECO 2023](#), or the equivalent, with a grade of “C-” or better, or consent of instructor, Department Chair, and Dean of the College. Nontechnical applications of basic economic principles to issues facing school systems at the primary and secondary levels worldwide; including background on the evolution of current systems, analysis of critical policy issues such as inefficiencies and inequities; examination of scholars’ and policymakers’ proposals for transformative reform; and consideration of opportunities for research on the issues.

ECO 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: A 3.0 COB grade point average, permission in writing (form available) from the instructor, the student’s advisor, the Department Chair, and the Dean of the College of Business. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

ECO 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: A 3.0 COB grade point average, permission in writing (form available) from the instructor, the student’s advisor, the Department Chair, and the Dean of the College of Business. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

ECO 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: A 3.0 COB grade point average, permission in writing (form available) from the instructor, the student’s advisor, the Department Chair, and the Dean of the College of Business. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

ECO 4933. Internship in Economics. (0-0) 3 Credit Hours.

Prerequisites: 12 semester credit hours of upper-division economics, a 2.5 UTSA grade point average, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. This opportunity for work experience in research or applied economics may be undertaken either in private business or a public agency; opportunities are developed in consultation with the faculty advisor and Department Chair

and require approval of both. This course will not count as a required economics course. Internships may be repeated (a total of 6 semester credit hours) provided the internships are with different organizations.

ECO 4951. Special Studies in Economics. (1-0) 1 Credit Hour.

Prerequisite: Consent of instructor, Department Chair, and Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ECO 4953. Special Studies in Economics. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor, Department Chair, and Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ECO 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: Enrollment limited to students applying for Honors in Economics (see page 34). Supervised research and preparation of an honors thesis. May be repeated once for credit with advisor's approval.

Educational Leadership (EDL)

EDL 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

EDL 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

EDL 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

EDL 4953. Special Studies in Educational Leadership. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

EDL 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: Enrollment limited to Honors College students during the last two semesters with sponsorship by a department faculty member. Supervised research and preparation for an honors thesis. May be repeated for credit once with advisor's approval.

Educational Psychology (EDP)**EDP 2113. Development in the Elementary and Middle School Child. (3-0) 3 Credit Hours.**

Prerequisite: Sophomore standing. An introduction to the cognitive, psychosocial, sociocultural, psychoanalytic and moral theories of development from birth through adolescence. Topics also include atypical development, exceptionality, and learning challenges. Emphasis is on applications at the elementary school level.

EDP 3133. Learning and Development in the Early Elementary Context EC–6. (3-0) 3 Credit Hours.

Prerequisite: Sophomore standing. An introduction to major theories of learning and development, with an emphasis on applications at the elementary level. Topics include individual and group differences, motivation, and elementary-level classroom management.

EDP 3203. Learning and Development in the Secondary School Adolescent. (3-0) 3 Credit Hours.

Prerequisites: Sophomore standing and satisfaction of the Texas Success Initiative (TSI) requirement. An introduction to major theories of learning and development, with an emphasis on applications at the secondary level. Topics include individual and group differences, motivation, and secondary-level classroom management.

EDP 3303. Learning and Development in the Middle School Context (Grades 4–8). (3-0) 3 Credit Hours.

Prerequisites: Sophomore standing and satisfaction of the Texas Success Initiative (TSI) requirement. An introduction to the major theories of learning and development, with an emphasis on applications to the middle school level (grades 4–8). Topics include child and adolescent development, individual and group-level differences, student motivation, and classroom management.

EDP 4203. Assessment and Evaluation. (3-0) 3 Credit Hours.

Prerequisites: Completion of all requirements for admission to the Teacher Certification Program, including but not limited to satisfaction of the Texas Success Initiative (TSI) requirement, and completion of [EDU 2103](#) and [EDP 3203](#) or [EDP 3303](#). This course will discuss the principles and techniques necessary to develop sound assessment strategies. The primary focus of the course will be on the creation of test items, administration of classroom evaluation procedures, and the roles of testing, measurement, and evaluation in daily classroom practice. The use and interpretation of standardized tests, alternative assessments, and norm- and criterion-referenced assessments will also be discussed as well as theoretical and ethical issues related to testing and evaluation. Restricted course; advisor code required for registration.

EDP 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

EDP 4953. Special Studies in Educational Psychology. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

EDP 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: Enrollment limited to Honors College students during the last two semesters with sponsorship by a department faculty member. Supervised research and preparation for an honors thesis. May be repeated once with advisor's approval.

Education (EDU)**EDU 2103. Social Foundations for Education in a Diverse U.S. Society. (3-0) 3 Credit Hours.**

Prerequisites: Sophomore standing and passing scores on all three sections of a Texas Success Initiative (TSI) approved assessment instrument. Students will explore the relationship between school and a diverse U.S. society. They will explore the need for an educational philosophy suited for educating a diverse population; the role of ethnicity, gender, and class in the historical construction of schooling as it is today, the interactive effects of culture and economics upon and within schools, and the politics of education. Students will explore the interconnections of the above issues.

EDU 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

EDU 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

EDU 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

EDU 4953. Special Studies in Education. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

Electrical Engineering (EE)

EE 1322. Introduction to Electrical and Computer Engineering. (2-1) 2 Credit Hours.

Prerequisite: [MAT 1073](#). An introduction to the electrical and computer engineering profession with emphasis on technical communication, team-based engineering design, professional and ethical responsibilities, contemporary issues, and software tools. One hour of recitation session per week. (Formerly EE 1323. Credit cannot be earned for both EE 1323 and [EE 1322](#).)

EE 2213. Electric Circuits and Electronics. (3-0) 3 Credit Hours. (TCCN = ENGR 2305)

Prerequisite: [PHY 1963](#). Corequisite: [EGR 2323](#). Principles of electrical circuits and systems. Basic circuit elements (resistance, inductance, mutual inductance, capacitance, independent and dependent controlled voltage, and current sources). Topology of electrical networks; Kirchhoff's laws; node and mesh analysis; DC circuit analysis; operational amplifiers; transient and sinusoidal steady-state analysis; AC circuit analysis; first- and second-order circuits; application of Laplace transforms to the analysis of RLC circuits. (Formerly EE 2214. Credit cannot be earned for both [EE 2213](#) and EE 2214.)

EE 2423. Network Theory. (3-1) 3 Credit Hours.

Prerequisites: [EE 1322](#) and completion of or concurrent enrollment in [EGR 2323](#) and [PHY 1963](#). Basic network principles; simple resistive circuits; steady state responses to DC and AC signals; node-voltage and mesh-current analysis; source transformations and superposition; Thevenin and Norton equivalents; natural and step transient responses of first and second order circuits; Laplace transform in circuit analysis; and use of SPICE to solve network problems. One hour of problem solving recitation per week.

EE 2511. Logic Design Laboratory. (1-2) 1 Credit Hour.

Prerequisite: Completion of or concurrent enrollment in [EE 2513](#). Introduction to digital design techniques. Implementation of basic digital logic and hardware; combinational circuits, flip-flops, registers, sequential circuits and state-machines.

EE 2513. Logic Design. (3-1) 3 Credit Hours.

Prerequisites: [EE 1322](#) and completion of or concurrent enrollment in [CS 2073](#). Number systems, Boolean algebra, combinational and sequential circuit design; and minimization and implementation. One hour of problem solving recitation per week.

EE 3113. Electrical and Computer Engineering Laboratory I. (1-6) 3 Credit Hours.

Prerequisites: [EE 2423](#), [EE 2513](#), and completion of or concurrent enrollment in [EE 3313](#). Introduction to basic measurement equipment and techniques; use of circuit simulation tools; comparison to empirical performance of simple circuits using discrete devices and circuits; simple subsystem circuit design; introduction to automated data acquisition; and laboratory technical communication.

EE 3213. Electromagnetic Engineering. (3-1) 3 Credit Hours.

Prerequisites: [EGR 3323](#) and [PHY 1963](#). Review of vector calculus, electrostatics, magnetostatics, electrodynamics, electromagnetic waves, dielectrics, boundary conditions, and RLC circuits. Selected other topics include wave guides, anisotropic crystal optics, transmission lines, fiber optics, reflection and refraction, and special relativity. One hour of problem solving recitation per week.

EE 3223. C++ and Data Structures. (3-1) 3 Credit Hours.

Prerequisite: [EE 3463](#). Review of C++ non-OOP concepts, object-oriented programming, inheritance, virtual functions and polymorphism, and operator overloading. In-depth study of data structures including stacks, queues, linked lists, trees, binary trees and its application to binary search trees and sorting. One hour of problem solving recitation per week.

EE 3313. Electronic Circuits I. (3-1) 3 Credit Hours.

Prerequisites: [EE 2423](#) and [PHY 1963](#). Electrical properties of semiconductors; P-N junctions; diode circuits; BJTs and FETs; application to digital and analog circuits; and use of SPICE to solve simple circuits. One hour of problem solving recitation per week.

EE 3323. Electronic Devices. (3-0) 3 Credit Hours.

Prerequisites: [CHE 1103](#) and [EE 3313](#). Introduction to semiconductor materials, fundamentals of quantum mechanics and carrier phenomena, operating principles of P-N junction diodes, metal-semiconductor contacts (Schottky diodes), bipolar-junction transistors, field-effect transistors (MOSFETS, complementary MOSFETS or CMOS, JFETS and MESFET), photodetectors and optoelectronic devices.

EE 3413. Analysis and Design of Control Systems. (3-1) 3 Credit Hours.

Prerequisites: [EGR 2213](#) and [EGR 2323](#) for electrical engineering majors ([EGR 2513](#) and [EE 2213](#) for mechanical engineering majors). Modeling, analysis, and design of linear automatic control systems; time and frequency domain techniques; stability analysis, state variable techniques, and other topics. Control systems analysis and design software will be used. One hour of problem solving recitation per week.

EE 3423. Signals and Systems I. (3-1) 3 Credit Hours.

Prerequisites: [EE 2423](#) and [EGR 2323](#). Frequency response and complex variables, Fourier series, Fourier transforms, Dirac Delta function, convolution, mathematical modeling of systems. MATLAB exercises. One hour of problem solving recitation per week.

EE 3463. Microcomputer Systems I. (3-1) 3 Credit Hours.

Prerequisites: [EE 2513](#) and [CS 2073](#). Introduction to assembly- and C-language programming; architecture, peripherals, operating system interfacing principles, and development tools; and software documentation techniques. One hour of recitation per week.

EE 3513. Electromechanical Systems. (3-0) 3 Credit Hours.

Prerequisite: [EGR 2213](#). Principles of electromechanical energy conversion; polyphase circuits; dynamic analysis and simulation of energy-transfer devices; and power devices.

EE 3523. Signals and Systems II. (3-0) 3 Credit Hours.

Prerequisite: [EE 3423](#). Time and frequency characteristics of signals and systems, sampling, discrete-time convolution, and applications of discrete-time Fourier and Z-transforms to systems. MATLAB exercises.

EE 3533. Random Signals and Noise. (3-0) 3 Credit Hours.

Prerequisites: [EE 3423](#) and [EGR 2323](#). Probability and random variables, conditional distribution, conditional density function; operations on random variables; Central Limit Theorem; random process; spectral analysis of random processes; and linear systems with random inputs.

EE 3563. Digital Systems Design. (2-3) 3 Credit Hours.

Prerequisites: [EE 2511](#) and [EE 2513](#). Introduction to switching theory; design of complex combinational and sequential circuits; analysis of hazards and fault detection, location, and tolerance; and design and verification of complex circuitry using schematic entry, functional modeling, and mixed-mode simulation.

EE 4113. Electrical and Computer Engineering Laboratory II. (1-6) 3 Credit Hours.

Prerequisites: [EE 3113](#), and completion of or concurrent enrollment in either [EE 3563](#) for computer engineering majors or [EE 4313](#) for electrical engineering majors. Complex electronic circuit subsystem

design, improving measurement system performance, impact of circuit parasitics, signal integrity, electromagnetic interference, thermal analysis, printed circuit board layout, and technical communication.

EE 4123. Power Engineering Laboratory. (1-4) 3 Credit Hours.

Prerequisites: [EE 3113](#), completion of or concurrent enrollment in [EE 4753](#) and [EE 4763](#). Power Electronics Laboratory to analyze and test DC-DC converters, voltage mode and current mode control. Power Systems Simulation Laboratory to analyze and design power systems that include power flow, transmission line, transient and fault analysis.

EE 4243. Computer Organization and Architecture. (2-3) 3 Credit Hours.

Prerequisite: [EE 3463](#). Design of advanced state machines and computer systems, and processor design using computer-assisted design and analysis tools.

EE 4313. Electronic Circuits II. (3-0) 3 Credit Hours.

Prerequisite: [EE 3313](#). Multiple transistor circuits; feedback and frequency response analysis; operational amplifier analysis and design; power semiconductors; and other topics. Design of analog and digital circuits; and use of SPICE to analyze complex circuits.

EE 4323. Dielectric and Optoelectronic Engineering Laboratory. (2-4) 3 Credit Hours.

Prerequisites: [EE 3213](#), completion of or concurrent enrollment in [EE 3323](#) for Topic 1 and completion of or concurrent enrollment in EE 4353 for Topic 2. Principles of dielectric devices and optical components and systems. May be repeated for credit when topics vary. Topic 1: Capacitance, resistance, and inductance device evaluations, impedance frequency and temperature spectrum analysis, characterization of tunable dielectric microwave materials, electromechanical coupling of piezoelectric devices. Topic 2: Lasers, photo-detectors, phase locked interferometer, electro-optical and nonlinear optic devices, optical image processing, Fourier optics, holographic recording, and photorefractive storage.

EE 4443. Discrete-Time and Computer-Controlled Systems. (3-0) 3 Credit Hours.

Prerequisites: [EE 3413](#) and completion of or concurrent enrollment in [EE 3523](#). Sampled-data techniques applied to the analysis and design of digital control systems; stability criteria; compensation; and other topics.

EE 4453. Selected Topics in Digital Signal Processing. (3-0) 3 Credit Hours.

Prerequisite: [EE 4643](#). Theoretical basis for signal processing and applications. Topics include modeling of biological systems; signal processing in computer security; data and image encryption; digital image compression; pattern recognition; biomedical signal and image processing; signal processing for system biology; genomic signal processing and statistics; speech and audio signal processing; multimedia signal processing. May be repeated for credit when topics vary. (Formerly titled "Principles of Bioengineering and Bioinstrumentation.").

EE 4513. Introduction to VLSI Design. (2-3) 3 Credit Hours.

Prerequisites: [EE 3323](#) and [EE 3463](#). Design of integrated digital systems; logic simulation, standard cell libraries, circuit simulation, and other computer-aided design tools; and integrated circuit processing and device modeling.

EE 4523. Introduction to Micro and Nanotechnology. (2-3) 3 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in [EE 3323](#). Survey of microfabrication techniques, scaling laws, mechanical, optical and thermal transducers, microfluidic applications, nanostructures. (Credit cannot be earned for both [EE 4523](#) and [PHY 4653](#).)

EE 4533. Principles of Microfabrication. (1-6) 3 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in [EE 3323](#). Photolithography, thin film deposition, doping, wet patterning, plasma etching, thin film characterization. Students will fabricate simple microstructures such as coplanar waveguides, microfluidic devices and nanopowder silica films.

EE 4543. Advanced Topics in Micro and Nanotechnology. (3-0) 3 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in [EE 3323](#). Topics to be selected from advanced sensors, actuators, engineered materials, device physics, microwave applications of MEMS structures, photonics, microelectronic devices, analog IC design, mixed-signal circuits and systems. May be repeated for credit when topics vary.

EE 4553. VLSI Testing. (2-3) 3 Credit Hours.

Prerequisite: [EE 3463](#). Faults modeling and simulation; stuck at faults, bridging faults, and functional testing; self-testing concepts; standard and test patterns; device and system testing; and design for testability.

EE 4563. FPGA-Based System Design. (3-0) 3 Credit Hours.

Prerequisites: [EE 3463](#) and [EE 3563](#). FPGAs replace digital circuits in most applications. This course addresses underlying theory and applications: Introduction to Field Programmable Gate Arrays; General-Purpose FPGA Architecture; Reconfigurable Computing Devices and Systems; Hardware Description Language for FPGAs; synthesizing FPGA interconnections; Global Timing Constraints; evaluating and optimizing problems for FPGA implementations; Arithmetic, Precision Analysis & Floating Point; FPGA vs. CPU partitioning.

EE 4583. Microcomputer Systems II. (2-3) 3 Credit Hours.

Prerequisite: [EE 3463](#). Advanced microprocessor-based system design; high-speed bus interfacing, coprocessors, and other specialized input/output devices; and high-level languages and software performance analysis.

EE 4593. Embedded System Design. (3-0) 3 Credit Hours.

Prerequisites: [EE 3463](#) and [EE 3563](#). The goal of this course is to develop a comprehensive understanding of the technologies behind embedded systems, particularly, those using computing elements: Embedded processor selection, hardware/firmware partitioning, circuit layout, circuit debugging, development tools, firmware architecture, firmware design, and firmware debugging. C programming of embedded microcontrollers, the function and use of common peripherals, and the programming and simulation (using VHDL/Verilog) of custom single-purpose processors.

EE 4613. Communication Systems. (3-0) 3 Credit Hours.

Prerequisites: [EE 3423](#) and [EE 3533](#) or [STA 3533](#). Basic theory and principles of modern analog and digital communication systems; signal and noise analysis, signal-to-noise ratio, and circuit implementations.

EE 4623. Digital Filtering. (3-0) 3 Credit Hours.

Prerequisite: [EE 3423](#) and completion of or concurrent enrollment in [EE 3463](#). Design and implementation of FIR and IIR filters, hardware, and software; and topics from adaptive filtering, neural networks. MATLAB exercises.

EE 4643. Digital Signal Processing. (3-0) 3 Credit Hours.

Prerequisites: Completion of or concurrent enrollment in [EE 3523](#), and [EE 3533](#) or [STA 3533](#). Sampling and reconstruction; quantization, A/D and D/A converters; discrete time representation and analysis of filters; DTFT computation, FFT algorithms, discrete cosine transform, fast convolution; and algorithms, methods, and applications of signal processing.

EE 4653. Digital Communications. (3-0) 3 Credit Hours.

Prerequisites: [EE 3423](#) and [STA 3533](#) or [EE 3533](#). Basic digital modulation schemes: ASK, BPSK, QPSK, FSK, and QAM modulation, binary signal detection, matched filtering, bit error rate, intersymbol interference, equalization, signal-space methods, optimum receiver, fundamentals of information theory and block coding, convolutional coding and spread spectrum.

EE 4663. Digital Image Processing. (3-0) 3 Credit Hours.

Prerequisite: [EE 3523](#). Fundamentals and some practical applications of digital image processing. Topics include image formation, sampling, and quantization; image motion and detector noise; feature extraction; image enhancement and restoration by spatial filtering and maximum entropy; image coding for bandwidth compression by DPCM; transform coding, subband coding; and use of MATLAB for image processing.

EE 4673. Data Communication and Networks. (2-3) 3 Credit Hours.

Prerequisites: [EE 3223](#) and completion of or concurrent enrollment in [EE 4613](#). Introduction to data communication networks, electrical interface, data transmission, WAN and LAN network overview, transmission devices, transmission errors and methods of correction, and protocols.

EE 4683. Wireless Communications. (3-0) 3 Credit Hours.

Prerequisite: [EE 3423](#), [EE 3533](#) or [STA 3533](#). Common wireless systems and standards. Cellular radio concepts: frequency reuse and handoff strategies. Large-scale path loss models. Small-scale fading and multipath. Modulation techniques for mobile radio: performances in fading and multipath channels. Multiple access techniques. RF hardware realization issues.

EE 4693. Fiber Optic Communications. (3-0) 3 Credit Hours.

Prerequisites: [EE 3313](#), [EE 3423](#), and completion of or concurrent enrollment in [EE 3213](#). Light propagation using ray and electromagnetic mode theories, dielectric slab waveguides, optical fibers, attenuation and dispersion in optical fibers, optical fiber transmitters and receivers, electro-optical devices, and optical fiber measurement techniques.

EE 4723. Intelligent Robotics. (3-1) 3 Credit Hours.

Prerequisite: [EE 3413](#) or [ME 3543](#). Coordinate transformations, forward and inverse kinematics, Jacobian and static forces, path planning techniques, dynamics, design, analysis and control of robots, sensing and intelligence. (Formerly EGR 4723 and ME 4713. Credit cannot be earned for both [EE 4723](#) and either EGR 4723 or ME 4713.).

EE 4733. Intelligent Control. (3-0) 3 Credit Hours.

Prerequisite: [EE 3413](#). Neural networks and fuzzy logic basics, approximation properties, conventional adaptive controller design and analysis, intelligent controller design and analysis techniques for nonlinear systems, and closed-loop stability.

EE 4743. Embedded Control Systems. (2-3) 3 Credit Hours.

Prerequisites: [EE 3413](#) and [EE 3463](#). Embedded system principles and control system concepts, programming, tools and their applications, embedded controls design, and analysis of industrial processes.

EE 4753. Analysis of Power Systems. (3-0) 3 Credit Hours.

Prerequisite: [EE 3413](#). Electric energy and environment, principles of power generation, transmission and distribution, power flow analysis, faults and transient stability analysis, power systems control and renewable energy systems.

EE 4763. Power Electronics. (3-0) 3 Credit Hours.

Prerequisites: [EE 3113](#) and [EE 3413](#). Switch-mode power conversion, analysis and control of DC-DC converters, DC-AC inverters for motor drives and to interface renewable energy sources with utility, AC-DC rectifiers, applications in sustainable energy systems, introduction to power semiconductor devices and magnetic components.

EE 4773. Electric Drives. (3-0) 3 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in [EE 3513](#). Analysis of electric machines in combination with power electronics; torque, speed and position control; space vectors, motor drive inverter; vector control; wind energy conversion.

EE 4811. Electrical and Computer Engineering Design I. (1-1) 1 Credit Hour.

Prerequisites: [EE 4313](#) for Electrical Engineering majors or [EE 3563](#) for Computer Engineering majors, and completion of or concurrent enrollment in [EE 4113](#). Business planning and project management in engineering design; discussion of ethical and social issues in design; and selection of a design project, development of a detailed design proposal, and approval of a design project.

EE 4813. Electrical and Computer Engineering Design II. (2-3) 3 Credit Hours.

Prerequisites: [EE 4113](#) and [EE 4811](#). Complex system design; advanced ATE; project management, proposals, status reporting, formal oral and written technical reports, and business plans; open-ended design project considering safety, reliability, environmental, economic, and other constraints; and ethical and social impacts.

EE 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

EE 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

EE 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

EE 4953. Special Studies in Electrical and Computer Engineering. (3-0) 3 Credit Hours.

Prerequisites vary with the topic (refer to the course syllabus on Bluebook or contact the instructor). An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

Engineering (EGR)

EGR 1303. Exploring the Engineering Profession. (3-1) 3 Credit Hours.

Engineering as a career; contemporary issues; academic and career resources; written and oral communication; effective team membership; professional and ethical responsibilities; professional registration; engineering problem formulation and solution; engineering design. One hour of recitation per week.

EGR 1313. Calculus with Engineering Applications. (3-2) 3 Credit Hours.

Prerequisite: Completion of precalculus or satisfactory performance on a placement examination. The first of a two-part integrated physics and calculus course. Calculus topics include an introduction to the concepts of limit, continuity, and derivative, mean value theorem, and applications of derivatives such as velocity and acceleration; introduction to the Riemann integral and the fundamental theorem of calculus. Physics topics include an introduction to vectors, force and Newton's Laws of Physics. Classes meet weekly for three hours of lecture and two hours of problem solving tutorials.

EGR 1323. Physics with Engineering Applications. (3-2) 3 Credit Hours.

Prerequisite: [EGR 1313](#). The second of a two-part integrated physics and calculus course. Calculus topics include applications of derivatives to maximization and curve sketching, evaluation of definite and indefinite integrals and an introduction to differential equations. Physics topics include applications of Newton's Laws and the concepts of momentum, energy, work and power. Classes meet weekly for three hours of lecture and two hours of problem solving tutorials.

EGR 1343. The Impact of Modern Technologies on Society. (3-0) 3 Credit Hours.

Prerequisites: Basic background in high school mathematics and physical sciences. This course is designed to inform non-engineering students of the social impact of modern technologies. The course explores the issues faced by society as technology becomes an integral part of human life. The course prepares students to think critically, practically, creatively and responsively about technological and sociological challenges, and encourages them to examine solutions of their own. The course also explores and discusses the socio-technological interplay. May be applied toward the core curriculum requirement in Social and Behavioral Sciences.

EGR 1403. Technical Communication. (3-0) 3 Credit Hours.

Prerequisite: [WRC 1013](#). Oral, written, graphical and visual communication; technical instructions; design project with presentation; team-work; and personal responsibility. May be applied toward the Core Curriculum requirement in the Component Area Option.

EGR 2103. Statics. (3-0) 3 Credit Hours. (TCCN = ENGR 2301)

Prerequisites: [MAT 1224](#) and [PHY 1943](#). Vector analysis of force systems applied to particles and rigid bodies and free body diagrams. Engineering applications of equilibrium; of moments, internal forces, and friction; and of centroids, centers of gravity, and moments of inertia.

EGR 2213. Statics and Dynamics. (3-0) 3 Credit Hours. (TCCN = ENGR 2303)

Prerequisites: [MAT 1224](#) and [PHY 1943](#). Force, moment, equilibrium, centroids and moments of inertia, kinematics, and kinetics of particles. Not open to students in Civil or Mechanical Engineering. May not be substituted for [EGR 2103](#).

EGR 2323. Applied Engineering Analysis I. (3-1) 3 Credit Hours. (TCCN = MATH 2321)

Prerequisite: [MAT 1224](#). Application of mathematical principles to the analysis of engineering problems using linear algebra and ordinary differential equations (ODE's). Use of software tools. Topics include:

mathematical modeling of engineering problems; separable ODE's; first-, second-, and higher-order linear constant coefficient ODE's; characteristic equation of an ODE; systems of coupled first-order ODE's; matrix addition and multiplication; solution of a linear system of equations via Gauss elimination and Cramer's rule; rank, determinant, and inverse of a matrix; eigenvalues and eigenvectors; solution of an ODE via Laplace transform; numerical solution of ODE's. One hour of problem solving recitation.

EGR 2513. Dynamics. (3-0) 3 Credit Hours. (TCCN = ENGR 2302)

Prerequisite: [EGR 2103](#). Kinetics of particles and plane rigid bodies, work and energy, impulse and momentum, equations of motion and engineering applications.

EGR 3301. Engineering Co-op. (0-0) 1 Credit Hour.

Prerequisite: Acceptance into the Cooperative Education in Engineering Program. Designed for students participating in Cooperative Education in Engineering Program. Problems related to students' work assignments during their work for co-op employers. May be repeated for credit, but no more than 3 semester credit hours of Engineering Co-op may apply to a bachelor's degree. To apply 3 semester credit hours of Engineering Co-op as a technical elective toward a degree in engineering, students must petition and get approval of a faculty advisor prior to co-op activities. The grade report for the course is either "CR" (satisfactory performance) or "NC" (unsatisfactory performance).

EGR 3323. Applied Engineering Analysis II. (3-1) 3 Credit Hours.

Prerequisite: [EGR 2323](#). Application of mathematical principles to the analysis of engineering problems using vector differential and integral calculus, partial differential equations, and Fourier series; complex variables; discrete mathematics; and use of software tools. One hour of problem solving recitation.

EGR 3713. Engineering Economic Analysis. (3-0) 3 Credit Hours.

Prerequisites: [ECO 2013](#) or [ECO 2023](#), and [MAT 1224](#). Time-value of money concepts; techniques for economic evaluation of engineering alternatives; depreciation and taxes; inflation and market rates; contracting practices; funding public projects and related public policy issues.

EGR 4953. Special Studies in Engineering. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

EGR 4993. Honors Research. (0-0) 3 Credit Hours.

Prerequisite: Enrollment limited to candidates for college honors during their last two semesters; approval by the College Honors Committee. Supervised research and preparation of an honors thesis. May be repeated once with approval.

English as a Second Language (ESL)

ESL 3003. Language and Schooling. (3-0) 3 Credit Hours.

Study of the principles of linguistics as they relate to language in education, particularly for bilingual and second language learners. Attention is given to linguistics approaches to development of oral language and literacy skills.

ESL 3023. Second Language Teaching and Learning in EC–6. (3-0) 3 Credit Hours.

Application of principles of second language acquisition to promote content-area learning and academic-language development for English language learning (ELL) students in Pre-K to sixth-grade classrooms. Particular attention on methods and strategies for planning, implementing and assessing effective instruction for ELL students. Field experience required.

ESL 3033. Foundations of English as a Second Language. (3-0) 3 Credit Hours.

Historical, theoretical, and policy foundations of ESL education. Application of research findings to planning and implementing effective programs for ESL students. Use and interpretation of formal and informal assessments to plan and adapt instruction for ESL students. Strategies for creating effective multicultural/multilingual learning environments. Advocating for ESL students and facilitating family and community involvement.

ESL 3053. Literacy in a Second Language. (3-0) 3 Credit Hours.

Application of theories of second language acquisition to promote ESL students' literacy development. Methods, strategies, and techniques for designing, implementing, and assessing effective reading and writing lessons for ESL students. Design and evaluation of appropriate materials for literacy instruction. Field experience required.

ESL 3063. Second Language Acquisition in Early Adolescence. (3-0) 3 Credit Hours.

Application of principles of second language acquisition to promote content-area learning and academic-language development for English language learning (ELL) students in grades 4 and higher. Particular attention is placed on methods and strategies for planning, implementing and assessing effective instruction for adolescent ELL students. Field experience required.

ESL 4003. Approaches to Second Language Teaching. (3-0) 3 Credit Hours.

Prerequisite: Completion of all requirements for admission to the Teacher Certification Program. Study of methods, instructional strategies and materials for teaching ESL students with beginning to advanced levels of proficiency. Focus on planning, implementing, and assessing developmentally appropriate ESL instruction in learner-centered classrooms. Particular focus on strategies and techniques for promoting students' communicative competence in English. Up to 20 hours of directed field experience are required.

ESL 4013. Principles of First and Second Language Acquisition. (3-0) 3 Credit Hours.

Study of first and second language acquisition. Application of this knowledge to promote students' language development in English and to promote teachers' abilities to assess language proficiencies.

ESL 4953. Special Studies in English as a Second Language. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. To apply credit earned in [ESL 4953](#) toward a minor, consent of the academic advisor in the COEHD Advising and Certification Center is required.

English (ENG)

ENG 1113. Introduction to Creative Literary Arts. (3-0) 3 Credit Hours.

Introduction to Creative Literary Arts exploration in the purposes and processes of the literary arts. This course provides opportunities for students to engage in creative literary practices through the study of literary genres such as poetry and fiction. May be applied toward the Core Curriculum requirement in Creative Arts.

ENG 2013. Introduction to Literature. (3-0) 3 Credit Hours. (TCCN = ENGL 2341)

Prerequisite: Completion of the Core Curriculum requirement in Communication. Introductory study of great works of literature with an emphasis on novels, plays, and poetry by British and American authors. Designed for nonmajors. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

ENG 2213. Literary Criticism and Analysis. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Communication. A study of poetry, fiction, and drama, with close attention to literary terms, literary criticism, and the characteristics of each genre. This course includes intensive reading and extensive writing requirements and is designed to prepare students who intend to take advanced courses in literature and other students who have a commitment to the rigorous study of literature. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

ENG 2223. British Literature I. (3-0) 3 Credit Hours. (TCCN = ENGL 2322)

Prerequisite: Completion of the Core Curriculum requirement in Communication. Study of representative works of British literature from the medieval period to 1700. Required of students majoring in English.

ENG 2233. British Literature II. (3-0) 3 Credit Hours. (TCCN = ENGL 2323)

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Study of representative works of British literature from 1700 to the present. Required of students majoring in English.

ENG 2263. American Literature I. (3-0) 3 Credit Hours. (TCCN = ENGL 2327)

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Study of representative works of American literature from the pre-Colonial period to 1865. Required of students majoring in English.

ENG 2293. American Literature II. (3-0) 3 Credit Hours. (TCCN = ENGL 2328)

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Study of representative works of American literature from 1865 to the present. Required of students majoring in English.

ENG 2323. Creative Writing: Fiction. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Offers the opportunity for intensive practice and development of techniques in the writing of fiction.

ENG 2333. Creative Writing: Poetry. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Offers the opportunity for intensive practice and development of techniques in the writing of poetry.

ENG 2343. Creative Writing: Nonfiction. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Offers the opportunity for intensive practice and development of techniques in the writing of nonfiction genres such as memoir, autobiography, and informal essays.

ENG 2383. Multiethnic Literatures of the United States. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Communication. A survey of the literature of various minority groups such as Native American, Asian American, African American, and Latina/o. Designed for nonmajors. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

ENG 2413. Technical Writing. (3-0) 3 Credit Hours. (TCCN = ENGL 2311)

Prerequisite: Completion of the Core Curriculum requirement in Communication. Techniques of expository writing, particularly adapted to students in technological and scientific subjects. May be applied toward the Core Curriculum requirement in the Component Area Option.

ENG 2423. Literature of Texas and the Southwest. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Communication. Study of the literature of Texas and the Southwest, including an examination of the region's multicultural heritage. Designed for nonmajors. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

ENG 2433. Editing. (3-0) 3 Credit Hours.

Prerequisite: [ENG 2413](#). Principles and applications of production editing and technical editing, including evaluation and revision of style, tone, and organization of documents. Practice in the use of editing symbols and copy marking. (Same as [COM 2433](#). Credit cannot be earned for both [ENG 2433](#) and [COM 2433](#).)

ENG 2443. Introduction to Rhetoric. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. Introduces students to key concepts and frameworks useful for analysis of texts, events, communication, and contexts by focusing on the traditional rhetorical canons of invention, arrangement, style, delivery, and memory.

ENG 3033. American Literature, 1945 to Present. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of the literature written in the United States since 1945.

ENG 3063. American Literature, 1870–1945. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of literature written in the United States in the late 19th and early 20th centuries.

ENG 3073. Young Adult Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Literary analysis of the kinds of reading available for adolescents: poetry, drama, biography, science fiction, mystery, and fantasy. Both classics and current trends will be considered. Emphasis on the novel. (Formerly ENG 2373. Credit cannot be earned for both [ENG 3073](#) and ENG 2373.)

ENG 3113. Studies in Individual Authors. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Study of the works of an individual British or American author or of several authors examined in relation to one another. May be repeated for credit when authors vary.

ENG 3123. Modern Fiction. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical survey of American, British, and Continental fiction of the 20th century, studied in relation to the development of modern techniques.

ENG 3133. Women and Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of the presentation of women and feminist issues in various literary forms.

ENG 3153. Topics in Drama. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Study of one or more periods (e.g., Tudor-Stuart, modern, contemporary) or modes (e.g., comedy, tragedy) of drama. May be repeated for credit when topics vary.

ENG 3213. Chaucer. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of *The Canterbury Tales* and other poems. Texts in Middle English.

ENG 3223. Shakespeare: The Early Plays. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of comedies, histories, and tragedies from 1590–1601.

ENG 3233. Shakespeare: The Later Plays. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of comedies, tragedies, and romances from 1602–1613.

ENG 3243. Topics in the British Novel. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of English novels. May be repeated for credit when topics vary.

ENG 3253. The American Novel. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Reading and discussion of representative American novels.

ENG 3273. Milton. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Reading and analysis of Milton's major poems and selected prose in the context of his times.

ENG 3303. Theory and Practice of Composition. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Communication. Extensive practice in the techniques of clear, effective writing. Designed for students who will write in their professions and will supervise the writing of others.

ENG 3313. Advanced Composition. (3-0) 3 Credit Hours.

Completion of the Core Curriculum requirement in Communication. Study of the principles and procedures of informational and persuasive prose. Emphasis on coherence, liveliness, persuasiveness, and originality. Extensive writing practice, including the writing of arguments.

ENG 3323. History of the English Language. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Historical survey of the development of the English language.

ENG 3333. Introduction to the Structure of English. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Analysis of English syntax from various theoretical perspectives, including traditional, structural, and generative. Consideration of the concept of Standard English and of language variation, especially regional and social variation within modern English.

ENG 3343. Principles of English Linguistics. (3-0) 3 Credit Hours.

Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Introduction to the goals and procedures of modern linguistics, emphasizing phonetics, phonology, and morphology. Discussion of language acquisition and the neurolinguistic foundations of language ability. Some attention to topics such as semantics, pragmatics, and language change. (Same as [ANT 3903](#) and [LNG 3813](#). Credit cannot be earned for more than one of these courses.).

ENG 3363. Topics in Rhetoric and Composition. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in Communication. Critical study of a topic in rhetoric and composition, such as history and development, research and methodology, major paradigms, and/or different contexts. Special emphasis on the diversity of approaches and applications. May be repeated for credit when topics vary.

ENG 3383. Writing in Public, Professional, and Workplace Contexts. (3-0) 3 Credit Hours.

Prerequisite: [ENG 2413](#). Study of the fundamental principles, forms, and procedures of writing in a specific topic, content, and/or genre, with emphasis on research, revision, documentation, and style. May be repeated for credit when topics vary.

ENG 3393. Literary Theories. (3-0) 3 Credit Hours.

Prerequisite: [ENG 2213](#). Critical study of the nature and function of literature and the relationship of literature to philosophy, history, and the other arts; attention to such topics as stylistics, genres, and literary history.

ENG 3413. Specialized Professional Writing. (3-0) 3 Credit Hours.

Prerequisite: [ENG 2413](#). Writing for specialized purposes such as news releases, feature articles, reports, newsletters, speeches, scriptwriting, advertising, and professional correspondence.

ENG 3423. Topics in Creative Writing. (3-0) 3 Credit Hours.

[ENG 2323](#) or [ENG 2333](#) or [ENG 2343](#) and consent of instructor (writing portfolio required). Creative writing workshop in specialized area or genre other than poetry or short fiction. May be repeated for credit when topics vary.

ENG 3513. Mexican American Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of literature by and about Mexican Americans, including prose, verse, drama, essays, and autobiography. Concentration on writings since 1959.

ENG 3613. African American Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of literature by and about African Americans, including prose, verse, drama, essays, and autobiography.

ENG 3713. Topics in Multiethnic Literatures of the United States. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Comparative study of a specific genre or theme in the literatures of various ethnic groups in the United States such as African American, Asian American, Native American, and/or U.S. Latino/a. May be repeated for credit when topics vary.

ENG 3813. Topics in Native American Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of a topic in Native American/Indigenous literatures focusing on an author, a genre, a theme, or on traditional and oral literature. May be repeated for credit when topics vary.

ENG 4013. Restoration and Eighteenth-Century Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Selected readings in the fiction, drama, poetry, and prose of the British literature of the late 17th century and the 18th century.

ENG 4023. Romantic Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Selected readings in the fiction, poetry, and prose of the British Romantic period.

ENG 4033. Literary Modes and Genres. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Intensive study of a single mode or genre such as comedy, tragedy, allegory, satire, epic, or a type of nonfiction such as biography. May be repeated for credit when topics vary.

ENG 4053. Modern British and American Poetry. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. An intensive study of major modern poets.

ENG 4063. Medieval English Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Study of the major English writings from the Anglo-Saxon and Middle English periods (excluding Chaucer), with special emphasis on Beowulf and Chaucer's contemporaries. Some works in translation, but original texts whenever possible.

ENG 4113. Renaissance Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Selected readings from major writers of the 16th and early 17th centuries (excluding Shakespeare).

ENG 4143. Victorian Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Selected readings in the fiction, poetry, and nonfiction prose of major Victorian writers.

ENG 4393. Feminist Theory of Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of feminist theory and the relationship of gender to literature. Selected readings from major feminist theorists in connection with the study of literary texts.

ENG 4423. Studies in Advanced Linguistics. (3-0) 3 Credit Hours.

Prerequisite: [ENG 3343](#) or [LNG 4013](#). Specialized study of one or more areas of linguistic research, including historical linguistics, sociolinguistics, dialectology, linguistics for literary analysis, or languages in contact. May be repeated for credit when topics vary.

ENG 4433. Advanced Professional Writing. (3-0) 3 Credit Hours.

Prerequisite: [ENG 2413](#) or the equivalent. Development of complex documents such as manuals, proposals, grants, environmental impact studies, newsletters, and brochures. Extensive practice in writing, layout and design, and preparation of professional documents. May be repeated for credit when topics vary.

ENG 4523. Writer's Workshop: Advanced Fiction Writing. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor (writing portfolio required).. Designed for students who have demonstrated potential as fiction writers. May be repeated for credit, but not more than 12 semester credit hours of [ENG 4523](#) and/or [ENG 4533](#) will apply to a bachelor's degree, and not more than 6 semester credit hours will apply toward the English major.

ENG 4533. Writer's Workshop: Advanced Poetry Writing. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor (writing portfolio required). Designed for students who have demonstrated potential as poets. May be repeated for credit, but not more than 12 semester credit hours of [ENG 4533](#) and/or [ENG 4523](#) will apply to a bachelor's degree, and not more than 6 semester credit hours will apply toward the English major.

ENG 4613. Topics in Mexican American Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of a topic in Mexican American literature: author, genre, or theme. May be repeated for credit when topics vary.

ENG 4713. Topics in African American Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Critical study of a topic in African American literature: author, genre, or theme. May be repeated for credit when topics vary.

ENG 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ENG 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ENG 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit,

but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ENG 4933. Internship. (0-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Supervised experience relevant to English. May be repeated once for credit, but not more than 3 semester credit hours will apply to the English major.

ENG 4953. Special Studies in English. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ENG 4973. Seminar for English Majors. (3-0) 3 Credit Hours.

Prerequisite: 12 upper-division semester credit hours in English. This undergraduate seminar, limited to English majors in their senior year, offers the opportunity to study a genre, author, or period in English or American literature. Content varies with each instructor. May be repeated once for credit when topics vary.

ENG 4991. Honors Thesis. (0-0) 1 Credit Hour.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee; enrollment in or completion of [ENG 4973](#). Supervised research and preparation of an Honors Thesis for the purpose of earning English Honors. May be repeated once with advisor approval.

ENG 4992. Honors Thesis. (0-0) 2 Credit Hours.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee; enrollment in or completion of [ENG 4973](#). Supervised research and preparation of an Honors Thesis for the purpose of earning English Honors. May be repeated once with advisor approval.

ENG 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee; enrollment in or completion of [ENG 4973](#). Supervised research and preparation of an Honors Thesis for the purpose of earning English Honors. May be repeated once with advisor approval.

English for International Students (EIS)

EIS 1063. ESL Intrnl Students:Listening. (3-0) 3 Credit Hours.

Development of listening comprehension and related note-taking skills needed in academic settings.

EIS 1073. ESL:Communicating Effectively. (3-0) 3 Credit Hours.

Development of oral discourse, including oral presentation, small group discussion, and pronunciation needed in academic settings.

EIS 1083. Content-based Reading. (3-0) 3 Credit Hours.

Development of reading proficiency needed for reading in undergraduate courses. (Includes TSI preparation.).

EIS 1093. Content-based Writing. (3-0) 3 Credit Hours.

Development of writing proficiency required for undergraduate courses. (Includes TSI preparation.).

EIS 1163. Advanced Oral Communications. (3-0) 3 Credit Hours.

Development of oral proficiency skills required for students at the graduate level, including international teaching assistants.

EIS 1183. Advanced Reading Strategies. (3-0) 3 Credit Hours.

Development of reading proficiency required for specific areas of study at the graduate level.

EIS 1193. Advanced Writing Strategies. (3-0) 3 Credit Hours.

Development of writing proficiency required for specific areas of study at the graduate level.

Entrepreneurship (ENT)**ENT 4123. Commercialization and Enterprise Planning. (3-0) 3 Credit Hours.**

Prerequisites: [MGT 3003](#), [MGT 3013](#), and a declared major in the College of Business or approval of Department Chair and Dean of the College. This course offers students a step-by-step instruction in how to develop a business plan for commercialization or enterprise development. The students will learn to present and defend their plan as Venture Capitalists would expect from a pitch. The course emphasizes the plan components, format, marketing and financial projections.

ENT 4223. Managing the Entrepreneurial Team. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [ENT 4123](#), and a declared major in the College of Business or approval of Department Chair and Dean of the College. This course examines how to recruit, manage and lead an entrepreneurial team. Particular emphasis will be placed on improving students communications and collaboration skills in a cross-functional team context. Students will also explore evolving, collaborative approaches employed by companies to accelerate innovations by using customers, suppliers, partners and other organizations outside the four walls of a company.

ENT 4523. Microlending Entrepreneurial Startups. (3-0) 3 Credit Hours.

Prerequisite: Declared major in the College of Business or approval of Department Chair and Dean of the College. This course focuses on access to capital in the United States as it relates to the financing of startups and the role microlending has played in this financing. Discusses the history of microlending in the entrepreneurship environment, the microlending industry, and factors leading to success or failure of microlenders.

ENT 4623. Tools and Objectives of the Social Enterprise. (3-0) 3 Credit Hours.

Prerequisite: Declared major in the College of Business or approval of Department Chair and Dean of the College. This course investigates the distinctive characteristics of the social enterprise and social entrepreneurs. Examines the role of innovation, the for-profit and not-for-profit models of the social enterprise as well as the corporate structure known as the "B Corporation." Develops ability to evaluate, plan and manage a social enterprise.

ENT 4723. Essentials of Global Entrepreneurship. (3) 3 Credit Hours.

Prerequisite: Declared major in the College of Business or approval of Department Chair and Dean of the College. This course examines the importance of the entrepreneurial venture in a changing world; explores the economic, political, cultural and technological differences in operating a business in a global versus a domestic environment; and introduces the concepts related to emerging economy entrepreneurs.

ENT 4873. Entrepreneurship. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [ENT 4123](#), and a declared major in the College of Business or approval of Department Chair and Dean of the College. Examines how and why entrepreneurs develop and/or grow a business as facilitated by the objectives and resources of the entrepreneur. Topics include differences between a commercial and social enterprise, developing a strategy formulation, and the development of a sustainable competitive advantage in global and social enterprise. (Formerly MGT 4873. Credit cannot be earned for both [ENT 4873](#) and MGT 4873.).

ENT 4883. Small Business Management. (3-0) 3 Credit Hours.

Prerequisites: [MKT 3013](#), [ENT 4123](#), and a declared major in the College of Business or approval of Department Chair and Dean of the College. Focuses on the start up and operation of small businesses. Examines the accounting, finance, management, and marketing functions as they pertain to entrepreneurial endeavors. Develops overall managerial awareness and analytical skills in small business problem solving. (Formerly MGT 4883. Credit cannot be earned for both [ENT 4883](#) and MGT 4883.).

ENT 4903. Practicum in Small Business and Entrepreneurship. (3-0) 3 Credit Hours.

Prerequisites: [ENT 4123](#), [FIN 4333](#), [ENT 4873](#), [ENT 4883](#), a declared major in the College of Business and permission from the instructor. This practicum will allow students to gain valuable experience. Drawing on the resources of the Colleges of Business and Engineering, local businesses, and entrepreneurs, the practicum provides students with the opportunity to examine real-world business problems, and thus gain insight into the challenges of starting a small business. Students will select from specific business problems or projects and participate in the Center for Innovation and Technology Entrepreneurship business plan competition. (Formerly MGT 4903. Credit cannot be earned for both [ENT 4903](#) and MGT 4903.).

ENT 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: [ENT 4873](#), a 3.0 COB grade point average and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ENT 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: [ENT 4873](#), a 3.0 COB grade point average and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ENT 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: [ENT 4873](#), a 3.0 COB grade point average and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ENT 4933. Internship in Entrepreneurship. (0-0) 3 Credit Hours.

Prerequisites: [ENT 4873](#) and 9 additional semester credit hours of Entrepreneurship (ENT) courses, a 2.5 UTSA grade point average, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for additional requirements and required forms. The opportunity for entrepreneurial work experience.

Requires a semester-long experience in private business or a not-for-profit enterprise and a written component. Opportunities and output requirements are developed in consultation with a faculty advisor and the Department Chair and require approval of both. Internship may be repeated once (for a total of 6 semester credit hours), provided the internships are with different organizations.

ENT 4951. Special Studies in Entrepreneurship. (1-0) 1 Credit Hour.

Prerequisites: [ENT 4873](#) and a declared major in the College of Business or approval of Department Chair and Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ENT 4952. Special Studies in Entrepreneurship. (2-0) 2 Credit Hours.

Prerequisites: [ENT 4873](#) and a declared major in the College of Business or approval of Department Chair and Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ENT 4953. Special Studies in Entrepreneurship. (3-0) 3 Credit Hours.

Prerequisites: [ENT 4873](#) and a declared major in the College of Business or approval of Department Chair and Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

Environmental Sciences (ES)

ES 1111. Environmental Botany Laboratory. (0-3) 1 Credit Hour. (TCCN = BIOL 1111)

Laboratory studies to accompany Environmental Botany Lecture. Selected laboratories pertaining to the structure and function of plants.

ES 1113. Environmental Botany. (3-0) 3 Credit Hours. (TCCN = BIOL 1311)

Study of structure and function of plant cells, tissues, and organs. Includes an evolutionary survey and life histories of the following representative groups: algae, fungi, mosses, liverworts, ferns, and seed producing organisms. Plant reproductive and functional interactions with their environment and with humans.

ES 1121. Environmental Zoology Laboratory. (0-3) 1 Credit Hour. (TCCN = BIOL 1113)

Laboratory studies to accompany Environmental Zoology Lecture. Selected laboratories pertaining to the taxonomy, molecular biology, and ecology of animals.

ES 1123. Environmental Zoology. (3-0) 3 Credit Hours. (TCCN = BIOL 1313)

Study of the principles of taxonomy, molecular biology, and ecology as they relate to animal form and function, diversity, behavior, and evolution.

ES 1211. Environmental Geology Laboratory. (0-3) 1 Credit Hour. (TCCN = GEOL 1105)

Laboratory studies to accompany Environmental Geology Lecture. Selected laboratories pertaining to urban and regional land use planning.

ES 1213. Environmental Geology. (3-0) 3 Credit Hours. (TCCN = GEOL 1305)

The earth as a habitat. Interrelationships between humans and the environment. Geologic factors in urban and regional land use planning.

ES 1314. Environmental Statistics. (3-3) 4 Credit Hours. (TCCN = MATH 1442)

Collection, analysis, presentation and interpretation of environmental data, and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals and hypothesis testing. Use of appropriate technology, including statistical software.

ES 2013. Introduction to Environmental Systems I. (3-0) 3 Credit Hours. (TCCN = BIOL 2306)

An introduction to the scientific principles, concepts, and methodologies needed to understand the interactions of the biotic component of the natural world, to identify and analyze environmental problems within the biotic component of natural world, risk assessment of these environmental problems, and to examine alternate solutions. General attention is given to the biotic concepts of growth, processes, and changes occurring in ecosystems and social structures. May apply toward the Core Curriculum requirement in Physical and Life Sciences.

ES 2021. Introduction to Environmental Systems I Laboratory. (0-3) 1 Credit Hour.

Concurrent enrollment in [ES 2013](#) is recommended. Qualitative and quantitative methods in the study of biotic environmental systems.

ES 2023. Introduction to Environmental Systems II. (3-0) 3 Credit Hours. (TCCN = ENVR 1302)

An introduction to the scientific principles, concepts, and methodologies needed to understand the interactions of the abiotic component of the natural world, to identify and analyze environmental problems within the abiotic component of the natural world, risk assessment of these environmental problems, and to promote environmental sustainability. General attention is given to the abiotic environmental factors including natural hazards, pollution processes, energy resources, sustainability, and changes occurring in ecosystems. May apply toward the Core Curriculum requirement in Physical and Life Sciences.

ES 2031. Introduction to Environmental Systems II Laboratory. (0-3) 1 Credit Hour.

Concurrent enrollment in [ES 2023](#) is recommended. Qualitative and quantitative methods in the study of abiotic environmental systems.

ES 3033. Environmental Ecology. (3-0) 3 Credit Hours.

Prerequisites: [ES 2013](#) and [ES 2023](#), or equivalents. Examination of the interactions of biotic and abiotic systems, including interactions of plants, animals, and the environment. (Formerly ES 3034. Credit cannot be earned for more than one of the following: [ES 3033](#), ES 3034 or [BIO 3283](#).)

ES 3042. Environmental Ecology Laboratory. (0-6) 2 Credit Hours.

Prerequisites: [ES 2013](#), [ES 2021](#), [ES 2023](#), and [ES 2031](#), or equivalents. Concurrent enrollment in [ES 3033](#) is recommended. A field-oriented course emphasizing modern ecological techniques, including examinations of plant and animal populations and measurement of selected chemical and physical parameters. (Credit cannot be earned for both [ES 3042](#) and [BIO 3292](#).)

ES 3053. Environmental Remediation. (3-0) 3 Credit Hours.

Prerequisites: [CHE 2603](#), [ES 2013](#), and [ES 2023](#), or equivalents. This course will focus on the fundamentals associated with environmental remediation in relation to the overall environmental quality and protection. Topics covered include contaminant fate and transport; physical, chemical, and biological processes/characteristics of the air, soil, and water; remediation/restoration methods; environmental

monitoring; environmental assessments; environmental regulations; and water/wastewater treatment. (Formerly ES 3054. Credit cannot be earned for both [ES 3053](#) and ES 3054.)

ES 3061. Environmental Remediation Laboratory. (0-3) 1 Credit Hour.

Prerequisites: [CHE 2603](#), [CHE 2612](#), [ES 2013](#), and [ES 2023](#), or equivalents. Concurrent enrollment in [ES 3053](#) is recommended. This laboratory and field-based course will provide hands-on experience in environmental remediation that will focus on regulatory aspects of assessing environmental contamination, technologies/strategies used to remediate, and current literature research investigations into remediation.

ES 3103. Environmental Microbiology. (3-0) 3 Credit Hours.

Prerequisites: [CHE 2603](#), [ES 2013](#), and [ES 2023](#), or equivalents, or consent of instructor. This course will survey environmental microbiology and will emphasize microbial interactions in terrestrial and aquatic environments as well as the fate of microbial pathogens. Topics covered include microbial environments, detection of bacteria and their activities in the environment, microbial biogeochemical cycling, bioremediation of organic and inorganic pollutants, and water quality. (Formerly ES 3104. Credit cannot be earned for more than one of the following: [ES 3103](#), ES 3104 or [BIO 3713](#).)

ES 3121. Introduction to Soils Laboratory. (0-3) 1 Credit Hour.

Prerequisites: [ES 2013](#) and [ES 2023](#), or equivalents. Laboratory exercise and field trips designed to develop student competency in soil description, analysis, and assessment.

ES 3123. Introduction to Soils. (3-0) 3 Credit Hours.

Prerequisites: [ES 2013](#) and [ES 2023](#), or equivalents. A study of soil properties and processes and relationships to land use, plant growth, environmental quality, and society.

ES 3141. Watershed Processes Laboratory. (0-3) 1 Credit Hour.

Prerequisites: [ES 2013](#), [ES 2023](#) and [ES 1213](#), or equivalents. Laboratory exercises and field trips designed to develop an understanding of watershed processes, watershed assessment, and watershed management.

ES 3143. Watershed Processes. (3-0) 3 Credit Hours.

Prerequisites: [ES 2013](#), [ES 2023](#) and [ES 1213](#), or equivalents. This course focuses on watershed processes, watershed assessment, and watershed management.

ES 3153. Environmental Chemistry. (3-0) 3 Credit Hours.

Prerequisites: [ES 2013](#), [ES 2023](#), [CHE 2603](#), or equivalents. This course explores the chemistry of the environment, the chemistry underlying environmental problems and solutions to environmental problems. Emphasis is placed on thermodynamics and kinetics of reaction cycles; sources, sinks and transport of chemical species; and quantitation of chemical species. Examples are selected from the chemistry of natural and contaminated air, water, and soil. (Same as [CE 4613](#). Credit can only be earned for [ES 3153](#) or [CE 4613](#).)

ES 3163. Ornithology. (3-0) 3 Credit Hours.

Prerequisite: [ES 3033](#) or [BIO 3283](#), or equivalents. A course covering various aspects of the biology of birds, including anatomy, physiology, systematics, evolution, behavior, ecology, and biogeography. Field trips may be required. (Same as [BIO 4063](#). Credit cannot be earned for both [ES 3163](#) and [BIO 4063](#).)

ES 3173. Mammalogy. (3-0) 3 Credit Hours.

Prerequisite: [ES 3033](#) or [BIO 3283](#), or equivalents. A course covering various aspects of the biology of mammals, including anatomy, physiology, systematics, evolution, behavior, ecology, and biogeography. Field trips may be required.

ES 3183. Entomology. (3-0) 3 Credit Hours.

Prerequisite: [ES 3033](#) or [BIO 3283](#), or equivalents. A course covering various aspects of the biology of insects, including anatomy, physiology, systematics, evolution, behavior, ecology, and biogeography. Field trips may be required.

ES 3193. Herpetology. (3-0) 3 Credit Hours.

Prerequisite: [ES 3033](#) or [BIO 3283](#), or equivalents. A course covering various aspects of the biology of amphibians and reptiles, including anatomy, physiology, systematics, evolution, behavior, ecology, and biogeography. Field trips may be required.

ES 3203. Environmental Law. (3-0) 3 Credit Hours.

Present-day environmental enabling acts and regulations will be covered, with emphasis on federal acts, such as the National Environmental Policy Act, Clean Water Act, Resource Conservation and Recovery Act, and associated regulations.

ES 3213. Biology of Flowering Plants. (2-3) 3 Credit Hours.

Prerequisite: Junior or senior status; a minimum of 60 semester credit hours. A study of the wildflowers of Texas emphasizing identification of the more common wildflowers, as well as family characteristics, flower anatomy, plant morphology, and plant-collecting techniques will be included. Lecture, laboratory, and fieldwork will be included as part of the course. (Same as [BIO 3273](#). Credit can only be earned for [ES 3213](#) or [BIO 3273](#).)

ES 3223. Woody Plants. (2-3) 3 Credit Hours.

Prerequisite: Junior or senior status; a minimum of 60 semester credit hours. A study of the woody plants emphasizing the characteristics of family, genus, and species. Includes identification of the common woody plants. Leaf, stem, and flower morphology, anatomy, and collecting techniques. Lecture, laboratory, and fieldwork will be included as part of the course. (Same as [BIO 3263](#). Credit can only be earned for [ES 3223](#) or [BIO 3263](#).)

ES 4003. Environmental Chemistry and Toxicology. (3-0) 3 Credit Hours.

Prerequisites: [CHE 2603](#), [ES 2013](#), and [ES 2023](#), or equivalents. Chemical principles applied to the understanding of processes in aquatic and environmental systems. Emphasis will be on physical, chemical, and biological processes in treatment and processing of hazardous waste materials.

ES 4011. Environmental Chemistry and Toxicology Laboratory. (0-3) 1 Credit Hour.

Prerequisites: [CHE 2603](#), [ES 2013](#), and [ES 2023](#), or equivalents. Concurrent enrollment in [ES 4003](#) is recommended. Laboratory principles applied to the understanding of processes in aquatic and environmental systems. Emphasis will be on physical, chemical, and biological processes in treatment and processing of hazardous wastes materials.

ES 4103. Global Change. (3-0) 3 Credit Hours.

Prerequisites: [CHE 2603](#), [ES 2013](#), and [ES 2023](#), or equivalents. Changes in the global distribution of plants and animals and the causes of the changes will be examined. Factors that are apparently coupled to changes in these distributions will be examined including, but not limited to, atmospheric composition change and temperature change. Additionally, examination of the impact of humans and their activities on

the environment: their effect on aquatic, marine, and terrestrial plant, animal, and human resources. (Formerly ES 4104. Credit cannot be earned for both [ES 4103](#) and ES 4104.)

ES 4111. Field Biology Laboratory. (3) 1 Credit Hour.

Prerequisite: Junior or senior status: a minimum of 60 semester credit hours, or consent of instructor. Concurrent enrollment in [ES 4113](#) (Field Biology Lecture) is recommended. A field-oriented course offering the opportunity for practical experience observing, collecting, and identifying Texas plants and animals. (Same as [BIO 4241](#). Credit can only be earned for [ES 4111](#) or [BIO 4241](#).)

ES 4113. Field Biology. (3) 3 Credit Hours.

Prerequisite: Junior or senior status: a minimum of 60 semester credit hours, or consent of instructor. Concurrent enrollment in [ES 4111](#) 1 is recommended. A study of the natural history of plants and animals in their native environment. Techniques for the identification of birds, mammals, reptiles, amphibians, insects, and the dominant flowering plants will be discussed. (Same as [BIO 4233](#). Credit can only be earned for [ES 4113](#) or [BIO 4233](#).)

ES 4123. Desert Biology. (3) 3 Credit Hours.

Prerequisite: Junior or senior status: a minimum of 60 semester credit hours, or consent of instructor. An introduction to wildlife biology and management including ecological principles dealing with ecosystems, natural communities, and populations. The importance of animal behavior, the availability of food, cover, wildlife diseases, predators, hunting, and trapping will be included. Field studies will allow students to observe and apply classroom topics.

ES 4133. Natural Resource Policy and Administration. (3) 3 Credit Hours.

Prerequisite: [ES 3203](#) Environmental Law, or equivalent. Factors in evolution of forest, range, wildlife and related natural resources administration and policies in the United States; policy components; policy formation implementation, administration and change processes; introduction to criteria for evaluating effectiveness of policies and administration.

ES 4143. Environmental Geomorphology. (3) 3 Credit Hours.

Prerequisites: [ES 1213](#) or consent of instructor, and junior or senior standing. Examination of landforms on the Earth's surface and landscape-forming processes. Field trips may be required.

ES 4153. Introduction to Sustainability. (3) 3 Credit Hours.

Prerequisites: [ES 2023](#) and junior or senior status: a minimum of 60 semester credit hours, or consent of instructor. This course will examine the major environmental issues and trends happening in modern society from a scientific and practical perspective, including biodiversity, population, food and water resources, climate change, energy, public health, and the overall forecast for the environment for the next several decades.

ES 4163. Renewable Energy. (3) 3 Credit Hours.

Prerequisites: [ES 2023](#) and junior or senior status: a minimum of 60 semester credit hours, or consent of instructor. This course is an introduction to energy systems and renewable energy resources, with a scientific examination of the energy field and an emphasis on alternate energy sources and their technology and application.

ES 4173. Waste Water Treatment. (3) 3 Credit Hours.

Prerequisite: [ES 2023](#) and junior or senior status: a minimum of 60 semester credit hours, or consent of instructor. The application of chemical, biochemical, and physical processes to water treatment, wastewater treatment, and pollution control.

ES 4183. Environmental Toxicology. (3) 3 Credit Hours.

Prerequisites: [ES 2023](#) and CHE 2604, or equivalents. Examination of advanced or specialized hazardous or toxic waste treatment methods. Emphasis will be on physical, chemical, and biological processes in treatment and processing of hazardous wastes materials.

ES 4203. Environmental Assessment. (3-0) 3 Credit Hours.

Prerequisites: [ES 2013](#) and [ES 2023](#), or equivalents. This course evaluates the framework of an impact assessment and details regarding the environment (air, water, soil), its pollutants (atmospheric, noise, water, solid waste), their impacts (physical, social, economic), relevant regulations, and pollution minimization or management strategies. Students use this information to review and comment on an existing Environmental Impact Statement (EIS).

ES 4211. Senior Seminar. (1) 1 Credit Hour.

Prerequisite: Senior status: Environmental Science majors and a minimum of 90 credit hours. The techniques of seminar presentation will be studied by preparing and presenting individual seminars on topics of interest. Enrollment for credit is limited to, and required of, all senior students majoring in environmental studies.

ES 4213. Conservation Biology. (3) 3 Credit Hours.

Prerequisite: [ES 3033](#) or [BIO 3283](#), or equivalents. The class topics will include studying the nature of the biosphere, threats to its integrity, and ecologically sound responses to these threats. Also included will be the origin and preservation of biotic diversity, how the rich variety of plant and animal life around us arose, how it has been maintained by natural processes, and how we can prevent its destruction. (Same as [BIO 4033](#). Credit cannot be earned for both [ES 4213](#) and [BIO 4033](#).)

ES 4233. Restoration Ecology. (3) 3 Credit Hours.

Prerequisite: [ES 3033](#) or [BIO 3283](#), or equivalents. Applies ecological principles to the restoration of disturbed terrestrial, wetland, and aquatic ecosystems. Includes the restoration of soils and waterways, of flora and fauna, and of natural ecological processes such as plant succession and nutrient cycling.

ES 4243. Wildlife Management. (3) 3 Credit Hours.

Prerequisite: [ES 3033](#) or [BIO 3283](#), or equivalents. An introduction to wildlife biology and management including ecological principles dealing with ecosystems, natural communities, and populations. The importance of animal behavior, the availability of food, cover, wildlife diseases, predators, hunting, and trapping will be included. Field studies will allow students to observe and apply classroom. (Same as [BIO 4053](#). Credit cannot be earned for both [ES 4243](#) and [BIO 4053](#).)

ES 4253. Sources, Fate, and Transport of Chemicals in the Environment. (3) 3 Credit Hours.

Prerequisites: [ES 2013](#), [ES 2023](#), [CHE 2603](#), or equivalents. Sources of chemicals in the environment. Processes regulating fate and transport of metals, organics, nutrients, salts, pathogens, and radionuclides in the environment.

ES 4911. Special Studies in Environmental Science. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ES 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research,

discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ES 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ES 4951. Special Studies in Environmental Science. (1-0) 1 Credit Hour.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ES 4952. Special Studies in Environmental Science. (2-0) 2 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ES 4953. Special Studies in Environmental Science. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

Facility & Property Management (FM)

FM 4213. Power and Air Conditioning. (3-0) 3 Credit Hours.

Prerequisite: [IS 4033](#) with a grade of "C-" or better or consent of instructor, the Department Chair and Dean of the College. The purpose of this class will be to explore the electrical power, air conditioning, and fire suppressant requirements of a data center. Electrical grids, standby generators, and uninterruptable power supplies will be discussed. The course explores the various aspects of power quality, interruption of service, voltage flicker and control, voltage swells and sags and power surges. Air conditioning requirements and methods will also be included. Fire suppressant techniques will also be part of the class. A comprehensive project involving the design of the data center to include these three major issues will be part of the class. (Same as [IS 4213](#). Credit cannot be earned for both [FM 4213](#) and [IS 4213](#).)

FM 4233. Sport and Event Facility Management. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3013](#). This course provides an overview of managing a facility used for sports, conventions, and entertainment events. Some of the topics are conducting feasibility studies, market research, facility design and layout, event bidding, quality assurance, risk management, and event staffing. Real Estate Finance and Development majors cannot take [SET 4233](#) for the degree requirements but can take [FM 4233](#). (Same as [SET 4233](#). Credit cannot be earned for both [FM 4233](#) and [SET 4233](#).)

FM 4303. Facility and Property Management Policies and Procedures. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3013](#). The implementation of professional policies, standards, practices, and procedures for the leasing, operation and maintenance of facilities. Topics include the facility management profession, leasing, and the acquisition, installation, operation, maintenance and disposition of building systems, furniture and fixtures, and grounds and exterior elements. (Formerly MGT 4303. Credit cannot be earned for both [FM 4303](#) and MGT 4303.).

FM 4313. Facility and Property Management Practices. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3013](#). The application of management practices to the operation of facilities. Topics include the study of human and environmental factors, building safety, building audits, building technology, emergency preparedness, the use and changing uses of facilities, and continuous quality improvement. (Formerly MGT 4313. Credit cannot be earned for both [FM 4313](#) and MGT 4313.).

Finance (FIN)**FIN 3003. Survey of Finance. (3-0) 3 Credit Hours.**

Prerequisite: [ACC 2003](#) or [ACC 2013](#) or the equivalent. A basic survey course focusing on three aspects of finance: the financial system, corporate finance, and investments. The financial environment will be described along with how the financial system interacts with the economy. Business decisions, efficient allocation of financial resources, and fundamentals of investment will be introduced. This course may not be applied toward a major or a minor in finance.

FIN 3014. Principles of Business Finance. (4-0) 4 Credit Hours.

Prerequisites: [MAT 1033](#), [MS 1023](#), [ACC 2013](#), and [ECO 2013](#) or their equivalents. Corequisite: [ACC 2033](#). Introduction to financial management techniques. Topics may include time value of money, valuation of stocks and bonds, risk and return, capital budgeting analysis, financing alternatives, financial planning, ratio analysis, short-term financial decisions, working capital, sources and uses of funds, capital structure, dividend policy, lease analysis, options, international financial management, and other topics associated with successful business finance decisions in an internationally competitive environment. One-hour laboratory included. (Formerly FIN 3013. Credit cannot be earned for both [FIN 3014](#) and FIN 3013.).

FIN 3023. Intermediate Corporate Finance. (3-0) 3 Credit Hours.

[FIN 3014](#), or the equivalent, with a grade of "C-" or better and successful completion of the Finance Assessment of Competency Test (FACT). Corequisite: ACC 3013 or [ACC 3023](#). Advanced discussion of subjects essential to corporate financial management, including short-term credit policies, capital budgeting, risk, sources of long-term funds, financial leverage, and the cost of capital. Special topics such as mergers, bankruptcy, and reorganization may also be considered.

FIN 3033. Principles of Investment. (3-0) 3 Credit Hours.

Prerequisite: [FIN 3014](#), or the equivalent, with a grade of "C-" or better. Introduction to securities markets; analysis of money market instruments, mutual funds, stocks, bonds, options, futures, and other securities; investment management in the light of tax considerations, timing, and selected portfolio needs.

FIN 3313. Money and Banking. (3-0) 3 Credit Hours.

Prerequisite: [ECO 2013](#) or the equivalent. Elements of monetary theory; relationships between money, prices, production, and employment; factors determining money supply; and operation of capital markets with reference to the United States.

FIN 3413. Introduction to Financial Markets. (3-0) 3 Credit Hours.

Prerequisite: [FIN 3313](#) or the equivalent. This course addresses the development of financial markets and market pricing of debt, equity, and foreign exchange. Special emphasis is placed on current and historical events to discuss these topics.

FIN 3423. Security Analysis. (3-0) 3 Credit Hours.

Prerequisite: [FIN 3033](#) or the equivalent. Advanced financial analysis; examination of statements and supplementary data of industrial, commercial, financial intermediary, and public enterprises; preparation of reports relevant to achieving an understanding of financial management policies.

FIN 3433. Principles of Real Estate. (3-0) 3 Credit Hours.

General introduction to the subject matter and terminology of real estate as a business and profession; federal, state, and local laws governing housing discrimination, equal credit opportunity, and community reinvestment.

FIN 3443. Technical Analysis. (3-0) 3 Credit Hours.

Prerequisite: [FIN 3014](#) with a grade of "C-" or better. Introduction to technical analysis of financial markets. Topics include trend analysis, charting techniques, measures of market sentiment, Dow theory, and cycle theories. Security selection, trading system management, and risk management are explored.

FIN 4323. Financial Institutions Management. (3-0) 3 Credit Hours.

Prerequisite: [FIN 3014](#) with a grade of "C-" or better. Direction and coordination of the various functions of the financial firm, including money position, lending, and capital management. Emphasis on asset and liability management in a changing environment of regulation, competition, and financial intermediation.

FIN 4333. Business Finance for Entrepreneurs. (3-0) 3 Credit Hours.

Prerequisite: [FIN 3014](#) with a grade of "C-" or better. Development of financial management techniques for developing businesses. Topics include cash flow projections, managing cash and working capital, estimating cost of capital, project evaluation, issues of limited diversification, and nontraditional sources of funds as well as growth and exit strategies.

FIN 4413. Trading and Analysis of Financial Instruments. (3-0) 3 Credit Hours.

Prerequisites: [FIN 3033](#) and consent of instructor and approval of the Department Chair and the Dean of the College. Theoretical concepts in investments analysis and trading applications with real-time and historical data are developed. Topics include technical and fundamental analysis of equity portfolios, fixed income valuation, and credit risk analysis. Computer applications include Bloomberg Professional® software.

FIN 4423. Investment Portfolio Management. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [FIN 3033](#) or the equivalent. Application of investment principles to management of investment portfolios of individuals and institutions; consideration of business cycles, investment constraints, portfolio construction, investment timing, and securities selection. Analysis of derivative securities and their use in the portfolio context.

FIN 4523. Introduction to Risk Management. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [FIN 3014](#) or consent of instructor and approval of the Department Chair and the Dean of the College. Analysis of risk management tools as an integral part of corporate financial decisions; alternatives for spreading risk such as insurance, retention funds, and external funds.

FIN 4613. Introduction to International Finance. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [FIN 3014](#) or the equivalent. Study of underlying forces in international financial relations and the unique problems of international trade, investments, and operations; examination of multinational business finance and its economic, legal, and political dimensions.

FIN 4713. Mortgage Banking and Real Estate Finance. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [FIN 3014](#), and [FIN 3433](#), or consent of instructor, approval of the Department Chair and the Dean of the College. Planning, structure, and analysis of real estate financing from the viewpoints of both the users and suppliers of funds; examination of various techniques and legal instruments; institutional constraints and their effects on real estate lending activities; and federal, state, and local laws governing housing discrimination, equal credit opportunity, and community reinvestment.

FIN 4723. Principles of Real Estate Investment. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [FIN 3014](#), and [FIN 3433](#), or consent of instructor, approval of the Department Chair and the Dean of the College. Analysis of real estate investment alternatives; feasibility and site analysis; tax considerations; income and expense analysis; discounted cash flow analysis; profitability measurement; and forms of ownership.

FIN 4733. Principles of Sustainable Real Estate Development. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [FIN 3014](#), [FIN 3433](#), and [FIN 4713](#) or [FIN 4723](#), or consent of instructor, approval of the Department Chair and Dean of the College. The examination of the principles involved in creating value through the real estate development process. Economic, regulatory, planning, financing, management and disposition issues are considered in the marketing and financial analyses of development prospects. (Same as [RFD 4733](#). Credit cannot be earned for both [FIN 4733](#) and [RFD 4733](#). Finance majors cannot take [RFD 4733](#) as an upper-division finance elective.)

FIN 4813. Property-Liability Insurance Finance. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [FIN 3014](#) or the equivalent. Analysis and management of risk and insurance, including the insurance contract, property insurance, liability insurance, business insurance, the insurance agency, financial structure and management of property-liability companies, and contemporary problems of property-liability insurance.

FIN 4823. Life and Health Insurance Finance. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [FIN 3014](#) or the equivalent. Philosophy of the life risk is developed, as well as an understanding of the special character of life and health insurance, human life value, the customary and special uses of life insurance, and the history of life insurance companies. Life, health, and disability insurance contracts are investigated in addition to term and whole life insurance, agency structure, and current issues of life and health insurance.

FIN 4853. Real Estate Appraisal. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [FIN 3014](#), and [FIN 3433](#), their equivalents, or consent of instructor, approval of the Department Chair and the Dean of the College. Functions and methods of property valuation, including comparable sales analysis, cost depreciation analysis, and income capitalization; residential and income property appraisal techniques and reporting. (Same as [RFD 4853](#). Credit cannot be earned for both [FIN 4853](#) and [RFD 4853](#). Finance majors cannot take [RFD 4853](#) as an upper-division finance elective.)

FIN 4873. Computer Modeling of Financial Applications. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [IS 3003](#), and [FIN 3014](#) or their equivalents. Provides the opportunity to develop computer modeling skills and techniques for analyzing financial situations encountered in

business, including the analysis of financial statements, forecasting, capital budgeting, and principles of investment analysis of securities. Financial issues involving uncertainty are examined.

FIN 4893. Cases and Problems in Finance. (3-0) 3 Credit Hours.

Prerequisites: [FIN 3023](#), [FIN 3033](#), [FIN 3313](#), ACC 3013 or [ACC 3023](#), senior standing, and 3 hours of additional finance electives. Students are also required to meet all University regulations related to good academic standing and maintain a minimum grade point average of 2.0 in all courses, and in UTSA College of Business courses, and in all courses for the major. Approval is obtained in the College of Business Undergraduate Advising Center. Integration of financial concepts and financial tools to enable strategic financial decision making in a wide variety of situations. Topics include corporate finance, investments, international finance, risk management, and other aspects of finance.

FIN 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: A 3.0 COB grade point average, [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

FIN 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: A 3.0 COB grade point average, [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

FIN 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: A 3.0 COB grade point average, [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

FIN 4933. Internship in Finance. (0-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), 9 semester credit hours of upper-division finance courses, a 2.5 UTSA grade point average, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. The opportunity for professional work experience in research of financial operations, including real estate and insurance, and may be undertaken in either private business or a public agency. Opportunities are developed in consultation with the faculty advisor and Department Chair and require approval of both. Internship may be repeated once (for a total of 6 semester credit hours) provided the internships are with different organizations, but only 3 hours may count toward the 21 hours of finance required for the major.

FIN 4951. Special Studies in Finance. (1-0) 1 Credit Hour.

Prerequisites: [MGT 3003](#) and consent of instructor, and approval of the Department Chair and the Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

FIN 4953. Special Studies in Finance. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and consent of instructor, and approval of the Department Chair and the Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

FIN 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: [MGT 3003](#). Enrollment limited to students applying for Honors in Finance (see page 40). Supervised research and preparation of an honors thesis. May be repeated once for credit with advisor's approval.

Foreign Languages (FL)**FL 1034. Prerequisite: Consent of instructor.. (0-0) 4 Credit Hours.**

Prerequisite: Consent of instructor. Opportunity to begin developing oral and written communication skills in the target language, along with enhanced comprehension skills in listening and reading. Linguistic and cultural immersion. May be repeated up to 8 semester credit hours in each language.

FL 1038. Beginning Language Study Abroad. (0-0) 8 Credit Hours.

Prerequisite: Consent of instructor. Opportunity to begin developing oral and written communication skills in the target language, along with enhanced comprehension skills in listening and reading. Linguistic and cultural immersion. May be repeated up to 8 semester credit hours in each language.

FL 1044. Individualized Instruction in Basic Language. (0-0) 4 Credit Hours.

Prerequisite: Consent of instructor. Opportunity to develop basic oral and written communication skills in the target language, along with enhanced comprehension skills in listening and reading. Generally restricted to special projects or languages not regularly offered as organized classes. May be repeated up to 8 semester credit hours in each language.

FL 2033. Intermediate Language Study Abroad. (0-0) 3 Credit Hours.

Prerequisites: Consent of instructor and 1008, 1024, or the equivalent in the selected foreign language. Opportunity to develop intermediate-level oral and written communication skills in the target language, along with increased comprehension skills in listening and reading. Linguistic and cultural immersion. May be repeated up to 6 semester credit hours in each language.

FL 2036. Intermediate Language Study Abroad. (0-0) 6 Credit Hours.

Prerequisites: Consent of instructor and 1008, 1024, or the equivalent in the selected foreign language. Opportunity to develop intermediate-level oral and written communication skills in the target language, along with increased comprehension skills in listening and reading. Linguistic and cultural immersion. May be repeated up to 6 semester credit hours in each language.

FL 2043. Individualized Instruction in Intermediate-Level Language. (0-0) 3 Credit Hours.

Prerequisites: Consent of instructor and 1008, 1024, or the equivalent in the selected foreign language. Opportunity to develop intermediate-level oral and written communication skills in the target language, along with increased comprehension skills in listening and reading. Generally restricted to special projects or languages not regularly offered as organized classes. May be repeated up to 6 semester credit hours in each language.

FL 3003. Introduction to Translation. (3-0) 3 Credit Hours.

Prerequisites: At least four courses of any single foreign language. Principles of translation with practice in translating brief documents of a general nature. May be repeated for credit when language varies.

FL 3013. Translation for the Language Specialist. (3-0) 3 Credit Hours.

Prerequisite: At least one course at the 3000 level in the selected foreign language. The language-related and cultural issues involved in translation and interpretation. Practice in translating documents from selected professional areas: business, health care, law, technology, or the arts. May be repeated for credit when topics/languages vary.

FL 3033. Advanced Language Study Abroad. (0-0) 3 Credit Hours.

Prerequisites: Consent of instructor and 2006, 2023, or the equivalent in the selected foreign language. Opportunity to develop advanced-level oral and written communication skills in the target language, along with enhanced comprehension skills in listening and reading. Linguistic and cultural immersion. May be repeated up to 6 semester credit hours in each language.

FL 3036. Advanced Language Study Abroad. (0-0) 6 Credit Hours.

Prerequisites: Consent of instructor and 2006, 2023, or the equivalent in the selected foreign language. Opportunity to develop advanced-level oral and written communication skills in the target language, along with enhanced comprehension skills in listening and reading. Linguistic and cultural immersion. May be repeated up to 6 semester credit hours in each language.

FL 3043. Individualized Instruction in Advanced-Level Language. (0-0) 3 Credit Hours.

Prerequisites: Consent of instructor and 2006, 2023, or the equivalent in the selected foreign language. Opportunity to develop advanced-level oral and written communication skills in the target language, along with enhanced comprehension skills in listening and reading. Generally restricted to special projects or languages not regularly offered as organized classes. May be repeated up to 6 semester credit hours in each language.

FL 3101. Languages Across the Curriculum. (0-0) 1 Credit Hour.

Prerequisite: Consent of instructor. Online add-on course offering a concurrent language component for courses in other disciplines, such as art, anthropology, history, humanities, music and political science. May be repeated for credit when topics vary.

FL 4243. Foreign Language Instruction. (3-0) 3 Credit Hours.

Prerequisite: 2023 or an equivalent in a foreign language. A study of second-language-acquisition theories. Emphasis on instructional methodology as it relates to foreign languages and cultures.

FL 4933. Internship. (0-0) 3 Credit Hours.

Prerequisite: Permission of Department Chair. Supervised experience in a setting that provides the opportunity to integrate theory and practice in language usage. May be repeated once for credit.

FL 4953. Special Projects. (0-0) 3 Credit Hours.

Prerequisite: Permission of Department Chair. Opportunity to apply advanced-level oral and written language skills in a research project. This course is especially designed as the Signature Experience for language majors. May be repeated up to 6 semester credit hours in each language.

French (FRN)

FRN 1014. Elementary French I. (3-2) 4 Credit Hours. (TCCN = FREN 1411)

Fundamentals of French offering the opportunity to develop listening, speaking, reading, and writing skills. Emphasis on listening and speaking. Introduction to French culture. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

FRN 1024. Elementary French II. (3-2) 4 Credit Hours. (TCCN = FREN 1412)

4 hours credit. Prerequisite: [FRN 1014](#), the equivalent, an appropriate placement test score, or consent of instructor. Fundamentals of French offering the opportunity to develop listening, speaking, reading, and writing skills. Further study of French culture.

FRN 2013. Intermediate French I. (3-1) 3 Credit Hours. (TCCN = FREN 2311)

3 hours credit. Prerequisite: [FRN 1024](#), the equivalent, an appropriate placement test score, or consent of instructor. Continued opportunity to develop listening, reading, speaking, and writing skills. Grammar review and further study of French culture.

FRN 2023. Intermediate French II. (3-1) 3 Credit Hours. (TCCN = FREN 2312)

Prerequisite: [FRN 2013](#), the equivalent, an appropriate placement test score, or consent of instructor. Continued opportunity to develop listening, reading, speaking, and writing skills. Grammar review and further study of French culture.

FRN 2333. French Literature in English Translation. (3-0) 3 Credit Hours. (TCCN = ENGL 2331)

Major works of French literature across time, genres, and movements. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture. (Formerly FRN 3333. Credit cannot be earned for both [FRN 2333](#) and FRN 3333.)

FRN 3023. Advanced Language Skills. (3-0) 3 Credit Hours.

Development of oral and written language skills using contemporary readings, media, and oral discourse. Emphasis on increasing fluency through vocabulary expansion activities and selective grammar review. May be repeated for credit when topics vary.

FRN 3053. Business French. (3-0) 3 Credit Hours.

Prerequisite: [FRN 2023](#) or consent of instructor. Introduction to the basic context of the French economy and business world, with emphasis on development of practical language skills to deal with matters such as commercial correspondence, documents, reports, telecommunications, and conferences. Attention to vocabulary and style specific to French business. Practice in translation on business-related topics.

FRN 3413. Survey of French Literature and Culture. (3-0) 3 Credit Hours.

Prerequisite: [FRN 2023](#) or consent of instructor. Selections from French literature and culture studied as reflections and interpretations of central movements in French cultural history. Introduction to concepts of style, genre, and period. May be repeated for credit when topics vary.

FRN 4003. Topics in French Literature. (3-0) 3 Credit Hours.

Prerequisite: [FRN 2023](#) or consent of instructor. Focus on a specific area of French literature, from the medieval period through the 21st century. Selected texts are studied as examples of representative movements, genres, or authors in French literary history. May be repeated for credit when topics vary.

FRN 4213. Topics in French Culture and Linguistics. (3-0) 3 Credit Hours.

Prerequisite: [FRN 2023](#) or consent of instructor. Selected topics of cultural history or linguistics from medieval period through the 21st century. May be repeated for credit when topics vary.

FRN 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

FRN 4933. Internship in French. (0-0) 3 Credit Hours.

Prerequisite: Permission of Department Chair. Supervised experience in a setting that provides the opportunity to integrate theory and practice in language usage. May be repeated once for credit.

FRN 4953. Special Studies in French. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

FRN 4993. Honors Research. (0-0) 3 Credit Hours.

Prerequisite: Consent of the undergraduate advisor. Supervised research and preparation of an honors thesis. May be repeated once for credit, with approval.

General Business Admin (GBA)**GBA 2013. Social and Ethical Issues in Business. (3-0) 3 Credit Hours.**

A study of the social and ethical responsibilities of business organizations and of the people who work in those organizations.

GBA 4951. Special Studies in General Business Administration. (1-0) 1 Credit Hour.

Prerequisites: [MGT 3003](#) and consent of instructor, Department Chair, and Dean. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

GBA 4952. Special Studies in General Business Administration. (2-0) 2 Credit Hours.

Prerequisites: [MGT 3003](#) and consent of instructor, Department Chair, and Dean. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

GBA 4953. Special Studies in General Business Administration. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and consent of instructor, Department Chair, and Dean. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

Generating Edu Excellence in Math & Science (GEM)

GEM 1011. GEEMS Mathematics/Science I. (1-2) 1 Credit Hour.

This course introduces students to the prospect of mathematics and science secondary teaching as a career choice through hands-on experiences observing and teaching in an elementary classroom. Students will work in teams with an exemplary elementary teacher at one of the local school districts participating in mathematics and science classes. Class activities will emphasize the qualities of good mathematics and science teaching, including standards-based instruction and the integration of resources into effective class planning. Field-based experiences required. Restricted course; GEEMS Office approval required for registration. (Formerly UTE 1011. Credit cannot be earned for both [GEM 1011](#) and UTE 1011.).

GEM 1021. GEEMS Mathematics/Science II. (1-2) 1 Credit Hour.

Prerequisite: [GEM 1011](#). Builds on the teaching practices, lesson plan design, and instructional models used in [GEM 1011](#), but in a middle school setting. Students become familiar with the reform movements in the middle school concept and philosophy. Through class activities and observations of middle school mathematics and science teachers, students identify the instructional and management strategies and assessment techniques appropriate to early adolescence. Students work in teams with an exemplary middle school teacher to design and deliver lessons appropriate to middle school students. Field-based experiences required. Restricted course; GEEMS Office approval required for registration. (Formerly UTE 1021. Credit cannot be earned for both [GEM 1021](#) and UTE 1021.).

GEM 1031. GEEMS Mathematics/Science III. (1-2) 1 Credit Hour.

Prerequisite: [GEM 1021](#). Builds on the teaching practices, lesson plan design, and instructional models used in [GEM 1021](#), but in a high school setting. Students become familiar with the reform movements in the high school concept and philosophy. Through class activities and observations of high school mathematics and science teachers, students identify the instructional and management strategies and assessment techniques appropriate to adolescence. Students work in teams with an exemplary high school teacher to design and deliver lessons appropriate to high school students. Field-based experiences required. Restricted course; GEEMS Office approval required for registration. (Formerly UTE 1031. Credit cannot be earned for both [GEM 1031](#) and UTE 1031.).

Geography (GRG)

GRG 1013. Fundamentals of Geography. (3-0) 3 Credit Hours. (TCCN = GEOG 1300)

Introduction to the study of physical and cultural features of the earth and their distributions, causes, and consequences to humans. Topics include landforms, climate, natural resources, population, human behavior in spatial context, economic growth, urbanization, and political systems. May apply toward the Core Curriculum requirement in Social and Behavioral Sciences.

GRG 1023. World Regional Geography. (3-0) 3 Credit Hours. (TCCN = GEOG 1303)

Study of the world's regions, focusing on salient physical, cultural, economic, and political characteristics, including physiography, climate, natural resources, population, economic structure and development, globalization, urban growth, cultural institutions, and political structure. Regions include North America, Latin America, Europe, Middle East/North Africa, Sub-Saharan Africa, South Asia, Japan, China and East Asia, the Russian Federation, and Australasia. May apply toward the Core Curriculum requirement in Language, Philosophy and Culture.

GRG 1366. Physical and Cultural Geography of the American Southwest. (6-0) 6 Credit Hours.

A capstone course in geography with both classroom and field components including visiting sites, keeping field logs and making student presentations. Illustrates how the principles of physical and cultural geography play out in the physical and cultural landscapes of the Southwest. The one-week field portion includes travel in vans to areas that may include West Texas and New Mexico in addition to adjacent Colorado, Arizona, and Utah. Students will stay in campgrounds and walk into historic and natural sites.

GRG 2613. Physical Geography. (3-0) 3 Credit Hours. (TCCN = GEOG 1301)

Study of the earth's major landforms and climatic patterns, the processes giving use to these patterns, and their relationship to human activity. Includes the geomorphology of volcanoes, glaciers, coral reefs, mountains, caves, dunes, and plate tectonics. May apply toward the Core Curriculum requirement in Life and Physical Sciences.

GRG 2623. Human Geography. (3-0) 3 Credit Hours. (TCCN = GEOG 1302)

Study of the relationship between the social and spatial aspects of human behavior. Topics include stereotyping of people and places, human proxemics and territoriality, perception of places, environmental perception, spatial diffusion, and human migration. May apply toward the Core Curriculum requirement in Social and Behavioral Sciences.

GRG 2633. Introduction to Geographic Methods. (3-0) 3 Credit Hours.

Broad survey of geographic research methods. May include map interpretation, basic field techniques, archival research methods, geographic information systems, computer cartography, digital remote sensing, and spatial statistics. Students will be exposed to ways geographic data is used to address social and environmental problems and will receive some hands-on experience with modern computer-based geographic technologies. This course is strongly recommended before upper-division courses in geographic techniques (GIS, computer cartography, spatial analysis, or remote sensing).

GRG 3113. Geography of the United States and Canada. (3-0) 3 Credit Hours.

Study of selected geographic aspects of the major regions of the United States and Canada, emphasizing current social and economic issues in these regions. From a contextualizing treatment of the continent's physical geographies, the course proceeds to the social geographies of the major ethnic groups, showing how the historical management and appropriation of space has been integral to determining the character of the contemporary social hierarchy at the national level. The course proceeds through analyses of social and economic patterns of development, including the national and internal geographical patterns of North American cities.

GRG 3123. Geography of Latin America. (3-0) 3 Credit Hours.

Beginning with basic aspects of the physical environment, the course examines the social geographies of pre-colonial and colonial Latin America. The structural factors of Latin American economies and cultural institutions are then examined. Emphasis is on their spatial manifestations and their role in producing a Latin America often termed "underdeveloped." The emerging role of Latin America in the democratic world order of the post-1990s is also examined.

GRG 3133. Geography of Europe. (3-0) 3 Credit Hours.

Survey of the European culture area, including Western Europe, Eastern Europe, and the Baltics. Discussion of historical, urban, political, ethnic, and economic forces shaping the 21st-century geography of Europe, including the European Union and the Russian Federation.

GRG 3143. Geography of Mexico. (3-0) 3 Credit Hours.

Investigation of Mexico's physical and social geography, including climatic and geomorphologic influences, the historical imprint of the Amerindians and the Spanish, population growth and migration,

urbanization, political reform, social and cultural change, agriculture and industry, trade liberalization and the impact of NAFTA. May include a field trip to Mexico.

GRG 3153. Geography of Texas. (3-0) 3 Credit Hours.

A topical and regional examination of the physical, cultural, and economic patterns of the state. Includes demographic characteristics, agriculture, mining, manufacturing, selected urban areas, and current social issues. May include a field trip to the nonmetropolitan hinterland of San Antonio.

GRG 3166. Physical and Cultural Geography of the American Southwest. (6-0) 6 Credit Hours.

A capstone course in geography with both classroom and field components including visiting sites, keeping field logs and making student presentations. Illustrates how the principles of physical and cultural geography play out in the physical and cultural landscapes of the Southwest. The one-week field portion includes travel in vans to areas that may include West Texas and New Mexico in addition to adjacent Colorado, Arizona, and Utah. Students will stay in campgrounds and walk into historic and natural sites.

GRG 3213. Cultural Geography. (3-0) 3 Credit Hours.

A thematic exploration of the nature and distribution of human culture hearths, population, folk culture, popular culture, agriculture, industrialization, languages, and religion. Topics are defined and examined in the context of their manifestations and influences as regions, cultural diffusion, ecology, cultural interaction, and landscapes.

GRG 3314. Introduction to Geographic Information Systems. (3-2) 4 Credit Hours.

An introductory course on the application of the computer to the acquisition, manipulation, analysis, and display of geographic data; overview of projection systems, data acquisition issues, and presentation techniques. Three lecture and two laboratory hours per week. (Formerly GRG 3313. Credit cannot be earned for both [GRG 3314](#) and GRG 3313.).

GRG 3323. Spatial Analysis. (3-0) 3 Credit Hours.

Conceptualization, operationalization, and analysis of relationships in geography and the social sciences. Includes the scientific method, research design, sampling, interpretation of spatial patterns, statistics, and univariate and multivariate analysis. Involves use of computer software in the analysis and display of data.

GRG 3334. Advanced Geographic Information Systems. (3-2) 4 Credit Hours.

Prerequisite: [GRG 3314](#). Advanced topics in the use of computer-based analysis of geographic information including data acquisition, modeling complex datasets, and an introduction to scripting to customize an industry-standard software package. (Formerly GRG 3333. Credit cannot be earned for both [GRG 3334](#) and GRG 3333.).

GRG 3343. Analytical and Computer Cartography. (2-2) 3 Credit Hours.

The design, construction, production, and reproduction of maps using computer hardware and software. Topics may include cartographic theory, principles of visual communication, and the techniques of geographic visualization, including 3-D and 4-D modeling and animation.

GRG 3413. Geography of the Middle East and North Africa. (3-0) 3 Credit Hours.

An analysis of the states spanning the Maghreb from Morocco to Libya; Egypt; and the Middle East from Turkey and the Arabian Peninsula to Pakistan. Examination of the region's physical and social geography and its political and economic dynamics from early history to modern times.

GRG 3423. Geopolitics of Russia and Eurasia. (3-0) 3 Credit Hours.

Multidisciplinary introduction and regional study of the Russian Federation and the Eurasian realm, including the Caucasus, Central Asian nations, Afghanistan, and Mongolia. Both the geography and the politics of this area will be analyzed. Historical and contemporary geopolitical topics include nation-building, regional civilizations, revolution, terrorism, the 19th-century “Great Game,” the rise of the USSR, and the current transition of the Russian Federation to an uncertain future. (Same as POL 3423. Credit cannot be earned for both [GRG 3423](#) and POL 3423.).

GRG 3433. The Geography and Politics of the Asian Rim. (3-0) 3 Credit Hours.

An analysis of the states spanning from the Indian subcontinent through Indo-China to Japan and China. Examination of their physical and social geographies and the regional political dynamics prevalent in the modern era. Selected themes will include population dynamics, cultural hearths, immigration patterns, economic development, and regional integration.

GRG 3443. Medical Geography. (3-0) 3 Credit Hours.

The human ecology of health. Analysis of the cultural/environmental interactions that explain world patterns of disease, their diffusion and treatment.

GRG 3453. Population Geography. (3-0) 3 Credit Hours.

Study of the spatial dimensions of population distribution, growth, and mobility. Includes the historical and modern reasons for global patterns of population, the changes in birth and death rates over time, and levels of development as explained by the demographic transition and population policies. Special attention will be given to human migration theories, models, and case studies at the intra-urban, internal, and international levels. Global issues that are related to population growth and movement, such as political conflict and governance, disease, and immigration policy, will be covered.

GRG 3463. The Geography of Tourism. (3-0) 3 Credit Hours.

Introduces the principles and practices of global tourism, including its geographic diversity and the connections between tourist origins and destinations. Discusses the economic importance and dimensions of tourism and the social, economic, and environmental impacts it has on host societies.

GRG 3513. Urban Geography. (3-0) 3 Credit Hours.

A geographic examination of the environmental settings and impacts, history, structure, growth, area of influence, economic base, social structure, and culture of cities. Topics may include the physiography and climate of cities, preindustrial and industrial cities in history, urban land-use models and examples, factors that influence the growth and decline of cities, central place theory and the city’s tributary region, the community economic base and the economic multiplier, social area analysis, and the city as a center of cultural diversity. Focus of the course may be local, national, or international.

GRG 3523. Introduction to Urban Planning. (3-0) 3 Credit Hours.

An introduction to the urban public policy, urban dynamics, selected problems, and the role of the master planning process in their management and solution. Issues and themes include poverty, public education, urban growth, municipal and regional government, energy and waste management, historic preservation and urban design, and relationships between transportation and land use.

GRG 3533. Geography of Economic Activity. (3-0) 3 Credit Hours.

Investigates the location of agricultural, industrial, retail and service activities, and transportation flows, through relevant theories and models. Includes case studies of agricultural land use around cities, the urban economic base, shift-share analysis, global impacts on the local economy, and central place principles such as threshold and range. Major focus is on the San Antonio region.

GRG 3613. Conservation of Resources. (3-0) 3 Credit Hours.

A survey of natural resources, environmental policies, global consumption patterns, and the competing values that affect them. Topics include agriculture, water resources, air pollution, waste disposal, land management, wildlife preservation, habitat conservation, biodiversity, energy production, urban sprawl, economic growth, and other selected components of built and natural systems.

GRG 3623. Geography of Natural Hazards. (3-0) 3 Credit Hours.

This course introduces students to the geophysical phenomena that are the root causes of natural disasters, as well as the social institutions and human geographies that exacerbate them. Hazards covered in this class may include earthquakes, tsunamis, volcanic eruptions, hurricanes, tornados, floods, drought, wildfire, and global climate.

GRG 3633. Geography of Development. (3-0) 3 Credit Hours.

Survey and analysis of economic growth and social change in different parts of the world, with an emphasis on less-developed countries. Topics may include the definition of development, the major theories of development and underdevelopment, the evolution of global inequalities, the impacts of population growth and migration, the role of agriculture, industry, and transportation in the development, and cultural imperialism and the rise of religious fundamentalism.

GRG 3643. Political Geography. (3-0) 3 Credit Hours.

Investigates the role of the political state in society and the evolution of state organization from classical times to the present. Topics may include centrifugal and centripetal forces, geopolitics, territorial morphology, boundaries, core areas, and emerging supranationalism.

GRG 3653. Geographic Perspectives on Women. (3-0) 3 Credit Hours.

The course studies the role of women in the spatial organizations of society. Topics may include analysis of gendered spaces, the importance of gender relations in shaping physical, social, and built environments, and the spatial-economic consequences of gender-based policies.

GRG 3713. Weather and Climate. (3-0) 3 Credit Hours.

Analysis of the elements and causes of daily weather, climatic classifications, and climate change. Study of world distributions and components of climate, with studies of air pressure, precipitation, air masses, optical phenomena, and wave cyclones. Regional attention to weather patterns, including tornadoes and hurricanes.

GRG 3723. Physiography. (3-0) 3 Credit Hours.

This course provides a study of landforms, the description and interpretation of relief features of the surface of the earth, and the processes and materials that form them and change them over time. Students will be introduced to the impacts of human intervention in landscape-shaping processes. Special emphasis will be placed on the landforms of the Southwestern United States.

GRG 3733. Urban and Regional Analysis. (3-0) 3 Credit Hours.

Applied models of urban and regional growth, structure, interaction, influence, and inequality over space, with emphasis on the United States. Stresses practical skills.

GRG 3743. Biogeography. (3-0) 3 Credit Hours.

The study of the distribution of species and ecosystems in geographic space and over time. Topics may include the prehistoric and historic diffusion of plant and animal species, the global distribution of flora, fauna and soils, the impacts of plants and animals on settlement and globalization, and the consequences of human activity for the biosphere.

GRG 3753. Climate Change. (3-0) 3 Credit Hours.

Examines changes in climatic systems over both short and long time periods, their physical and human causes, and their impacts on physical and ecological systems. Discusses past, present, and future changes in climatic conditions and the methods used to evaluate changes in temperature, precipitation, and other climatic indicators.

GRG 4313. Remote Sensing. (2-2) 3 Credit Hours.

Prerequisite: [GRG 2633](#) or [GRG 3314](#) or equivalent. Introduction to the use of electromagnetic energy to sense objects in the natural and built environment; interpretation and recognition of patterns detected by satellite and aircraft-borne sensors. Application of computer software to the analysis and interpretation of remotely-sensed information.

GRG 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

GRG 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

GRG 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

GRG 4923. Advanced Research Tutorial. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor and the Department Chair. The tutorial provides students with the opportunity to serve as an apprentice to a professor in order to learn the process of academic research. The student would engage in all aspects of the professor's research project, potentially including data collection, report writing, joint paper presentations or publications, providing ideal preparation for graduate school.

GRG 4933. Internship in Geography. (0-0) 3 Credit Hours.

Prerequisites: Consent of internship coordinator and faculty supervisor. Supervised experience relevant to geography within selected community organizations. A maximum of 6 semester credit hours may be earned through the internship.

GRG 4936. Internship in Geography. (0-0) 6 Credit Hours.

Prerequisites: Consent of internship coordinator and faculty supervisor. Supervised experience relevant to geography within selected community organizations. A maximum of 6 semester credit hours may be earned through the internship.

GRG 4953. Special Studies in Geography. (3-0) 3 Credit Hours.

An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

GRG 4983. Research Practicum. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor and the Department Chair. The practicum provides students with the opportunity to focus on a specific research issue having practical applications in geography, governance, politics, or policy. Students participate in a hands-on research experience on the issue in a collective research environment. Potential practicum activities could be related to the Social Research Lab, the Media & Elections Studio, and the GIS Lab, for example.

GRG 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for Honors in Geography during the last two semesters; completion of honors examination and consent of the Honors College. Supervised research and preparation of an honors thesis. May be repeated once with advisor's approval.

Geology (GEO)**GEO 1013. The Third Planet. (3-0) 3 Credit Hours. (TCCN = GEOL 1301)**

Evolution of ideas concerning the earth's origin, structure, and age; social impact of recognizing the antiquity of the planet and humankind's brief presence; examination of how the distribution of planetary resources influenced the rise and clash of civilizations. May not be applied to a major in geology. May apply toward the Core Curriculum requirement in Life and Physical Sciences.

GEO 1103. Physical Geology. (3-0) 3 Credit Hours. (TCCN = GEOL 1303)

Prerequisites: Completion of or concurrent enrollment in [MAT 1093](#) or higher, or satisfactory performance on placement exam. Completion of or concurrent enrollment in [GEO 1111](#) required. The earth as a dynamic planet; relation of the earth's present processes to its resources, structure, and internal composition. Nature of minerals and rocks, the hydrosphere, tectonics, earthquakes, volcanism, and surface features of the earth. (Formerly titled "Introduction to Earth Systems.").

GEO 1111. Physical Geology Laboratory. (1-3) 1 Credit Hour. (TCCN = GEOL 1103)

Prerequisite: Completion of or concurrent enrollment in [GEO 1103](#). Relation of the earth's present processes to its resources, structure, and internal composition. Field and laboratory study of minerals, rocks, maps, and aerial and satellite photos. Field trips may be required. (Formerly titled "Introduction to Earth Systems Laboratory.").

GEO 1123. Life Through Time. (3-0) 3 Credit Hours. (TCCN = GEOL 1304)

The origin of Earth and the interaction of plate tectonics, mountain building, evolution of the oceans and climate, and the history and development of life from the Archean to the present. Concurrent enrollment in [GEO 1131](#) recommended. May apply toward the Core Curriculum requirement in Life and Physical Sciences. (Formerly titled "Earth History.").

GEO 1131. Life Through Time Laboratory. (1-3) 1 Credit Hour. (TCCN = GEOL 1104)

Prerequisite: Completion of or concurrent enrollment in [GEO 1123](#). Field and laboratory study of fossils and rock sequences; interpretation of earth history. Field trips may be required. (Formerly titled "Earth History Laboratory.").

GEO 2003. Mineralogy. (3-0) 3 Credit Hours.

Prerequisites: [CHE 1103](#), [CHE 1121](#), [GEO 1103](#), [GEO 1111](#), [MAT 1093](#) or higher, or satisfactory performance on placement exam. Completion of or concurrent enrollment in [GEO 2011](#). Crystallography, crystal chemistry, and the physical and optical properties of minerals. Principles of optical mineralogy and the microscopic determination of nonopaque minerals. Field trips may be required.

GEO 2011. Mineralogy Laboratory. (1-4) 1 Credit Hour.

Prerequisite: Concurrent enrollment in [GEO 2003](#). Laboratory study of crystal models, crystals, and minerals. Use of the petrographic microscope for mineral identification. Field trips may be required. (Formerly GEO 2012. Credit cannot be earned for both [GEO 2011](#) and GEO 2012.).

GEO 2113. Fundamentals of Geographic Information Systems (GIS). (2-2) 3 Credit Hours.

Prerequisite: [CS 1173](#) or equivalent. This course will serve as a basic introduction to the concepts and techniques of utilizing a Geographic Information System (GIS) to study and model environmental issues. In lecture and laboratory, students will study methods of querying, analyzing, creating and displaying GIS data utilizing industry standard software. Students will also be introduced to using the Global Positioning System (GPS) as a means for creating GIS data. (Formerly ES 2113 and ES 4043. Credit cannot be earned for more than one of the following: [GEO 2113](#), ES 2113, or ES 4043.).

GEO 3004. Rocks, Fossils, and Global Tectonics. (2-4) 4 Credit Hours.

Prerequisites: [GEO 1103](#) and [GEO 1111](#). An investigation of the major rock forming minerals, petrogenesis of the major rock types, and their plate tectonic context. Study of major trends in fauna and flora through time and their application to interpreting plate tectonics, paleoenvironments, and paleoclimate. Credit may not be applied to a B.S. or B.A. major in Geology.

GEO 3043. Petrology. (3-0) 3 Credit Hours.

Prerequisites: [GEO 2003](#), [GEO 2011](#), [GEO 3112](#), [MAT 1214](#), and concurrent enrollment in [GEO 3051](#). Description, classification, occurrence, and origin of igneous and metamorphic rocks. Field trips may be required.

GEO 3051. Petrology Laboratory. (1-4) 1 Credit Hour.

Prerequisites: [GEO 2003](#), [GEO 2011](#), and concurrent enrollment in [GEO 3043](#). Laboratory study of igneous and metamorphic rocks in hand specimen and thin section. Field trips may be required. (Formerly GEO 3052. Credit cannot be earned for both [GEO 3051](#) and GEO 3052.).

GEO 3063. Paleontology. (3-0) 3 Credit Hours.

Prerequisites: [GEO 1103](#), [GEO 1111](#), [GEO 1123](#), [GEO 1131](#), [GEO 3123](#), [GEO 3131](#), or consent of instructor, and concurrent enrollment in [GEO 3071](#). Study of fossil animals and plants. Emphasis on invertebrate animals. Systematics, biostratigraphy, paleoecology, and evolution of fossil organisms. Field trips may be required.

GEO 3071. Paleontology Laboratory. (1-3) 1 Credit Hour.

Prerequisites: [GEO 1103](#), [GEO 1111](#), [GEO 1123](#), [GEO 1131](#), [GEO 3123](#), [GEO 3131](#), and concurrent enrollment in [GEO 3063](#). Study of fossil specimens, collections, and preparation techniques. Field trips may be required.

GEO 3103. Structural Geology. (3-0) 3 Credit Hours.

Prerequisites: [GEO 3043](#), [GEO 3051](#), and concurrent enrollment in [GEO 3111](#). Response of earth materials to natural stresses. Description and origin of geologic structures. Field trips may be required.

GEO 3111. Structural Geology Laboratory. (1-3) 1 Credit Hour.

Prerequisite: Concurrent enrollment in [GEO 3103](#). Laboratory study of geologic structures using maps, cross-sections, photographs, and descriptive geometric and stereographic methods. Field trips may be required.

GEO 3112. Geologic Field Investigations. (1-4) 2 Credit Hours.

Prerequisites: [GEO 1111](#) and [GEO 1131](#), or consent of instructor. Introduction to techniques for studying geologic features and processes in the field, including rock identification, construction of geological maps, orientation analysis, and report writing. Concurrent enrollment in [GEO 4933](#) or [GEO 4943](#) is not permitted. Some half-day and Saturday field trips may be required. (Formerly GEO 3113. Credit cannot be earned for both [GEO 3112](#) and GEO 3113.).

GEO 3123. Sedimentation and Stratigraphy. (3-0) 3 Credit Hours.

Prerequisites: [GEO 1123](#), [GEO 1131](#), [GEO 2003](#), [GEO 2011](#), [GEO 3112](#), and concurrent enrollment in [GEO 3131](#). Processes of erosion, transportation, and deposition that form bodies of sedimentary rock. Depositional systems and modeling are a significant area of study. Stratigraphic principles and temporal and spatial facies relationships at various scales. Field trips may be required. (Formerly titled "Sedimentary Geology.").

GEO 3131. Sedimentation and Stratigraphy Laboratory. (1-3) 1 Credit Hour.

Prerequisites: [GEO 2003](#), [GEO 2011](#), and concurrent enrollment in [GEO 3123](#). Laboratory studies of sedimentary processes and their products. Hand specimens, thin sections, sedimentary structures, and interpretation of depositional environments. Stratigraphic case studies, including surface, subsurface, and sequence stratigraphic analysis. Field trips may be required. (Formerly titled "Sedimentary Geology Laboratory.").

GEO 3143. Economic Geology. (3-0) 3 Credit Hours.

Prerequisites: [GEO 2003](#), [GEO 2011](#), and concurrent enrollment in [GEO 3151](#). Origin and occurrence of economic natural resources including metallic ore deposits, industrial minerals, and fossil fuels. Field trips may be required.

GEO 3151. Economic Geology Laboratory. (1-3) 1 Credit Hour.

Prerequisites: [GEO 2003](#), [GEO 2011](#), and concurrent enrollment in [GEO 3143](#). Laboratory study of ore specimens and industrial minerals from important ore localities. Field trips may be required.

GEO 3163. Oceanography. (3-0) 3 Credit Hours.

General oceanography, with emphasis on marine geology and especially the continental margins. An optional field trip may be offered.

GEO 3374. Geochemistry. (2-4) 4 Credit Hours.

Prerequisites: [GEO 1103](#), [GEO 1111](#), [CHE 1103](#), [CHE 1121](#), and [MAT 1093](#). A survey of geochemical processes and the distribution of elements in the earth. Application of geochemical methods and data to the solution of geologic problems. Includes geochemical laboratory experiments and use of analytical equipment. Incorporates use of standard computer software for analysis of geochemical data and graphing of results.

GEO 3383. General Geophysics. (3-0) 3 Credit Hours.

Prerequisites or Corequisites: [MAT 1224](#) and [PHY 1623](#) or [PHY 1963](#). This course examines the interrelated geology and physics of the Earth's interior as deduced from earthquake seismology, gravity and magnetic fields, and the application of geophysical methods to the exploration of near-surface cultural and natural resources. Topics in archeological, environmental, and engineering geophysics will

be explored through the methods of refraction seismology, electrical resistivity, electromagnetic induction, microgravity, and ground penetrating radar. Field trips may be required.

GEO 3393. Introduction to Isotope Geochemistry. (3-0) 3 Credit Hours.

Prerequisites: [GEO 1103](#), [GEO 1111](#), [CHE 1103](#), [CHE 1121](#), and [MAT 1093](#); or [GEO 3374](#). The course includes a review of theories of nuclear structure, stability of nucleus, nucleosynthesis and origin of elements, and introduces both radiogenic and stable isotope geochemistry. Topics include radioactive decay schemes for tritium-helium, U-Pb, Rb-Sr, Sm-Nd, K-Ar, and U-Th-Pb-He systems; isotopic fractionations of stable isotopes of C, H, O, N, and S; and application of radiogenic and stable isotopes to petrology, evolution of the crust and mantle, geochronology, geothermometry, archaeology, ecology, hydrology, and paleoclimatic interpretation.

GEO 4013. Volcanology. (3-0) 3 Credit Hours.

Prerequisite: [GEO 3043](#) or consent of instructor. A survey of volcanoes and volcanic processes, including historically important volcanic eruptions and the prediction and mitigation of volcanic hazards. Field trips may be required.

GEO 4023. Engineering Geology. (3-0) 3 Credit Hours.

Prerequisites: PHY 1923 (engineering majors only) or [PHY 1603](#) or [PHY 1943](#), and [MAT 1214](#); or consent of instructor. Geologic factors in construction. Geotechnical properties of minerals, rocks, and soils. Case studies. Field trips may be required. (Formerly GEO 3023. Credit cannot be earned for both [GEO 4023](#) and GEO 3023.).

GEO 4063. Environmental Geology. (3-0) 3 Credit Hours.

Prerequisites: [GEO 1103](#) and [GEO 1111](#). An analysis of human interaction with geologic systems; the risks and effects of natural geologic hazards such as volcanic eruptions, earthquakes, and floods. Topics will include the effects of human activity on natural systems such as groundwater quality and recharge, river systems, and coasts. The meaning of “geologic repository” for human waste disposal and how the concept is applied will also be addressed.

GEO 4093. Principles of Remote Sensing. (2-2) 3 Credit Hours.

Prerequisites: [MAT 1073](#) or higher and [PHY 1603](#) or [PHY 1943](#). This course will provide a thorough introduction to remote sensing theory, technology, and application. The emphasis in this course is on understanding the underlying principles of acquiring, interpreting, and applying data from imaging systems covering the electromagnetic spectrum from the ultraviolet through the microwave. (Formerly ES 4093. Credit cannot be earned for both [GEO 4093](#) and ES 4093.).

GEO 4113. Geomorphology. (3-0) 3 Credit Hours.

Prerequisites: [GEO 1103](#) or [GRG 2613](#), or consent of instructor, and junior or senior standing, and concurrent enrollment in [GEO 4121](#). Examination of landforms on the Earth’s surface and landscape-forming processes. Field trips may be required.

GEO 4121. Geomorphology Laboratory. (1-3) 1 Credit Hour.

Prerequisites: [GEO 1103](#) or [GRG 2613](#), or consent of instructor, and junior or senior standing, and concurrent enrollment in [GEO 4113](#). Interpretation of landforms and their formative processes from maps, aerial photographs, and calculations. Field trips may be required.

GEO 4623. Ground-Water Hydrology. (3-0) 3 Credit Hours.

Prerequisites: [GEO 1103](#), [GEO 1111](#), [PHY 1603](#) or [PHY 1943](#), and [MAT 1214](#). Hydrologic cycle and the theory of underground water. Recharge and discharge of aquifers; water quality; exploration and development of ground-water supplies. Field trips may be required.

GEO 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree in geology.

GEO 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree in geology.

GEO 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree in geology.

GEO 4933. Field Geology Part I. (1-6) 3 Credit Hours.

Prerequisites: [GEO 3103](#) and [GEO 3111](#), or consent of instructor. Part I: Field mapping and measurements. Field trips are required. (Formerly GEO 4946. Credit cannot be earned for both [GEO 4933](#) and GEO 4946.).

GEO 4943. Field Geology Part II. (1-6) 3 Credit Hours.

Prerequisite: [GEO 4933](#) or consent of instructor. Part II: Field mapping and measurements. Field trips are required. (Formerly GEO 4946. Credit cannot be earned for both [GEO 4943](#) and GEO 4946.).

GEO 4951. Special Studies in Geology. (1-0) 1 Credit Hour.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

GEO 4952. Special Studies in Geology. (2-0) 2 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

GEO 4953. Special Studies in Geology. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

GEO 4993. Honors Research. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for College Honors during their last two semesters; approval by the College Honors Committee. Supervised research and preparation of an honors thesis. May be repeated only once with approval.

German (GER)**GER 1014. Elementary German I. (3-2) 4 Credit Hours. (TCCN = GERM 1411)**

Fundamentals of German offering the opportunity to develop listening, reading, speaking, and writing skills. Introduction to German culture.

GER 1024. Elementary German II. (3-2) 4 Credit Hours. (TCCN = GERM 1412)

Prerequisite: [GER 1014](#), the equivalent, an appropriate placement test score, or consent of instructor. Fundamentals of German offering the opportunity to further develop abilities in listening, reading, speaking, and writing skills. Further exposure to German culture.

GER 2013. Intermediate German I. (3-1) 3 Credit Hours. (TCCN = GERM 2311)

Prerequisite: [GER 1024](#), the equivalent, an appropriate placement test score, or consent of instructor. Continued opportunity to develop listening, reading, speaking, and writing skills. Continued exposure to German culture.

GER 2023. Intermediate German II. (3-1) 3 Credit Hours. (TCCN = GERM 2312)

Prerequisite: [GER 2013](#), the equivalent, an appropriate placement test score, or consent of instructor. Continued opportunity to develop listening, reading, speaking, and writing skills. Continued exposure to German culture.

GER 2333. German Literature in English Translation. (3-0) 3 Credit Hours. (TCCN = ENGL 2331)

Major works of German literature across time, genres, and movements. (Formerly GER 3333. Credit cannot be earned for both [GER 2333](#) and GER 3333.)

GER 3023. Advanced Language Skills. (3-0) 3 Credit Hours.

Prerequisite: [GER 2023](#) or consent of instructor. Development of oral and written language skills using contemporary readings, media, and oral discourse. Emphasis on increasing fluency through vocabulary expansion activities and selective grammar review. May be repeated for credit when topics vary.

GER 3413. Survey of German Literature and Culture. (3-0) 3 Credit Hours.

Prerequisite: [GER 2023](#) or consent of instructor. Selected works from the medieval period to the 21st century are studied as examples of central movements in German culture and literary history. The course presents the shape of German civilization, emphasizing the major periods, styles, movements, and generations. May be repeated for credit when topics vary.

GER 4003. Topics in German Literature. (3-0) 3 Credit Hours.

Prerequisite: [GER 2023](#) or consent of instructor. Focus on a specific area of German literature, from the medieval period through the 21st century. Selected texts are studied as examples of representative movements, genres, or authors in German literary history. May be repeated for credit when topics vary.

GER 4213. Topics in German Culture and Linguistics. (3-0) 3 Credit Hours.

Prerequisite: [GER 2023](#) or consent of instructor. Focuses on selected topics of cultural history, such as Vienna 1890–1914, Expressionism, contemporary cultural/political developments, or on a linguistic topic. May be repeated for credit when topics vary.

GER 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

GER 4933. Internship in German. (0-0) 3 Credit Hours.

Prerequisite: Permission of Department Chair. Supervised experience in a setting that provides the opportunity to integrate theory and practice in language usage. May be repeated once for credit.

GER 4953. Special Studies in German. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

GER 4993. Honors Research. (0-0) 3 Credit Hours.

Prerequisite: Consent of the undergraduate advisor. Supervised research and preparation of an honors thesis. May be repeated once for credit, with approval.

Global Affairs (GLA)**GLA 1013. U.S. in the Global Arena. (3-0) 3 Credit Hours.**

This course assists students in understanding the context in which United States interacts with the rest of the world and the mutual effects of that relationship. It traces the history and evolution of the United States' involvement in global affairs and why and how what happens in the world matters for the U.S. and vice-versa. Issues to be discussed may include globalization, law politics, international banking, multinationals, health issues, the environment, terrorism, security, food, technology, international communication, and other intermestic issues.

GLA 2603. Introduction to Global Affairs. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). This course offers an opportunity for broad study of issues such as North-South and East-West conflicts; international aid and trade through transnational enterprises; economic development and debt; military conflicts and nuclear weapons; new frontiers of oceanic resources, tropical forests, and space; cross-cultural communications; American and foreign values; language issues; and investigations of issues related to a particular nation and culture. (Same as INS 2403 and [POL 2603](#). Credit cannot be earned for [GLA 2633](#), INS 2403 and [POL 2603](#).)

GLA 2633. Comparative Politics. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). A comparative examination of the diverse forms, goals, styles, and practices of government in democratic and authoritarian states. Several major polities will be studied in detail. (Same as [POL 2633](#). Credit cannot be earned for both [GLA 2633](#) and [POL 2633](#).)

GLA 3003. International Law. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). This course evaluates the ways that international law affects world politics. Emphasis is on the foundations and substantive rules of international law and national politics.

Topics may include the laws of war, war crimes, terrorism, human rights, economic exchange and natural resources.

GLA 3013. Introduction to Global Analysis. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). An overview of global conditions and events traditionally subject to analysis by American and international organizations, such as defense and security concerns, economic development, natural resources, human migration, terrorism, arms transfers and weapons proliferation, natural disasters, and international cooperation. Provides an overview of how government and private sector organizations respond and how they engage in defense, diplomacy, intelligence, etc. Discusses the role and operations of analytical functions in government and private organizations. May be taught from different perspectives depending upon faculty expertise and interests. (Same as [POL 3273](#). Credit cannot be earned for both [GLA 3013](#) and [POL 3273](#).)

GLA 3033. International Governance. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). International law, organizations, regimes, hierarchies, and norms such as sovereignty govern the international system. These factors help create a world order that limits armed conflict, regulates the world economy, advances environmental protection, and sets human rights standards. This course explains theories of international governance, and compares these perspectives to the analysis of political scientists on the past record and likely future of world order. (Same as [POL 3033](#). Credit cannot be earned for both [GLA 3033](#) and [POL 3033](#).)

GLA 3043. International Human Rights. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). This course explores the philosophical and political meaning of fundamental human rights; cases of human rights violations (such as genocide in the Holocaust, Rwanda, Kosovo, and Cambodia; the death penalty; female genital mutilation; violations of workers' rights; and torture); and the role that states, international organizations and individuals can play in ending human rights abuses. Course readings may include contemporary theories of human rights and case studies on the enforcement of rights around the world. (Same as [POL 3043](#). Credit cannot be earned for both [GLA 3043](#) and [POL 3043](#).)

GLA 3063. Comparative Political Participation. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). This course examines the citizen participation in the democratic process across industrialized democracies, including the United States. The course covers participation within mainstream channels of the democratic process, such as voting and campaign participation, and also participation in unconventional activities such as social movements and protests. (Same as [POL 3063](#). Credit cannot be earned for both [GLA 3063](#) and [POL 3063](#).)

GLA 3103. Research Methods in Global Affairs. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). This course introduces students to a range of methodological approaches relevant to studies of global problems and international relations. Students will study relevant background debates in the philosophy of the social sciences, consider examples of contemporary research designs associated with global problems and international relations, and learn how to craft research questions that address real world challenges. Course may include a range of methodological approaches including quantitative methods (e.g. measures of central tendency and dispersion, regression, and problems of description and inference, etc.), qualitative methods (e.g. comparative case studies, content analysis, and discourse analysis, etc.). Course may require the use of standard computer packages and secondary analysis of data.

GLA 3213. Theories of International Relations. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). This course provides an overview of theoretical debates and conceptual frameworks for the study of international relations. It examines a range of theoretical models

important to explaining how the world works including but not limited to, classical and structural realism, liberalism, global society/complex interdependence/liberal institutionalism, Marxism/dependency, constructivism, and critical theories including feminism and post-modernism. The course also may introduce frameworks for the study of foreign policy decision making such as bureaucratic and organizational politics, and small group politics.

GLA 3223. Theories of Globalization. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). This course explores the nature of justice in a globalized political world. It raises questions such as whether a single standard of justice (e.g., human rights) can legitimately be applied to all cultures across the world, and examines the nature of our obligations to individuals in other countries given the economic and political interdependency of all peoples. Some attention may also be given to particular topics such as immigration policy and the use of foreign military intervention for humanitarian purposes.

GLA 3233. Theories of International Justice. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). This course explores the nature of justice in a globalized political world. It raises questions such as whether a single standard of justice (e.g., human rights) can legitimately be applied to all cultures across the world, and examines the nature of our obligations to individuals in other countries given the economic and political interdependency of all peoples. Some attention may also be given to particular topics such as immigration policy and the use of foreign military intervention for humanitarian purposes.

GLA 3383. East European Politics. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). This course provides an overview of politics in Eastern Europe broadly understood as the region of East Central and Southeastern Europe, and the post-Soviet space. It traces the evolution of nation building since the interwar period and the system of communist rule, with a focus on key dimensions of the post-communist transformation of the region. Thematic coverage may include constitutions, political culture, party politics, and Euro-Atlantic integration. Same as [POL 3383](#). Credit cannot be earned for both [GLA 3383](#) and [POL 3383](#)).

GLA 3393. Latin American Politics. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). An examination of political institutions and their relationship to social and economic change in Latin America. Profiles of major Latin American countries, such as Mexico, Brazil, Argentina, Peru, and Cuba. (Same as [POL 3393](#). Credit cannot be earned for both [GLA 3393](#) and [POL 3393](#)).

GLA 3403. European Governments. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). The interplay of politics with the changing social and economic environment in the advanced industrial societies of Western Europe. Elites, participation, governmental structures, party systems, interest groups, and public policy will be examined in several selected polities and the European Union. (Same as [POL 3403](#). Credit cannot be earned for both [GLA 3403](#) and [POL 3403](#)).

GLA 3433. Governments and Politics of Southeast Asia. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). A comparative examination of the political systems of selected Southeast Asian countries and their efforts to deal with political, economic, and social change. Countries studied may include Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. (Same as [POL 3433](#). Credit cannot be earned for both [GLA 3433](#) and [POL 3433](#)).

GLA 3443. Governments and Politics of East Asia. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). A comparative examination of the political systems of selected East Asian countries and their efforts to deal with problems of political, economic, and social change. Countries studied may include the People's Republic of China, the Republic of China, and South Korea. (Same as [POL 3443](#). Credit cannot be earned for both [GLA 3443](#) and [POL 3443](#).)

GLA 3453. The Politics of Mexico. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). Background to the contemporary political system of Mexico, including independence, foreign intervention, the Diaz regime, and the 1910–1917 revolution. Other topics may include the constitution, the structure of government, political parties, the presidency, economic development and policy, contemporary leadership, and elites. (Same as [POL 3453](#). Credit cannot be earned for both [GLA 3453](#) and [POL 3453](#).)

GLA 3463. Politics of the Third World. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). The political system of various Third World nations. An inquiry into the political and economic problems of these countries, such as development, instability, and political change. (Same as [POL 3463](#). Credit cannot be earned for both [GLA 3463](#) and [POL 3463](#).)

GLA 3483. International Political Economy. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). This course is an introduction to the institutions and policies that govern international economic relations. Students will study the development of the international economic system as well as controversies over money, trade, and governance. (Same as [POL 3483](#). Credit cannot be earned for both [GLA 3483](#) and [POL 3483](#).)

GLA 3493. Politics of the Middle East. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). An examination of the past, present, and future of Middle East politics, with an emphasis on culture, politics, religion, and conflicts in the area; the international relations of Middle Eastern countries as well as superpowers' involvement. (Same as [POL 3493](#). Credit cannot be earned for both [GLA 3493](#) and [POL 3493](#).)

GLA 3503. American Foreign Policy since World War II. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). Major private interests and public institutions involved in American foreign policy making; public opinion and foreign involvement; specific policies toward international organizations and major world regions. (Same as [POL 3503](#). Credit cannot be earned for both [GLA 3503](#) and [POL 3503](#).)

GLA 3513. International Organizations in World Politics. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). Major issues involving international organizations: nationalism and globalism, financing problems, international staffing, voting patterns, peace-keeping, and international conferences. Organizations examined include the United Nations system, regional development banks, alliance systems, cartels, and common markets. (Same as [POL 3513](#). Credit cannot be earned for both [GLA 3513](#) and [POL 3513](#).)

GLA 3523. Force in International Politics. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). An examination of modern research into the use of coercion in international relations, specifically economic sanctions, war, and terrorism. Special emphasis will be placed on the causes, trends, and consequences of interstate wars. Peace movements and the technologies of peace making will also be covered. (Same as [POL 3523](#). Credit cannot be earned for both [GLA 3523](#) and [POL 3523](#).)

GLA 3563. Current Issues in World Politics. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). An examination of the issues that divide the people of the world. The structure of contemporary world problems will be studied and possible strategies for the reduction of international conflict will be assessed. Topics may include nuclear proliferation, world hunger, revolution and intervention, transnational enterprises, competing ideologies of international relations, and global ecology. (Same as [POL 3563](#). Credit cannot be earned for both [GLA 3563](#) and [POL 3563](#).)

GLA 3633. Political Economy. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). The political, legal, and ethical context of modern commercial society is explored through the evolution of conceptions of the economy, the individual, and the state. Topics may include the institutional foundations of market societies, ethical and legal impact of business practices, comparisons of national economic policies, the interaction of modern government and economic activity, and the impact of markets on concepts of public and private life. (Same as [POL 3633](#). Credit cannot be earned for both [GLA 3633](#) and [POL 3633](#).)

GLA 3763. Globalization. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). This course examines normative and empirical issues in globalization debates, such as the role of states and nonstate actors, the emergence of global civil society, patterns of international development, the influence of international integration on security, health, violence, and intercultural toleration, and the status of institutions for global justice. (Formerly INS 3763. Same as [POL 3763](#). Credit cannot be earned for more than one of the following: [GLA 3763](#), INS 3763, or [POL 3763](#).)

GLA 3783. Comparative Democratization. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). This course examines theories of democratic transition and focuses on the problematics of democratic change throughout the world. Case studies may include political change after the end of the Cold War in the former Communist states, democratic transitions in Latin America, patterns of change in sub-Saharan Africa, the Middle East, and south Asia. (Same as [POL 3783](#). Credit cannot be earned for both [GLA 3783](#) and [POL 3783](#).)

GLA 3793. Politics and Ethics of International Business. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). This course will examine theories of international investment, corporation strategy, and measures of international business performance. Topics may include the relationships between corporations, states, and markets, and multinational corporations as actors in trade, finance, social innovation, economic development, and global conflict.

GLA 4003. Comparative Foreign Policy. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). This course is an in-depth comparative examination of the worldviews, institutional processes, political actors, and outcomes of foreign policy-making of several major nation-states. Themes that may be covered are comparative policies for international security, international governance, economic competition, humanitarian action, and regional crises such as the Middle East and African development. (Same as [POL 4003](#). Credit cannot be earned for both [GLA 4003](#) and [POL 4003](#).)

GLA 4013. The Intelligence Community and World Affairs. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). Discusses the historical and political developments of intelligence as a component of defense and security policy, mainly in the post-World War II era. Examines the legal foundations of the American national security and intelligence functions, including discussion of accountability and control measures. Emphasizes the role of intelligence in national security policy-making principally conducted by the Executive and Legislative branches in democratic societies.

Discusses the main functions of intelligence. (Same as [POL 4013](#). Credit cannot be earned for both [GLA 4013](#) and [POL 4013](#).)

GLA 4123. Techniques in Global Analysis. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). Examines various techniques for collecting, analyzing, and communicating information by government and private sector organizations engaged in global analysis. Stresses methodologies for analyzing informational inputs, including strengths and weaknesses of various analytical applications. Studies analytic cultures and pathologies associated with information collection and interpretation, legal and political oversight, accommodation of dissenting views in interpretation and policy debate, and economic, political, and cultural implications of analytical findings. Compares and contrasts analytical methods employed by public and private organizations. May be taught from different perspectives depending upon faculty expertise and interests. (Formerly [POL 4023](#). Credit cannot be earned for both [GLA 4123](#) and [POL 4023](#).)

GLA 4133. Conflict, Law, and Security in Global Affairs. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). This course offers students an opportunity to closely examine the causes, dynamics, and dilemmas associated with conflict on the modern global stage. Issues under discussion may include intra- and interstate conflicts; nationalism and conflict; economic, social, and political costs and implications of conflict; national and international approaches to conflict resolution, reconstruction, and development; human rights principles and questions of international law and justice; debates about humanitarian interventions; population displacements; the range of security concerns and responses by government actors and institutions; and the viability of nation states in protecting individuals, groups, and institutions of governance.

GLA 4143. The European Union. (3-0) 3 Credit Hours.

(3-0) 3 hours credit. Prerequisite: [GLA 1013](#) or [POL 1013](#). This course focuses on the historical, political, and intellectual sources of the European Union, the evolution of its institutions, and the effectiveness of its system of governance. Emphasis will be placed on the influence of regional integration on politics and democracy within Europe. The course will consider the construction of united Europe in the context of relations between the EU and member states, European institutions and citizens, and the EU and the world system of politics. (Same as [POL 4143](#). Credit cannot be earned for both [GLA 4143](#) and [POL 4143](#).)

GLA 4203. Current Topics in Global Analysis. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#) or [POL 1013](#). An organized course offering the opportunity for specialized study of topics in such areas as domestic security planning, politics of national defense budgets and products, terrorism, arms transfers and controls, natural disaster preparedness, peace making, nuclear weapons proliferation and negotiations, international trade agreements and policies, national security economics, and civil liberties controversies. (Formerly [POL 4203](#). Credit cannot be earned for both [GLA 4203](#) and [POL 4203](#).)

GLA 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: [GLA 1013](#) and Independent Study Course Form signed by the instructor, the student's advisor, the Department Chair, and the Dean of the College of Liberal and Fine Arts. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

GLA 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: [GLA 1013](#) and Independent Study Course Form signed by the instructor, the student's advisor, the Department Chair, and the Dean of the College of Liberal and Fine Arts. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for

credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

GLA 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: [GLA 1013](#) and Independent Study Course Form signed by the instructor, the student's advisor, the Department Chair, and the Dean of the College of Liberal and Fine Arts. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

GLA 4933. Internship in Global Affairs. (0-0) 3 Credit Hours.

Prerequisites: [GLA 1013](#) and consent of the internship coordinator and Department Chair. Supervised experience relevant to global affairs within selected community and national organizations. A maximum of 6 semester credit hours may be earned through the internship.

GLA 4936. Internship in Global Affairs. (0-0) 6 Credit Hours.

Prerequisites: [GLA 1013](#) and consent of the internship coordinator and Department Chair. Supervised experience relevant to global affairs within selected community and national organizations. A maximum of 6 semester credit hours may be earned through the internship.

GLA 4953. Special Studies in Global Affairs. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#). An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

GLA 4973. Seminar in Global Affairs. (3-0) 3 Credit Hours.

Prerequisite: [GLA 1013](#). The opportunity for an intensive study of a selected topic. Primary emphasis on supervised research on various aspects of the topic. May be repeated for credit when topics vary, up to an additional 3 credits. Enrollment limited to juniors and seniors majoring in Global Affairs.

GLA 4983. Research Practicum. (0-0) 3 Credit Hours.

Prerequisites: [GLA 1013](#) and permission in writing (form available) of the instructor, the student's advisor, and the Department Chair. The practicum provides students with the opportunity to focus on a specific research issue having practical applications in global affairs. Students participate in hands-on research experience on the issue in a collective research environment. Potential research may be related to the Social Research Lab or Study Abroad programs.

GLA 4993. Honors Thesis. (0-0) 3 Credit Hours.

A minimum grade point average of 3.0 at UTSA, a 3.5 grade point average in the major, and recommendation by a member of the Political Science and Geography faculty.

Greek (GRK)

GRK 1114. Introductory Classical Greek I. (3-2) 4 Credit Hours. (TCCN = GREE 1411)

Fundamentals of Greek grammar and readings in Greek. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

GRK 1124. Introductory Classical Greek II. (3-2) 4 Credit Hours.

Fundamentals of Greek grammar and readings in Greek.

GRK 2113. Intermediate Classical Greek I. (3-0) 3 Credit Hours.

Prerequisite: [GRK 1124](#) or the equivalent. Continued practice in reading Greek prose and poetry. Selections from Plato and Homer. Review of Greek grammar and syntax.

GRK 3113. Selected Greek Authors: Prose. (3-0) 3 Credit Hours.

Prerequisite: [GRK 2113](#) or the equivalent. Reading and in-depth analysis of a particular Greek prose author such as Lysias, Herodotus, Demosthenes, Plato or Isocrates.

GRK 3123. Selected Greek Authors: Poetry. (3-0) 3 Credit Hours.

Prerequisite: [GRK 2113](#) or the equivalent. Reading and in-depth analysis of a particular Greek poet such as Hesiod or Homer, a specific genre such as elegiac or lyric poetry, or a play of the tragedians Aeschylus, Sophocles, and Euripides.

Health (HTH)**HTH 2133. School Health. (3-0) 3 Credit Hours. (TCCN = TECA 1318)**

This course is designed to provide teacher certification students with the opportunity to gain developmentally appropriate knowledge and skills in health and environmental safety. It will address health-related issues in personal, interpersonal, and community settings and creating a safe teaching environment. Offered Spring Semester only.

HTH 2413. Introduction to Community and Public Health. (3-0) 3 Credit Hours.

This course is a survey of the profession of public health and the competencies required of health educators, including examination of philosophies, ethics and current trends. This course serves as a foundation for other courses in the health degree. May be applied toward the Core Curriculum requirement in Social and Behavioral Sciences.

HTH 2513. Personal Health. (3-0) 3 Credit Hours. (TCCN = KINE 1304)

Emphasizes the concept of mind, body, and spirit as necessary components of total well-being; principles of preventive health; and self-responsibility for personal health behaviors. May be applied toward the Core Curriculum requirement in Social and Behavioral Sciences.

HTH 2601. Field-Based Skills in Community Health and Preventive Services. (1-0) 1 Credit Hour.

Prerequisite: [HTH 2413](#). This course introduces students to practices and skills that are commonly used in community health and preventive health services. These include health screening skills and skills for communicating and interpreting screening results. The course offers hands-on practice of these skills.

HTH 2623. Applied Technology for Research and Health Education. (3-0) 3 Credit Hours.

This course is a survey of common technologies used for health education practice, research, and database management in Community and Preventative Health Services. This course will provide an overview of the major skills and critical issues associated with health education material development, database management, and data reporting for program evaluation.

HTH 3003. Survey of Drugs and Health. (3-0) 3 Credit Hours.

Study of the use and abuse of drugs and other substances. Examines addiction, dependence, tolerance, motivation for use, and effects of substance abuse on health and society.

HTH 3013. Survey of Human Nutrition. (3-0) 3 Credit Hours.

An overview approach to understanding the principles of nutrition and their effect on health and fitness. Emphasis on major nutritional issues throughout the human life cycle; self-evaluation of diet and fitness habits.

HTH 3023. Survey of Human Sexuality. (3-0) 3 Credit Hours.

A study examining the breadth of human sexuality, including psychosocial, cultural and physical aspects, and its impact on our lives.

HTH 3043. Principles of Weight Management. (3-1) 3 Credit Hours.

An in-depth study of the field of prevention and management of obesity. This course provides practical application of nutritional, psychological, and physical activity principles that help individuals manage their own weight and is suitable for students in health, kinesiology, psychology, biology, counseling, or others. A noncompetitive, monitored activity component is required.

HTH 3303. Physical Activity and Health. (3-0) 3 Credit Hours.

Prerequisites: [HTH 3503](#) and [HTH 3663](#). The course provides a survey of the health-related effects and social-cultural and behavioral determinants of physical activity and exercise. Biological/physiological mechanisms for adaptations to physical activity are also addressed.

HTH 3503. Theories of Health Behavior. (3-0) 3 Credit Hours.

Designed to provide an overview of health behavior theories, program planning models and multi-level interventions typically used in public health. Each level of the socio-ecological model will be discussed including individual, interpersonal, organization, community and policy. Directed field experience is required. (Formerly titled "Foundations of Health Theory.").

HTH 3513. Community Health. (3-0) 3 Credit Hours.

Prerequisites: [HTH 2413](#) and [HTH 3503](#). Study of community health problems and the function and organization of public, private, and voluntary health agencies, application of health theories and models and program planning methods. Directed field experience is required. Offered Fall Semester only.

HTH 3523. Worksite Health Promotion. (3-0) 3 Credit Hours.

Prerequisites: [HTH 2413](#) and [HTH 3503](#). Organization, administration, and supervision of health programs in the community, school, business, or industry setting. Application of health theories, models and program planning methods is required. Directed field experience is required. Offered Spring Semester only.

HTH 3533. Drugs and Health. (3-0) 3 Credit Hours.

Prerequisites: Completion of Core science requirements, anatomy and physiology, [HTH 2413](#), [HTH 3503](#), and [HTH 3663](#). Study of the use and abuse of drugs and other substances. Examines addiction, dependence, tolerance, motivation for use, and effects of substance abuse on health and society. Application of theories and models for program development, implementation and evaluation. Health majors and minors only. Offered Spring Semester only.

HTH 3543. Growth and Development. (3-0) 3 Credit Hours.

Physical, social, and psychological development throughout the lifespan. Implications for health professionals at all stages of development (prenatal to death) are addressed. Offered Spring Semester only.

HTH 3553. Emotional Wellness. (3-0) 3 Credit Hours.

Practical application of techniques for shaping healthier emotional behavior; emphasis on personality, stress management, and fulfilling relationships. Offered Fall Semester only.

HTH 3563. Child and Adolescent Health Promotion. (3-0) 3 Credit Hours.

Designed for students who are interested in promoting the health of youth, as well as those students pursuing academic training in education and community health. The primary goal of this course is to improve the health literacy of teachers and health promotion specialists through understanding and application of evidence-based child and adolescent health promotion concepts. Offered Fall Semester only.

HTH 3663. Program Planning and Evaluation. (3-0) 3 Credit Hours.

Prerequisites: [HTH 2413](#) and [HTH 3503](#). This course provides students with a basic understanding of planning, implementing, and evaluating health promotion programs in a variety of settings, including worksite, healthcare, and community and at a various levels (individual, organization, community, policy).

HTH 4503. Human Disease and Epidemiology. (3-0) 3 Credit Hours.

An in-depth look at the etiology, prevention, and treatment of chronic and contagious diseases afflicting humans and epidemiological methods.

HTH 4513. Consumer Health. (3-0) 3 Credit Hours.

Study of the consumer's selection of health products and services; health frauds, scams and quackery; and the acquisition of basic knowledge for making responsible decisions when selecting professional, complementary, or alternative health care services and products. Offered Fall Semester only.

HTH 4523. Understanding Human Sexuality. (3-0) 3 Credit Hours.

Prerequisites: [HTH 2413](#), [HTH 3503](#), and [HTH 3663](#). An in-depth study of human sexuality, including psychosocial, cultural and physical aspects. Application of theories and models for program development, implementation and evaluation. Health majors and minors only. Directed field experience is required. Offered Spring Semester only.

HTH 4533. Nutrition and Health. (3-0) 3 Credit Hours.

Prerequisites: Completion of Core science and mathematics requirements, [BIO 2083](#), [BIO 2103](#), [HTH 2413](#), [HTH 3503](#), and [HTH 3663](#). An in-depth examination of the principles of nutrition and their effects on health and fitness. Emphasis on critical thinking and translation of nutritional knowledge to real-world settings. Includes self-evaluation of diet and fitness habits. Application of health theories and models for program development, implementation, and evaluation in nutritional context. Health majors and minors only.

HTH 4543. Environmental Health and Safety. (3-0) 3 Credit Hours.

Intensive coverage of the aspects of a human being's health and safety in a changing environment. Considers applicable factors of ecology, including problems related to water, waste, pesticides, foods, radiation, population, and other aspects of the total ecosystem, as well as personal and occupational safety within these parameters. Offered Fall Semester only.

HTH 4911. Independent Study. (0-0) 1 Credit Hour.

Intensive coverage of the aspects of a human being's health and safety in a changing environment. Considers applicable factors of ecology, including problems related to water, waste, pesticides, foods, radiation, population, and other aspects of the total ecosystem, as well as personal and occupational safety within these parameters. Offered Fall Semester only.

HTH 4912. Independent Study. (0-0) 2 Credit Hours.

Intensive coverage of the aspects of a human being's health and safety in a changing environment. Considers applicable factors of ecology, including problems related to water, waste, pesticides, foods, radiation, population, and other aspects of the total ecosystem, as well as personal and occupational safety within these parameters. Offered Fall Semester only.

HTH 4913. Independent Study. (0-0) 3 Credit Hours.

Intensive coverage of the aspects of a human being's health and safety in a changing environment. Considers applicable factors of ecology, including problems related to water, waste, pesticides, foods, radiation, population, and other aspects of the total ecosystem, as well as personal and occupational safety within these parameters. Offered Fall Semester only.

HTH 4921. Capstone for Community Health and Preventive Services. (1-0) 1 Credit Hour.

Corequisite: Must be completed the same semester as internship ([HTH 4936](#)). This course aids students in synthesizing their classroom and internship experiences to reinforce critical skills and key responsibilities for Health Educators. This course will provide students with an overview of resources, skills, and recommendations regarding their professional development. Students are required to take this course concurrent with [HTH 4936](#).

HTH 4936. Internship in Health. (0-0) 6 Credit Hours.

Prerequisites: Student is required to have a cumulative grade point average of 2.0 or greater and must be within 13 semester credit hours of graduation. The opportunity for work experience in a private or public health-related agency. Opportunities are developed in consultation with the faculty advisor and on-site coordinator. No more than 6 semester credit hours of internship will apply to a bachelor's degree. (Credit cannot be earned for both [HTH 4936](#) and [KIN 4936](#).)

HTH 4951. Special Studies in Health. (1-0) 1 Credit Hour.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study in an area of health not available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

HTH 4952. Special Studies in Health. (2-0) 2 Credit Hours.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study in an area of health not available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

HTH 4953. Special Studies in Health. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study in an area of health not available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

HTH 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for honors in the Department of Health and Kinesiology during the last two semesters; consent of the Honors College. Supervised research and preparation of an honors thesis. May be repeated once for credit with advisor's approval.

History (HIS)

HIS 1043. United States History: Pre-Columbus to Civil War Era. (3-0) 3 Credit Hours. (TCCN = HIST 1301)

From a variety of perspectives, this course will analyze topics covering the geography of North America; pre-Columbian societies; European colonial societies and their transition into the national period; the development of modern economic structures and political traditions; westward expansion; class, race, ethnicity, and gender; cultural diversity and national unity; the relations of the United States to other nations and cultures; and the impact of these trends and issues on the development of the nation. May be applied toward the Core Curriculum requirement in American History.

HIS 1053. HIS 1053 United States History: Civil War Era to Present. (3-0) 3 Credit Hours. (TCCN = HIST 1302)

From a variety of perspectives, this course will analyze topics covering the development of the United States as an urban industrial nation; the rising importance of the business cycle, corporations, and immigration; political traditions; class, race, ethnicity, and gender; cultural diversity and national unity; the relationship between the United States and other nations and cultures; and the impact of these trends on the development of the nation. May be applied toward the Core Curriculum requirement in American History.

HIS 2003. Historical Methods. (3-0) 3 Credit Hours.

Prerequisite: [WRC 1013](#). An introduction to the study of history in which students will consider examples and approaches to the problems of research and writing in the field. This course is designed for students completing requirements for a major or minor in history. A minimum grade of "C-" is needed in [HIS 2003](#) to enroll in [HIS 4973](#).

HIS 2053. Texas History. (3-0) 3 Credit Hours. (TCCN = HIST 2301)

An overview of the development of Texas from the era of Spanish exploration and colonization to the modern period, with emphasis on major events in the 19th and 20th centuries. Topics may vary, but generally will include cultural geography, contributions of ethnic minorities and women, the Republic of Texas, statehood, secession, Reconstruction, conservatism, reform, oil exploration, urbanization, and political, economic, and social change in the post-World War II era. May be applied toward the Core Curriculum requirement in American History.

HIS 2123. Introduction to World Civilization to the Fifteenth Century. (3-0) 3 Credit Hours. (TCCN = HIST 2321)

A general introduction to World History from the Late Neolithic to the Columbian Encounter in the late 15th century CE. Broad overview of the pattern of development of major civilizations and their interactions with closer attention given to those events, institutions, beliefs, and practices that involved and affected large numbers of people and had lasting significance for later generations. This course is always offered as a Q-course. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture. (Credit cannot be earned for both [HIS 2123](#) and IDS 2203.).

HIS 2133. Introduction to World Civilization since the Fifteenth Century. (3-0) 3 Credit Hours. (TCCN = HIST 2322)

A general introduction to World History since the late 15th century CE. Broad overview of the pattern of development of major civilizations and their interactions with closer attention to those events, institutions, beliefs, and practices that involved and affected large numbers of people and laid foundations of the modern world. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture. (Credit cannot be earned for both [HIS 2133](#) and IDS 2213.).

HIS 2533. Introduction to Latin American Civilization. (3-0) 3 Credit Hours.

An introduction to Latin America examining the broader topics that shaped its history. These topics may include Native American societies; the encounter between Native Americans, Europeans, and Africans; the post-Independence era; the different paths toward nation-building; the nature of authoritarian regimes; the impact of revolutions; and the cultural development of Latin America and its historiography. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

HIS 2543. Introduction to Islamic Civilization. (3-0) 3 Credit Hours.

An introduction to the role of Islam in world history from the Prophet and the founding of the Umayyad Caliphate to the breakup of the Ottoman Empire. Primary focus will be on the Ottoman Empire, its institutions and culture, and its interaction with Western civilization. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

HIS 2553. Introduction to East Asian Civilization. (3-0) 3 Credit Hours. (TCCN = HIST 2323)

An introduction to East Asian history and culture from antiquity to the beginning of the modern period during the 17th and 18th centuries. The course will cover China, Japan, Korea, and Vietnam, with particular attention to the development of culture, society, and the state in the traditional era prior to the arrival of the West in East Asia. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

HIS 2563. Introduction to European Civilization. (3-0) 3 Credit Hours.

An introduction to the major historical and historiographical problems in the experience of Europe from the earliest times to the present. The course will expose students to a variety of intellectual approaches and to the diversity of European history.

HIS 2573. Introduction to African Civilization. (3-0) 3 Credit Hours.

An introduction to the major historical and historiographical problems in the experience of Africa from the earliest times to the present. The course will expose students to a variety of intellectual approaches and to the diversity of African history. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

HIS 2583. Introduction to South Asian Civilization. (3-0) 3 Credit Hours.

This course explores the history, cultures, religions, and civilization of the Indian subcontinent from earliest times to the present. It begins with prehistory and the Indus civilization, the migration and settlement of the Aryans, the ancient empires of the Maurya and Gupta, and the Islamic conquest. The rise and fall of various Muslim kingdoms of the Mughal Empire, British colonial rule, the nationalist movements and independence of India, Pakistan, and Bangladesh are also discussed. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

HIS 3003. Colonial America and the Formation of American Society. (3-0) 3 Credit Hours.

An examination of the development and transformation of colonial societies in the 17th and 18th centuries, with special emphasis on family and community studies as measures of social change.

HIS 3023. American Independence and National Unity, 1760–1820. (3-0) 3 Credit Hours.

Topics may include origins of the American Revolution, the Revolutionary War, the struggle for unity, and the early years of nationhood.

HIS 3033. The Spanish and Mexican Borderlands. (3-0) 3 Credit Hours.

This course will provide students an opportunity to study Spanish exploration, the colonization of New Spain's northern frontier, and the shift from Spanish to Mexican sovereignty. Topics that may be

discussed include Hispanic institutions; customs and traditions; the development of a frontier society; inter-cultural exchanges, conflicts, and negotiations between native societies, Spanish-Mexican settlers, and non-Hispanic European Americans and immigrants; Mexico's struggle for independence; social, cultural, economic, and political trends within the Mexican republic; the westward migration of people from the United States into Mexico's northern frontier; the Texas revolt, and the U.S.-Mexico War.

HIS 3043. History of Women in the United States: Pre-Columbus to 1890. (3-0) 3 Credit Hours.

An examination of how women have been affected by economic, social, cultural, and political structures, with emphasis on the role of class, race, ethnicity, region, and age. Topics may include Native American societies, colonial life, the impact of the American Revolution, the early national period, slavery, the Civil War, westward expansion, and the "cult of domesticity." (Formerly HIS 3473. Credit cannot be earned for both [HIS 3043](#) and HIS 3473.)

HIS 3053. History of Women in the United States: Since 1890. (3-0) 3 Credit Hours.

This course will offer an analysis of women's lives in U.S. history since 1890 and may examine women's role in the Progressive Era, World Wars, the Civil Rights Movement, and the Feminist Movement. It will consider the effects of economic, social, cultural, and political structures on women since 1890, with particular attention to the role of class, race, ethnicity, region, and age. (Formerly HIS 3473. Credit cannot be earned for both [HIS 3053](#) and HIS 3473.)

HIS 3083. History of the American West. (3-0) 3 Credit Hours.

An examination of the American westward movement in the 19th and 20th centuries. Topics may include the conquest and settlement of the territory, the relationship of the new territory to the nation, patterns of economic development, community building, population diversity, and the symbolism of the frontier.

HIS 3093. United States Constitutional History. (3-0) 3 Credit Hours.

Constitutional developments from the formation of the state and federal constitutions to Watergate. Particular attention is paid to the context of judicial decision-making at the Supreme Court level and the impact of those decisions on American life. Complements [POL 3323](#) Constitutional Law.

HIS 3113. North American Indian Histories. (3-0) 3 Credit Hours.

A history of the American Indian from European contact to the present. Attention is given to the internal cultural, economic, and political developments of the different Indian groups as well as to the European and American developments and policies affecting the Indian. (Formerly titled "The American Indian.")

HIS 3123. Colonial Texas under Spanish and Mexican Rule to 1836. (3-0) 3 Credit Hours.

An overview of Texas history beginning with 16th-century and 17th-century Spanish exploration, with emphasis on 18th-century colonization, and culminating in 19th-century Anglo-American immigration and the sociopolitical changes that resulted in Texas independence.

HIS 3133. Themes in the Social History of the United States. (3-0) 3 Credit Hours.

A survey of social history focusing on the American experience. The course explores changes in the family, work, gender roles, mobility, migration, urbanization, and industrialization, with special attention to class, race, ethnicity, and gender.

HIS 3153. Development of American Urban Society. (3-0) 3 Credit Hours.

This course investigates the impact of urbanization on American society, economy, and culture. Topics may vary, but consideration will be given to urban social and spatial organization, migration, urban systems, technology, communication, and forms of individual and family adaptation.

HIS 3173. Modern America, 1914–1945. (3-0) 3 Credit Hours.

An examination of the many developments which fundamentally transformed American society between 1914 and 1945. The course examines how these developments reverberated throughout society, affecting all aspects of American life from habits of leisure to patterns of race relations, from the role of women to the style of presidential leadership.

HIS 3183. Law and American Development. (3-0) 3 Credit Hours.

The impact of law from colonial times to the present. Particular attention will be paid to the impact of law on social change, economic growth, and political development.

HIS 3193. The South in American History. (3-0) 3 Credit Hours.

Topics may include development of southern identity, slavery, Civil War and Reconstruction, Jim Crowism, the black experience, and the civil rights movement, with emphasis on the period since 1815.

HIS 3223. The Civil War in the Age of Nationalism. (3-0) 3 Credit Hours.

The U.S. Civil War occurred during an age of violent political upheaval in Europe and the Americas. Grounding the significance of the causes of the Civil War in a transnational context, this course will examine how questions of national self-determination, race, and class the world over influenced the growing differences between the American North and South, as well as the war itself. Setting the Civil War in an international context, this course will enlarge the understanding of the global rise of nationalism in the nineteenth century.

HIS 3243. Europe in the Nineteenth Century. (3-0) 3 Credit Hours.

The course offers a survey of European history from the Congress of Vienna until World War I. Topics may include an examination of the changing scope of international relations, industrial growth and acceleration, the conditions among social groups, and various social and political initiatives among European nations.

HIS 3253. The United States since 1945. (3-0) 3 Credit Hours.

An examination of the social, political, economic, and cultural developments which have shaped life in the United States since World War II. Students will explore the causes and consequences of the country's evolution into a pluralistic, suburban, postindustrial superpower during the last half of the 20th century.

HIS 3263. Seventeenth- and Eighteenth-Century Europe. (3-0) 3 Credit Hours.

A survey of European history under the Ancient Regime to 1789. Examination of the development of and the limits to absolutism, the "crisis" of the 17th century and the Baroque, the rise of science, and the culture of the Enlightenment.

HIS 3273. The Early Middle Ages. (3-0) 3 Credit Hours.

This course will examine culture and society in the West (in what was to be Europe) from Late Antiquity to about A.D. 1000. It will focus on the transformation and survival of old social, political, and cultural forms at the end of the Roman Empire and the emergence of new ones in the successor states of Italy, Gaul, Germany, and Britain.

HIS 3283. Twentieth-Century Europe. (3-0) 3 Credit Hours.

Economic, social, political, and cultural change in Europe since World War I. Topics may include the formation of new political movements (such as social democracy, communism, fascism) between the wars, World War II and its effects, the postwar transformation of Europe, and the Cold War in Europe.

HIS 3293. Imperial Spain. (3-0) 3 Credit Hours.

Iberian history from the evolution of the northern kingdoms to the early 19th century. Topics may include the growth and development of Castile and Aragon, Hapsburg imperialism, the Bourbon reformers, and the collapse of the monarchy and the rise of the Carlist movement.

HIS 3303. History of Mexico. (3-0) 3 Credit Hours.

An overview of Mexican history from the pre-Columbian indigenous civilizations to the present. The course will cover the peopling of Mexico, the conquest, the formation of colonial society, independence, the Mexican American War, the liberal reforms, the Porfiriato, and the Mexican Revolution.

HIS 3313. History of U.S. Relations with Latin America. (3-0) 3 Credit Hours.

A survey of U.S. relations with Latin America from the Monroe Doctrine to the present. General topics may include the Monroe Doctrine, Manifest Destiny, gunboat diplomacy, the Good Neighbor Policy, the Cold War, and the Alliance for Progress. Specific themes include U.S. reactions to revolutions, authoritarian regimes, and reformist governments.

HIS 3323. Latinas and Latinos in the United States to 1890. (3-0) 3 Credit Hours.

This course surveys the origins of Latinas and Latinos in the United States from the point of contact between indigenous people and Spanish colonizers to 1890. Thematic topics may include conquest, Spanish colonization, the development of borderlands cultures, migratory and settlement patterns, and labor. While the course will end at a time when the U.S. is emerging as a global industrialized nation, much of it covers a time period prior to the foundation of the U.S. as a nation state, thus demonstrating the deep histories of Latinas and Latinos tied to this land.

HIS 3333. Latinas and Latinos in the United States from 1890 to Present. (3-0) 3 Credit Hours.

This course surveys the history of Latinas and Latinos in the modern United States from 1890 to the present. Covering the period of the greatest migratory flows into the United States from points all over Latin America, especially from Mexico, Cuba, and Puerto Rico, this course will address the development of transnational communities and regional identities within the U.S. Emphasis will be placed on the dialectic between immigration and historically rooted communities, the formation of varied racial and class based identities, and the dynamic geographies of Latinas and Latinos.

HIS 3353. Latin America since Independence. (3-0) 3 Credit Hours.

The course will emphasize the 19th and 20th centuries and may include the following topics: the breakdown of colonialism; the problems of independence; neocolonial development; the impact of the Depression; industrialization and urbanization; and the importance of nationalism, socialism, fascism, communism, and revolution in the contemporary era.

HIS 3373. Revolution in Latin America. (3-0) 3 Credit Hours.

An analysis of the role colonial legacies played in 19th- and 20th-century social and political violence. Case studies may include Mexico, Bolivia, Cuba, Chile, and Nicaragua.

HIS 3403. Pre-Hispanic and Colonial Latin America. (3-0) 3 Credit Hours.

An analysis of the pre-Columbian Indian civilizations, the Spanish conquest, and the Spanish and Portuguese colonial societies of the New World.

HIS 3423. United States-Mexico Border. (3-0) 3 Credit Hours.

This course will examine social, economic, and political conditions shaping the character of the United States-Mexico borderlands. Using a transnational approach, students will have an opportunity to explore the history of the border as a multi-cultural region, and to examine issues relevant to the development of

the border area. Topics of interest may include urbanization; industrialization; constructions of race, ethnicity, class, gender, and nationality; trade; migration; security; and ecological problems.

HIS 3433. The Emergence of Modern America, 1877–1914. (3-0) 3 Credit Hours.

An examination of social and political responses to the industrial revolution in the United States.

HIS 3453. History of Medicine in America. (3-0) 3 Credit Hours.

The course examines the social and cultural history of health and healing in the United States. By contextualizing the history of health, healthcare, patient stories, disease, and professional development, it provides analytical skills necessary to better evaluate the place of medicine in modern American culture. The particular focus of the course may vary by semester to more closely examine such historical topics as: women and health; rise of the medical profession; technology and medicine; popular culture and health history; and medicine and film.

HIS 3463. History of Religion in the United States. (3-0) 3 Credit Hours.

This course examines Puritanism, disestablishment, the First and Second Great Awakenings, religion and the Civil War, the Social Gospel, urban revivalism and religion, the growth of evangelical Protestantism, and religion in modern America. Special thematic concentrations may include church-state relations, the role of race and ethnicity in American religion, Catholicism and African American religions.

HIS 3493. History of San Antonio. (3-0) 3 Credit Hours.

Topics may include the cultural origins of colonial San Antonio; political, economic, and social development; and the effects of urbanization on local ethnic communities.

HIS 3513. Warfare in the Premodern World. (3-0) 3 Credit Hours.

A comparative study of military change in the ancient, medieval, and early modern world (to 1815 and the end of the Napoleonic Wars). The course examines such controversies as the Military Revolution and the Fiscal-Military State and describes how societies in Europe, Asia, Africa, and the Americas organized, trained, and provisioned military forces, developed tactics and strategies of war, and how their military organization impacted state-society relations and their struggles for survival or imperial expansion.

HIS 3523. European Cultural History. (3-0) 3 Credit Hours.

Introduction to various aspects of the European cultural heritage focusing on the interaction between society and culture. Topics may include popular culture, the arts, philosophy, science, social theory, ideology, and mass media. Course content may include discussions of sexuality and graphic visual materials suitable for an adult audience.

HIS 3543. History of Modern Warfare. (3-0) 3 Credit Hours.

Survey of the major developments in the history of war since the Napoleonic era. Analyses of the social, economic, and political context in which wars have occurred. Topics may include emergence of new forms of weaponry, strategy, logistics, and tactics.

HIS 3553. Civil War America. (3-0) 3 Credit Hours.

This course explores the Civil War era in American history, beginning by tracing the causes of the Civil War, including the role that the economics of slavery played in the conflict. It studies the war itself, examining the social, cultural, and military aspects of the war. The course concludes with an examination of the attempts to reconstruct the Union in the years after the Confederate surrender.

HIS 3563. African American History to the Civil War. (3-0) 3 Credit Hours.

A survey of the social, economic, political, and cultural history of African Americans from the time of contact with European slave traders until the Civil War. The course will examine the process by which

millions of Africans were taken from their homelands, enslaved, and transported to America, where they were gradually, and often violently, transformed into Americans. While the course will focus on the United States, it will also consider how the experiences of Blacks in America relate to the history of the peoples of the African diaspora.

HIS 3573. African American History since the Civil War. (3-0) 3 Credit Hours.

This course surveys the African American experience from emancipation to the present, focusing on political, economic, cultural, and social developments. The course will utilize both traditional historical methodology, with its emphasis on chronology and the examination of documents and alternative interdisciplinary methodologies, which analyze nontraditional sources such as film, music, and oral interviews.

HIS 3603. Occupation, Revolution and Nation in Africa. (3-0) 3 Credit Hours.

This course focuses on political and social change in Africa after 1800, a particularly tumultuous and often violent period in African history. Working from an African perspective, students will explore events and historical processes that were often triggered by external forces. The course examines the ways in which historical themes—conquest, resistance, revolution, nationalism, identity politics—play out in an African context. (Formerly titled "Africa in Colonial and Post-Colonial Contexts.").

HIS 3613. Migration, Society and Culture in Africa. (3-0) 3 Credit Hours.

Examination of political and social organization in African societies. The emphasis is on Africa prior to colonization. Topics will include regional trading networks, slavery, the range of political/governmental structures, cultural variation (including categories of gender and generation), and African relations with other parts of the world. (Formerly titled "African Politics, States, and Empires.").

HIS 3623. History of the Civil Rights Movement. (3-0) 3 Credit Hours.

An examination of the struggle for civil rights in the United States from the conclusion of the Civil War to the present. While particular attention will be paid to the movement by Black southerners for equal rights, the course will also consider the struggle for civil rights conducted by other racial minorities in the United States.

HIS 3633. Early Modern England, 1485–1760. (3-0) 3 Credit Hours.

English history in the Tudor, Stuart, and early Hanoverian eras emphasizing the growth of the national state, the overseas expansion of England, and preindustrial social and economic change.

HIS 3643. Modern Spain. (3-0) 3 Credit Hours.

A study of 19th- and 20th-century Spain beginning with the origins of the Carlist movement, continuing with the rise and fall of the two Spanish Republics, the Civil War, the advent of the Franco regime, and concluding with the restoration of the monarchy.

HIS 3723. The High Middle Ages and the Early Renaissance. (3-0) 3 Credit Hours.

This course will examine the cultural, political, and social achievements of High Medieval Europe, with particular reference to France, Germany, and Italy. It will then focus on the great crisis of the 14th century and the emergence of a new, antimedieval culture in Early Renaissance Italy to about 1450.

HIS 3733. Europe in the High Renaissance and Reformation. (3-0) 3 Credit Hours.

This course will study the cultural, social, and political developments of Italy and Northern Europe in the time of the High Renaissance and the Reformation (ca. 1450–1550).

HIS 3743. Imperial Russia. (3-0) 3 Credit Hours.

The development of Russia from the accession of Peter the Great to the outbreak of the Russian Revolution.

HIS 3753. The Soviet Union and After. (3-0) 3 Credit Hours.

The evolution of Russia from the revolution of 1917 to the present. A critical analysis of the construction and decline of a socialist society in the Soviet Union and the relationship of 20th-century Russia to the outside world.

HIS 3763. Russia before Peter the Great. (3-0) 3 Credit Hours.

An examination of the Russian state-building process in the period from the Mongol Yoke to the formation of the Russian Empire, focusing on the development of autocracy, serfdom, and the state service system and examining Russia's relations with Europe and Asia.

HIS 3773. The Age of the Baroque. (3-0) 3 Credit Hours.

This course will examine the formation of a Post-Renaissance culture in Europe, with the emergence of Mannerism and the Baroque, and the rise of science. It will also study the struggles for religious and political mastery on the continent from roughly the Peace of Augsburg (1555) to the end of the Thirty Years' War (1648), in the context of economic, social, and political change.

HIS 3803. World History in the Cinema. (3-0) 3 Credit Hours.

An analysis of several classic films to introduce for closer critical study important events and issues in world history which have intrigued film makers and their audiences as well as historians. Exploration of the similarities and differences between artistic and historical imagination. (Formerly HIS 2073. Credit cannot be earned for both [HIS 3803](#) and HIS 2073.).

HIS 3813. American Political History. (3-0) 3 Credit Hours.

A study of American political history from the 18th century to the present. Deals with presidents and major national developments and may consider such topics as federalism, state politics, voting behavior, party systems, and political realignment.

HIS 3823. History of American Foreign Relations. (3-0) 3 Credit Hours.

This course examines the emergence of the United States as a world power and its subsequent activities in world affairs. The course places particular emphasis on the domestic roots of U.S. activity, the factors shaping perceptions of international affairs, and the causes and consequences of international conflicts involving the United States.

HIS 3843. Migration and History. (3-0) 3 Credit Hours.

What has caused people to migrate as individuals and as groups? To what extent has geographical mobility been a function of economic mobilization, political transformation, social upheaval, and/or technological revolution? How has the migratory process, in turn, affected the migrants themselves, both in their place of origin, and in the host society? Specific theme, regional focus, and time period may vary according to the instructor's choice of examples drawn from a variety of historical situations.

HIS 3903. Modern Japan. (3-0) 3 Credit Hours.

An overview of Japanese history since the end of the 16th century. Topics may include the Tokugawa period of early modern history, the Meiji transformation of state and society, the rise of Japanese militarism leading up to the Pacific War, the American occupation, and the subsequent rebirth of Japan into a global economic giant.

HIS 3913. Late Imperial China. (3-0) 3 Credit Hours.

Chinese history from the late Ming (ca. 1550) to the end of the Qing dynasty in the 1911 Revolution. The course will address the nature of imperial institutions, state-society interaction, economic developments, social and cultural changes, and China's relationship with the outside world.

HIS 3923. China in Revolution. (3-0) 3 Credit Hours.

A study of 20th-century China. The course will analyze and characterize the different phases of revolutionary changes in China and examine the sources of its revolutionary impulse.

HIS 3943. History of India. (3-0) 3 Credit Hours.

This course questions the extent to which South Asia is an outcome of its traditional structure (religion, caste hierarchy, joint families, village communities), and how much it is a product of global historical forces including colonialism, capitalism, feminism, and globalization. It examines politics and cultures of South Asia, with emphasis on the freedom struggle, the rise of the Congress and the Muslim League, the two-nation theory, partition and independence, the untouchables, and other contemporary issues including globalization and diaspora. (Formerly titled "Modern India, Pakistan, and Bangladesh.")

HIS 3953. Cultures and Empires of the Silk Road, 700 BCE – 1480 CE. (3-0) 3 Credit Hours.

An examination of the political, military, economic, and cultural interaction of nomadic and sedentary peoples along the northern Silk Road running from Western China through Central Asia to the Black Sea Steppe. Topics may range from the formation of the first powerful nomadic tribal confederations (Scythians, Sarmatians, Huns) in the Iron Age and culminating with the rise of the great Gunpowder Empires of the Ottomans, Timurids, and Moscow tsars in the 14th and 15th centuries.

HIS 3963. Women and Gender in India. (3-0) 3 Credit Hours.

This course examines the history of women in the Indian subcontinent from colonial times under British rule to modern independent India. Topics to be discussed and studied include the dowry system, colonial reform movements, education for women, special challenges for Muslim, Christian, and low-caste women, and the nationalist struggle for independence.

HIS 3973. Muslim South Asia: India, Pakistan, Bangladesh. (3-0) 3 Credit Hours.

This course addresses the development and rise of Muslim nationalism in the Indian subcontinent. Under British colonial rule, Muslims in South Asia began to emerge as a political community, ultimately demanding self-rule under the sovereignty of Pakistan. After a chaotic Partition with India in 1947, Pakistan struggled to achieve cohesion across lines of region, language, and ethnicity. A civil war in 1971 led to the formation of the independent nation of Bangladesh. The class may consider topics of history, culture, gender, class, religion, and economic development for Muslims in South Asia, along with issues of contemporary interest in the region.

HIS 3983. Women and Gender in Latin America. (3-0) 3 Credit Hours.

This course examines the role of gender in Latin American history, particularly with respect to the lives of ordinary women. Topics that may be discussed include exploring the changing roles of women over time to see how colonialism and imperialism, the rise of capitalism, and the existence of race/ethnicity and class hierarchies impacted women's social, economic and political roles. Throughout the course, we will be sensitive to how gender norms informed the ways women and men exercised power as well as the forces that constrained them from using power.

HIS 4133. History and the Public. (3-0) 3 Credit Hours.

Investigation of the status, uses, and value of history in schools and universities, and in other spheres of life. Special interests include public and private roles of scholars and intellectuals, forms of public history,

literary and cinematic uses of history, public policy applications, history as social and cultural criticism, and alternative conceptions of history and historians' work.

HIS 4143. History Standards and Their Public Reception. (3-0) 3 Credit Hours.

This course, intended especially for majors pursuing certification to teach History in the public schools, examines the continuing debate about the articulation of standards for United States and World History instruction in primary and secondary schools. It offers students the opportunity to review the range of specific skills and understandings professional historians have tried to represent in History education. It further identifies the external expectations and pressures upon History instruction in the current day as well as the past.

HIS 4223. Environmental History of the United States. (3-0) 3 Credit Hours.

Prerequisite: [HIS 2003](#) recommended. An introductory survey of the interaction of human beings and the environment in the United States from early Indian occupancy to the present. Topics may include problems of ecological change, climate, energy, population, conservation, and human ideas and uses of nature.

HIS 4233. American Society in the 1960s. (3-0) 3 Credit Hours.

This course examines the political, cultural, and social developments that shaped American society in the 1960s. Topics will include the emergence of movements for social change, the expansion of the welfare state, the growth of the counterculture, and the Americanization of the war in Vietnam. The course will invite students to move beyond the stereotypes of the 1960s and to explore how different people responded to, participated in, and experienced the changes that occurred in American society during this turbulent decade.

HIS 4603. Issues in History. (3-0) 3 Credit Hours.

Prerequisite: Upper-class standing or consent of instructor. Coverage of topics of current interest in the field of history. May be repeated for credit when topics vary, but not more than 6 semester credit hours will apply to a bachelor's degree. (Formerly HIS 4923.).

HIS 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

HIS 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

HIS 4933. Internship in History. (0-0) 3 Credit Hours.

Prerequisites: [HIS 2003](#) and consent of Department Chair. Supervised experience relevant to history within selected community organizations. A maximum of 6 semester credit hours may be earned through Internship in History. Must be taken on a credit/no-credit basis.

HIS 4953. Special Studies in History. (3-0) 3 Credit Hours.

An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

HIS 4973. Seminar in History. (3-0) 3 Credit Hours.

Prerequisite: [HIS 2003](#) with a minimum grade of "C-". The opportunity for an intensive study of a selected topic. Primary emphasis on supervised research on various aspects of the topic. Enrollment limited to juniors and seniors majoring in history.

HIS 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for Honors in History during their last two semesters. Supervised research and preparation of an honors thesis. May be repeated once with advisor's approval.

Honors (HON)**HON 2201. Honors Community Service. (0-0) 1 Credit Hour.**

Prerequisite: Enrollment in the Honors College or consent of instructor. Supervised community service experience relevant to an Honors education. May be repeated for credit, but not more than 3 semester credit hours will apply to a bachelor's degree.

HON 3021. Honors Essay Writing. (0-0) 1 Credit Hour.

Prerequisites: [WRC 1013](#) and [WRC 1023](#), enrollment in the Honors College, and consent of instructor. A special Honors course designed to allow students to receive credit for work on writing essays for competitions. Involves substantial rewriting. May be repeated for credit, but not more than 3 semester credit hours will apply to a bachelor's degree.

HON 3223. Honors Seminar in Social & Behavioral Sciences. (3-0) 3 Credit Hours.

Prerequisite: Enrollment in the Honors College or consent of instructor. Interdisciplinary seminar that explores broad topics and themes in the social and behavioral sciences. May be repeated for credit when topics vary.

HON 3233. Honors Seminar in Arts & Humanities. (3-0) 3 Credit Hours.

Prerequisite: Enrollment in the Honors College or consent of instructor. Interdisciplinary seminar that explores broad topics and themes in arts and humanities. May be repeated for credit when topics vary.

HON 3243. Honors Seminar in Business & the Professions. (3-0) 3 Credit Hours.

Prerequisite: Enrollment in the Honors College or consent of instructor. Interdisciplinary seminar that explores broad topics and themes in business and the professions. May be repeated for credit when topics vary.

HON 3253. Honors Seminar in the Sciences. (3-0) 3 Credit Hours.

Prerequisite: Enrollment in the Honors College or consent of instructor. Interdisciplinary seminar that explores broad topics and themes in the sciences. May be repeated for credit when topics vary.

HON 3301. Graduate School Workshop. (1-0) 1 Credit Hour.

Prerequisite: Enrollment in the Honors College or consent of instructor. A special workshop designed to prepare undergraduate students for admission to graduate school, with special emphasis on admission to

Ph.D. programs. Topics include selecting a graduate program, preparing an application packet, writing the personal statement, and preparing for the Graduate Record Examination.

HON 3501. Honors Capstone Exploration. (1-0) 1 Credit Hour.

Prerequisite: Enrollment in the Honors College or consent of instructor. Course designed to help students develop an understanding of what a thesis project is, what resources are necessary to complete the project, and identify a topic and a faculty thesis advisor. Students are encouraged to take this course in the first semester of their junior year. (Formerly titled "Honors Thesis Exploration Seminar.").

HON 3513. Policy-Making Process. (3-0) 3 Credit Hours.

Prerequisite: Enrollment in the UT System Archer Fellows Program. This course will focus on the role of Congress and the President in the policy-making process. The course will use a variety of sources (academic texts, newspaper and journal articles, Web sites, blogs, advocacy papers) to compare textbook and "real world" versions of how policy is made in Washington, D.C.

HON 3523. Beyond Congress and the White House. (3-0) 3 Credit Hours.

Prerequisite: Enrollment in the UT System Archer Fellows Program. This course is designed to help students understand power in our nation's capital and, especially, power that lies outside Congress and the White House. Students will study Washington, D.C., by making visits to local sites, as they examine complex issues, such as the use of DDT to combat malaria, the relationship between democracy and war, and the future of the Internet.

HON 3533. Advocacy in Applied Settings. (3-0) 3 Credit Hours.

Prerequisite: Enrollment in the UT System Archer Fellows Program. This course will provide an introduction to the issues individuals face when placed in the role of being advocates for an issue, idea, or even themselves. The goal of the course is for students to learn about advocacy in ways that they can apply to their internship settings.

HON 4913. Honors Independent Study. (0-0) 3 Credit Hours.

Prerequisite: Enrollment in the Honors College or consent of instructor. Independent reading, research, and writing under the direction of a faculty member. Designed as preparation for completion of an Honors Thesis. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

HON 4933. Honors Internship. (0-0) 3 Credit Hours.

Prerequisite: Enrollment in the Honors College or consent of instructor. Supervised experience in a professional setting that provides the opportunity to integrate theory and practice programs relevant to the student's degree program and honors experience. May be repeated for credit in a subsequent semester, but not more than 6 semester credit hours of internship will apply to a bachelor's degree.

HON 4936. Honors Internship. (0-0) 6 Credit Hours.

Prerequisite: Enrollment in the Honors College or consent of instructor. Supervised experience in a professional setting that provides the opportunity to integrate theory and practice programs relevant to the student's degree program and honors experience. May be repeated for credit in a subsequent semester, but not more than 6 semester credit hours of internship will apply to a bachelor's degree.

HON 4941. Honors Leadership. (0-0) 1 Credit Hour.

Prerequisite: Enrollment in the College of Business Leadership Challenge program. Supervised leadership experience relevant to an Honors education. Usually involves planning and designing experiences for new Honors students.

HON 4993. Honors Capstone Project. (0-0) 3 Credit Hours.

Prerequisite: Enrollment in the Honors College or consent of instructor. Supervised research and preparation of an Honors Capstone project for the purpose of earning Highest Honors. May be repeated once for credit. (Formerly titled “Honors Thesis.”).

Humanities (HUM)**HUM 1203. Medical Humanities and Ethics. (3-0) 3 Credit Hours. (TCCN = HUMA 1301)**

Prerequisite: Completion of Core Curriculum requirement in rhetoric. The practice of medicine has long been considered both an art and a science. Through examination of texts in the medical humanities and health care ethics, this course explores the art of medicine, the meaning of illness, and what it means to practice medicine, which includes the interrelationship of professional identity formation and ethics.

HUM 2023. Introduction to the Humanities I. (3-0) 3 Credit Hours. (TCCN = HUMA 1301)

Prerequisite: Completion of Core Curriculum requirement in rhetoric. An introductory survey of the important aesthetic works, ideas, social structures, and other cultural productions of Western Civilization from the Paleolithic through the Medieval eras. This course will employ an interdisciplinary approach designed to acquaint students with major cultural modes in Western Civilization with a particular focus on aesthetic works and the dominant critical approaches used to address them. May be applied toward the Core Curriculum requirement in Creative Arts.

HUM 2033. Introduction to the Humanities II. (3-0) 3 Credit Hours. (TCCN = HUMA 1302)

Prerequisite: Completion of Core Curriculum requirement in rhetoric. An introductory survey of the important aesthetic works, ideas, social structures, and other cultural productions of Western Civilization from the Renaissance through the Present. This course will employ an interdisciplinary approach designed to acquaint students with major cultural modes in Western Civilization with a particular focus on aesthetic works and the dominant critical approaches used to address them. May be applied toward the Core Curriculum requirement in Creative Arts.

HUM 2053. History of Film. (3-0) 3 Credit Hours. (TCCN = HUMA 1315)

Prerequisite: Completion of Core Curriculum requirement in rhetoric. An introductory survey of the history, criticism, and cultural importance of film in Western Culture. This course will focus on the development of film as a medium for cultural production including a comparative analysis between film and other cultural media such as literature, drama, and the visual arts. May be applied toward the Core Curriculum requirement in Creative Arts.

HUM 2093. World Religions. (3-0) 3 Credit Hours. (TCCN = PHIL 1304)

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of the origins, teachings, development, and philosophical foundations of the world’s chief religious movements, such as Hinduism, Buddhism, Shintoism, Confucianism, Taoism, Sikhism, Jainism, Islam, Zoroastrianism, Judaism, and Christianity. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture. (Formerly HUM 3093. Credit cannot be earned for both [HUM 2093](#) and HUM 3093.).

HUM 3013. History of Ideas. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Survey of the development and influence of major philosophical, scientific, and aesthetic conceptions from ancient times to the present.

HUM 3023. The Medieval World. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Interdisciplinary investigation of medieval thought and culture as exemplified in major works of literature, philosophy, theology, and history.

HUM 3033. Renaissance Ideas. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Interdisciplinary investigation of Renaissance thought and culture, as exemplified in major works of literature, philosophy, history, theology, and fine arts.

HUM 3043. Classicism and Enlightenment. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Interdisciplinary investigation of thought and culture in the later 17th and the 18th centuries, as exemplified in major works of philosophy, literature, and the fine arts.

HUM 3053. The Romantic Age. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Interdisciplinary investigation of the development of ideas in literature, philosophy, art, politics, and society at the end of the 18th and beginning of the 19th century.

HUM 3063. The Modern World. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Interdisciplinary investigation of modern thought in the late 19th and 20th centuries, as exemplified in major works of philosophy, literature, and the fine arts.

HUM 3103. American Film. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Survey of the art, history, development, and major critical approaches to American film with attention to such topics as classic and revisionist film styles, cinematic apparatus, the history and development of film genres, and film as a part of American culture.

HUM 3203. Film Genres. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Intensive study of a particular film genre, such as Western, science fiction, film noir, or documentary. May be repeated for credit when topics vary.

HUM 3213. The Christian Classics. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. The opportunity for an intensive survey of selected works of writers studied in the context of Christian thought.

HUM 3223. The Bible as Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of the Core Curriculum requirement in literature. Offers the opportunity to survey major themes, stories, and motifs in the Old and New Testament, with emphasis on those elements fundamental to Western culture.

HUM 3303. Major Filmmaker. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Intensive study of the work of a particular major filmmaker, such as Alfred Hitchcock, Akira Kurosawa, Orson Welles, Charles Chaplin, or Ingmar Bergman. May be repeated for credit when topics vary.

HUM 3403. Literature into Film. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of what distinguishes and links the media of cinema and written literature. Case studies in adaptation of novels, short stories, and plays into film.

HUM 3623. Topics in National Cultures and Civilizations. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. The cultural life of the respective geographic regions and social strata of individual nations of Europe and America, as reflected in and interpreted by their artistic production. Individual topics may focus on a single nation or several nations. May be repeated for credit when topics vary.

HUM 3703. Topics in Popular Culture. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Intensive study of a particular period (e.g., the '20s, the '60s, the Middle Ages), medium (e.g., television, hip hop, radio), or event (e.g., 9/11, the Alamo, Kennedy assassination) as shaped by and shaper of the popular imagination. May be repeated for credit when topics vary.

HUM 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

HUM 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

HUM 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

HUM 4953. Special Studies in Humanities. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

HUM 4973. Senior Seminar in Humanities. (3-0) 3 Credit Hours.

Prerequisites: 12 upper-division semester credit hours in humanities, classics, or philosophy. Undergraduate seminar limited to students in the humanities emphasis in their senior year. Content varies with each instructor. May be repeated once for credit when topics vary. (Formerly titled "Seminar for Humanities Majors.").

HUM 4991. Honors Thesis. (0-0) 1 Credit Hour.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee; enrollment in or completion of [HUM 4973](#). Supervised research and preparation of an Honors Thesis for the purpose of earning Humanities Honors. May be repeated once with advisor approval.

HUM 4992. Honors Thesis. (0-0) 2 Credit Hours.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee; enrollment in or completion of [HUM 4973](#). Supervised research and preparation of an Honors Thesis for the purpose of earning Humanities Honors. May be repeated once with advisor approval.

HUM 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee; enrollment in or completion of [HUM 4973](#). Supervised research and preparation of an Honors Thesis for the purpose of earning Humanities Honors. May be repeated once with advisor approval.

Human Neuroscience (HNSC)**HNSC 1013. Introduction to Human Neuroscience. (3-0) 3 Credit Hours.**

This course introduces students to system level human neuroscience using noninvasive imaging methodology (MRI, PET, TMS) as the primary tool to explore different motor, perceptual (e.g., vision, audition), and cognitive systems (e.g., attention, memory) in the human brain.

HNSC 2013. Disorders of the Human Nervous System. (3-0) 3 Credit Hours.

Prerequisite: [HNSC 1013](#). This course explores the mechanism of action of disorders of the human nervous system (e.g., autism, aphasia, motor disorders). Based on a system level approach to the human brain, each disorder is introduced with attention to the primary behavioral symptoms. The application of noninvasive brain imaging to explore the mechanism of action of disease, and diagnosis and treatment of disorders is covered whenever possible.

HNSC 3013. Introduction to Imaging Meta-Analysis. (3-0) 3 Credit Hours.

Prerequisites: [HNSC 1013](#) and a course in statistics. This course is designed to provide students with the tools to conduct system level meta-analysis of brain imaging data. Students are introduced to meta-analysis, including the analytic tools of this statistical methodology. Students use an existing database of imaging data to conduct a meta-analysis in an area of interest.

Information Systems (IS)**IS 1403. Business Information Systems Fluency. (3-0) 3 Credit Hours. (TCCN = BCIS 1305)**

Required course for all students majoring in Business at UTSA. This three-unit course concentrates on a set of core computing skills that are essential to student success, such as using e-mail, word processing, spreadsheets, basic data management, presentation software and on- and off-campus Internet resources. This is a Web-based course. Instructions and exams are accomplished through the use of a computer.

IS 1503. Introduction to Cyber Security. (3-0) 3 Credit Hours.

An introduction to the principles and best practices for cyber security. This course addresses the fundamental aspects of computer and network security. Issues concerning home computer security, internet security, privacy, viruses and worms, spam, and ethics will be included in this course. Public Component software will be used to illustrate the principles discussed in the class.

IS 2031. Introduction to Programming Concepts Laboratory Systems Laboratory. (0-2) 1 Credit Hour.

Prerequisite: Concurrent enrollment in [IS 2033](#), or completion of an [IS 2033](#) equivalent with a grade of "C-" or better. Laboratory accompanies [IS 2033](#). Uses object-oriented programming language and software development tools to develop basic applications that underline the concepts learned in [IS 2033](#). (Formerly titled "Introduction to Computer Concepts for Information Systems Laboratory.").

IS 2033. Introduction to Programming Concepts. (3-0) 3 Credit Hours.

Prerequisites: [IS 1403](#) with a grade of "C-" or better and concurrent enrollment in [IS 2031](#). An introduction to programming with an object-oriented language. Addresses basic elements of OOP (object-oriented programming), including control structures, classes and objects, class behavior, arrays, GUIs (graphical user interfaces), file input/output, exception handling, and object-oriented design. (Formerly titled "Introduction to Computer Concepts for Information Systems.").

IS 2041. Intermediate Object-Oriented Programming Laboratory. (0-2) 1 Credit Hour.

Prerequisite: Concurrent enrollment in [IS 2043](#), or completion of an [IS 2043](#) equivalent with a grade of "C-" or better. Laboratory accompanies [IS 2043](#). Laboratory uses object-oriented programming language and software development tools to develop basic applications that underline the concepts learned in [IS 2043](#). (Formerly titled "Data Structures and File Processing Laboratory.").

IS 2043. Intermediate Object-Oriented Programming. (3-0) 3 Credit Hours.

Prerequisites: [IS 2033](#) with a grade of "C-" or better and concurrent enrollment in [IS 2041](#). An object-oriented programming course designed to enforce introductory object-oriented principles learned in [IS 2033](#) and focus on concepts including exception handling, data structures, searching and sorting, recursion, generic collections, file processing, and GUIs (graphical user interfaces). An object-oriented language like Java will be used to develop applications using these concepts. (Formerly titled "Data Structures and File Processing.").

IS 3003. Principles of Information Systems for Management. (3-0) 3 Credit Hours.

Prerequisite: [IS 1403](#) with a grade of "C-" or better. An analysis of managerial/organizational information needs. Systematic procedures for developing information systems are covered. Includes coverage of hardware and software tools, information structures, and formal problem-solving techniques. Issues related to organizational controls, security, and globalization as a result of changing technologies are discussed. Cases will be assigned to illustrate the use of specific tools and techniques for problem solving.

IS 3033. Operating Systems. (3-0) 3 Credit Hours.

Prerequisites: [IS 2041](#) and [IS 2043](#) with a grade of "C-" or better, or consent of instructor, Department Chair, and Dean of the College. This course examines the role of computer operating systems in the overall vulnerability of the network. A comparison of the more popular operating systems will be used to illustrate the concepts to the class.

IS 3063. Database Management for Information Systems. (3-0) 3 Credit Hours.

Prerequisites: [IS 2041](#) and [IS 2043](#) with a grade of "C-" or better. A study of database management systems (DBMS) features, functions, and architecture, including logical design, data models, normalization, object-oriented data, and database administration. A DBMS product will be used to illustrate principles.

IS 3073. Application Development. (3-0) 3 Credit Hours.

Prerequisites: [IS 2041](#) and [IS 2043](#) with a grade of "C-" or better. A study of the use of information systems techniques to solve managerial problems. Includes cases where students are asked to design and

implement information systems that address various classes of analytic problems. Principles of decision theory are addressed.

IS 3413. Introduction to Telecommunications for Business. (3-0) 3 Credit Hours.

Prerequisites: [IS 3003](#) and 6 hours of IS coursework with a grade of "C-" or better, or consent of instructor, Department Chair, and Dean of the College. Includes an in-depth look at basic telecommunications terminology and concepts. Introduction to voice and data networks, signaling and multiplexing. Network topologies and protocol fundamentals and architectures are presented and compared. Frame relay, X.25, and ATM packet technologies are introduced. Network security fundamentals are explored.

IS 3423. Network Security. (3-0) 3 Credit Hours.

Prerequisite: [IS 3413](#) with a grade of "C-" or better or consent of instructor, Department Chair, and Dean of the College. The course provides a foundation in networking technologies that are core to creating secure networks. Topics included in this course are basic cryptography, secure networking protocols, logical and physical security management and security devices. Relation between these technologies and operational and implementation issues for these technologies will also be discussed. (Formerly titled "Secure Network Design.").

IS 3433. Introduction to Digital Forensics. (3-0) 3 Credit Hours.

The digital forensic investigation process involves organizational preparation, incident response, data collection, data analysis, and communication of findings. This course will teach students how to prepare for incidents, how to respond to incidents, and how to reliably collect digital data. Students will be introduced to various types of storage media and sources of volatile data. Students will also be introduced to fundamental legal issues related to digital forensics.

IS 3453. Networking Fundamentals. (3-0) 3 Credit Hours.

Prerequisite: [IS 3413](#) with a grade of "C-" or better or consent of instructor, Department Chair, and Dean of the College. This course will focus on the principles of telecommunication with particular emphasis on networking. Networking and transmission protocols will be emphasized. Both IPv4 and IPv6 will be included. This class will also include the hardware side of the network. The role of servers, switches and routers will be included. Security will be introduced.

IS 3503. Attack and Defend – An Introduction to Information Assurance. (3-0) 3 Credit Hours.

An introduction to information assurance. This survey course will present common ways that hackers attack a network and how to defend against the attacks. It will also include related subjects such as how to protect data, encryption, physical security, and hiding data. The course is a "hands-on" class and students will gain experience with readily available software packages. This course is intended for non-Infrastructure Assurance majors. Information Systems and Infrastructure Assurance majors cannot use [IS 3503](#) toward their degree requirements.

IS 3513. Information Assurance and Security. (3-0) 3 Credit Hours.

Prerequisite: [IS 3413](#) with a grade of "C-" or better or consent of instructor, Department Chair, and Dean of the College. This course provides an in-depth presentation of information assurance topics such as fraud, eavesdropping, traffic analysis, intrusion detection and prevention, hacking, viruses, and cryptography. Risk management will also be discussed. (Formerly IS 4453. Credit cannot be earned for both [IS 3513](#) and IS 4453.).

IS 3523. Intrusion Detection and Incident Response. (3-0) 3 Credit Hours.

Prerequisite: [IS 3513](#) with a grade of "C-" or better. This course provides an in-depth look at intrusion detection methodologies and tools and the approaches to handling intrusions when they occur; examines

the laws that address cybercrime and intellectual property issues; and includes a study of proper computer and network forensics procedures to aid in the identification and tracking of intruders and in the potential prosecution of criminal activity.

IS 3533. Cyber Law. (3-0) 3 Credit Hours.

An introductory course in laws and legal issues that affect law enforcement, businesses, and investigators related to the preservation, collection, and analysis of digital data. Students will examine computer crime laws, civil and criminal laws that often involve electronic evidence, search and seizure of electronic evidence, judicial issues involving the admissibility of electronic evidence and related testimony, and legal issues involved with electronic surveillance.

IS 4033. Network Operations. (3-0) 3 Credit Hours.

Prerequisite: [IS 3453](#) with a grade of "C-" or better or consent of instructor, Department Chair, and Dean of the College. The course will explore the fundamentals of operating a network. Issues to be included are physical security, electrical and air conditioning issues, data storage and retention, and backup and redundancy of data. Other topics include floor loading, patch management, converting user requirements to system requirements and disaster recovery.

IS 4053. Systems Analysis and Design. (3-0) 3 Credit Hours.

Prerequisites: [IS 3063](#) with a grade of "C-" or better and [MGT 3003](#). An introduction to systems theory and development techniques. Topics include problem definition, system development life cycle, feasibility analyses, project management, system models and CASE tools.

IS 4063. Advanced Topics in Information Systems. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and 15 semester credit hours of information systems courses (excluding [IS 1403](#) and [IS 3003](#)). Survey of recent developments in information technology. Analysis will focus on applications in the business community and theoretical developments that relate to those applications. Ordinarily taken during semester of graduation.

IS 4073. The Information Resource. (3-0) 3 Credit Hours.

Prerequisites: [IS 3003](#) with a grade of "C-" or better, [MGT 3003](#), and [MGT 3013](#). A study of the principles and concepts involved in the management of organizational information systems resources. Topics include project control, CIO functions, information systems planning, and strategic impact of information systems, multinational organizations, and relevant legal, professional, and ethical issues.

IS 4103. Business Process Management and Control. (3-0) 3 Credit Hours.

Business professionals are frequently responsible for designing, implementing, supporting and managing technology-based business processes in organizations. In order to accomplish those tasks, these professionals must understand the business processes that support an organization and how they are controlled. This course contributes to the student's understanding of how key business processes are managed, controlled and integrated in enterprise resource planning systems. SAP will be used to illustrate the concepts discussed in the class. (Same as [ACC 4103](#). Credit cannot be earned for both [IS 4103](#) and [ACC 4103](#).)

IS 4143. Wide Area Networks. (3-0) 3 Credit Hours.

Prerequisites: [IS 3413](#) with a grade of "C-" or better and [MGT 3003](#) or consent of instructor, Department Chair, and Dean of the College. This course explores the telecommunication technologies used in wide area networks. Technologies such as frame relay, ATM, TCP/IP, and voice over IP will be studied. The role of the common carriers will also be discussed. Secure network traffic over TCP/IP will be included.

IS 4153. Web Site Development. (3-0) 3 Credit Hours.

Prerequisites: [IS 3073](#) with a grade of "C-" or better and [MGT 3003](#) or consent of instructor, Department Chair, and Dean of the College. A study of issues related to the use of electronic networks to facilitate inter- and intra-organizational business activities. The principles of Web site design from the consumer and the information systems points of view will be presented. The course will also include the development of a Web site. (Formerly titled "Electronic Commerce.").

IS 4183. Advanced Database Concepts. (3-0) 3 Credit Hours.

Prerequisites: [IS 3063](#) with a grade of "C-" or better and [MGT 3003](#). In-depth consideration of concepts governing the design and management of database systems. Topics include database design, distributed databases, database administration, object-oriented data modeling, and performance evaluation.

IS 4213. Power and Air Conditioning. (3-0) 3 Credit Hours.

Prerequisite: [IS 4033](#) with a grade of "C-" or better or consent of instructor, Department Chair, and Dean of the College. The purpose of this class will be to explore the electrical power, air conditioning, and fire suppressant requirements of a data center. Electrical grids, standby generators, and uninterruptable power supplies will be discussed. The course explores the various aspects of power quality, interruption of service, voltage flicker and control, voltage swells and sags and power surges. Air conditioning requirements and methods will also be included. Fire suppressant techniques will also be part of the class. A comprehensive project involving the design of the data center to include these three major issues will be part of the class. (Same as [FM 4213](#). Credit cannot be earned for both [IS 4213](#) and [FM 4213](#).)

IS 4223. Emerging Network Technologies. (3-0) 3 Credit Hours.

Prerequisite: [IS 3453](#) with a grade of "C-" or better or consent of instructor, Department Chair, and Dean of the College. Cloud computing has become popular in industry. This class will look at what it is and how it works. How cloud computing interfaces with current networks, computing ability and storage requirements will be discussed. Security issues will be an important part of the course. Other topics include virtual machines, storage area networks and remote systems management.

IS 4463. Secure Electronic Commerce. (3-0) 3 Credit Hours.

Prerequisites: [IS 3513](#) with a grade of "C-" or better and [MGT 3003](#) or consent of instructor, Department Chair, and Dean of the College. The security issues related to electronic commerce will be discussed in this course. The legal environment of e-commerce, public and private key encryption, digital signatures, authentication, and third party certificates are topics that will be included.

IS 4473. Information Assurance Policy. (3-0) 3 Credit Hours.

Prerequisites: [IS 3413](#) with a grade of "C-" or better, [MGT 3003](#), and one 3-semester-credit-hour security course, or consent of instructor, Department Chair, and Dean of the College. There are many policy issues, within the firm and at various levels of government, that affect information assurance. This course will examine how these policies affect electronic security. Subjects will include privacy of information, intellectual property protection, globalization of information systems, and other policy matters. The protection and control of secured information will also be discussed.

IS 4483. Digital Forensic Analysis I. (3-0) 3 Credit Hours.

Prerequisites: [IS 3513](#) with a grade of "C-" or better and [MGT 3003](#). An introductory course in collecting, examining, and preserving evidence of computer crimes. This course examines the issues, tools, and control techniques needed to successfully investigate illegal activities facilitated through the use of information technology. The tools of collecting, examining, and evaluating data in an effort to establish intent, culpability, motive, means, methods, and loss resulting from e-crimes will be examined. (Formerly titled "Cyber Forensics.").

IS 4513. Cyber and Physical Systems. (3-0) 3 Credit Hours.

Prerequisites: [IS 3513](#) with a grade of “C-” or better and [MGT 3003](#) or consent of instructor, Department Chair, and Dean of the College. Many of the critical infrastructure systems contain a system control and data acquisition (SCADA) component. Frequently, the control systems are remotely accessed and therefore becomes the focal point for attack. This course examines the control system components from the standpoint of vulnerability and protection. (Formerly titled “System Control and Data Acquisition.”).

IS 4523. Digital Forensic Analysis II. (3-0) 3 Credit Hours.

Prerequisite: [IS 4483](#). This course examines advanced digital forensic analysis topics, tools, techniques, and control mechanisms. Advanced topics include operating system artifacts, non-standard file systems, mobile devices, malware, and volatile memory. Students will gain experience with state-of-the-art forensics tools and techniques needed to successfully investigate illegal activities perpetuated through the use of information technology.

IS 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for the required forms. Independent research in an information systems topic under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

IS 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for the required forms. Independent research in an information systems topic under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

IS 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for the required forms. Independent research in an information systems topic under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

IS 4933. Internship in Information Systems. (0-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), 9 semester credit hours of information systems courses (excluding [IS 1403](#) and [IS 3003](#)), a 2.5 UTSA grade point average, and permission in writing from the instructor, the Department Chair, and the Dean of the College. See the College of Business Undergraduate Advising Center for required forms. The opportunity to gain knowledge through experiential activities in professional life. Joint cooperation with business and governmental institutions in structuring and monitoring work experience aimed at supplementing the classroom learning process. May not be repeated for credit.

IS 4943. Internship in Information Assurance. (0-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), 9 semester credit hours of information systems courses (excluding [IS 1403](#) and [IS 3003](#)), a 2.5 UTSA grade point average, and permission in writing from the instructor, the Department Chair, and the Dean of the College. See the College of Business Undergraduate Advising Center for required forms. The opportunity to gain knowledge through experiential activities in professional life. Joint cooperation with business and governmental institutions in structuring and monitoring work experience aimed at supplementing the classroom learning process. May not be repeated for credit.

IS 4951. Special Studies in Information Systems. (1-0) 1 Credit Hour.

Prerequisites: [MGT 3003](#) and consent of instructor. An organized course offering specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

IS 4952. Special Studies in Information Systems. (2-0) 2 Credit Hours.

Prerequisites: [MGT 3003](#) and consent of instructor. An organized course offering specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

IS 4953. Special Studies in Information Systems. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and consent of instructor. An organized course offering specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

IS 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: [MGT 3003](#). Enrollment limited to students applying for Honors in Information Systems (see page 44). Supervised research and preparation of an honors thesis. May be repeated once for credit with advisor's approval. No more than 3 semester credit hours may apply toward information systems major requirements.

Interdisciplinary Studies (IDS)**IDS 2013. Introduction to Learning and Teaching in a Culturally Diverse Society. (3-0) 3 Credit Hours.**

Introductory course for all prospective teachers. This course is designed to help students understand the complexity of K–12 teaching in our contemporary society. Students will examine the history, policies and practices that have shaped schooling in the United States. Contemporary dilemmas of equity, the achievement gap, and other marginalizing practices will be considered to better understand the culture of schooling and classrooms, and the complex role of the teacher. Emphasis will be on, but not limited to, students as learners, curriculum standards and assessment, effective teaching practices for diverse learners, professionalism, and the sociopolitical challenges confronting today's teachers. Field experience required.

IDS 2083. Technology for Learning and Teaching. (3-1) 3 Credit Hours.

This course focuses on integrating instructional technology into learning and teaching environments. Students will investigate theoretical and practical issues surrounding the use of instructional technologies. Participants will gain practical experience in curriculum planning that takes specific advantage of technology to enhance and extend learning. Course requirements are aligned with national and state technology standards.

IDS 2113. Society and Social Issues. (3-0) 3 Credit Hours.

This course explores contemporary social issues resulting from modern globalization and transnationalism from diverse disciplinary perspectives. Students investigate data and relate scholarship to understand the nature of global changes, as well as their impact on the world's people and global societies. Personal and social responsibility in relation to social issues will be explored through a variety of global,

national, regional, and community-based topics. Students will be expected to synthesize disciplinary studies and demonstrate their connections of global issues to local contexts through written, oral, and visual representations. May be applied toward the Core Curriculum requirement in Social and Behavioral Sciences.

IDS 2403. Physical Science. (3-0) 3 Credit Hours.

Prerequisites: Completion of Mathematics and Science Core Curriculum requirements. Study of fundamental laws that govern the universe, including mechanics, thermodynamics, electromagnetism, and quantum theory, and how these relate to physics and chemistry. Topics will include but not be limited to: basic scientific problem-solving techniques, fundamental forces; energy and how it is conserved and transformed; matter; atomic structure; and chemical interactions. (Credit cannot be earned for both [IDS 2403](#) and [IDS 3234](#).)

IDS 2413. Earth Systems Science. (3-0) 3 Credit Hours.

Prerequisites: Completion of Mathematics and Science Core Curriculum requirements. This course provides a look at the Earth system as a whole. Emphasis will be on the interrelationships between biological, geological, hydrological, climatological, and human systems on local, continental and global scales. The interactions between the hydrosphere, atmosphere, biosphere, cryosphere, and lithosphere that together make up the Earth system will be studied. This interdisciplinary view of our planet highlights the manner in which all systems of the Earth control or influence each other. (Formerly IDS 3213. Credit cannot be earned for both [IDS 2413](#) and IDS 3213. Credit cannot be earned for both [IDS 2413](#) and [IDS 3224](#).)

IDS 3003. STEM in Social Contexts. (3-0) 3 Credit Hours.

Prerequisites: [IDS 2113](#), [WRC 1013](#) and [WRC 1023](#). An exploration of inquiry in STEM fields and how it is situated in local and global sociocultural contexts across time. This course uses an interdisciplinary approach to studying the nature of inquiry, knowledge, and theory development, as well as the mutual relationships between STEM fields and social contexts. (Formerly titled “Science and Humanity.”)

IDS 3013. Diversity, Equity, and the Social Sciences. (3-0) 3 Credit Hours.

Prerequisite: [IDS 2113](#). An exploration of knowledge, and the construction of knowledge, in the social sciences. The course emphasizes an in-depth inquiry of diversity and equity, critical reflection and discourse, as well as individual, social, and civic responsibility and action.

IDS 3123. Culture, Literature, and Fine Arts. (3-0) 3 Credit Hours.

Prerequisites: [IDS 2113](#), [WRC 1013](#), and [WRC 1023](#). An interdisciplinary study of local and global cultures through diverse genres, including investigation of cultural expressions across literature and the arts, music, film and other forms of popular culture. This course, addressing both historical and contemporary genres, will foster interdisciplinary inquiry, knowledge of primary sources, theory development, and critical reflection and analysis of identities and their representations.

IDS 3201. Inquiry in Physical Science. (0-3) 1 Credit Hour.

Prerequisites: Completion of Mathematics and Science Core Curriculum requirements. Hands-on experimental inquiry with standard laboratory tools and techniques in the fields of physics and chemistry. Major themes include energy, forces, and atomic and subatomic interactions. (Credit cannot be earned for both [IDS 3201](#) and [IDS 3234](#).)

IDS 3211. Inquiry in Earth Systems Science. (0-3) 1 Credit Hour.

Prerequisites: Completion of Mathematics and Science Core Curriculum requirements. Course familiarizes students with laboratory and field tools, techniques, and safety issues and allows them to form a better understanding of major topics in Earth systems science, especially in the areas of hydrology,

soils, atmosphere, land cover, and GPS. Students will participate in scientific inquiry investigations of the Earth's systems and components. (Credit cannot be earned for both [IDS 3211](#) and [IDS 3224](#).) (Formerly titled "Advanced Earth Systems Science Laboratory.")

IDS 3224. Earth Systems Science Investigations. (2-4) 4 Credit Hours.

Prerequisites: Completion of Mathematics and Science Core Curriculum requirements. Integrated online lecture and laboratory course that provides a look at the Earth system as a whole. Emphasis will be on the interrelationships between biological, geological, hydrological, and human systems on local, continental and global scales. The interactions between the hydrosphere, atmosphere, biosphere, and lithosphere that together make up the Earth system will be studied. This interdisciplinary view of our planet highlights the manner in which all systems of the Earth influence each other. Credit for [IDS 3224](#) is equivalent to credit for both [IDS 2413](#) and [IDS 3211](#). Credit cannot be earned for [IDS 2413](#) (or IDS 3213) and [IDS 3211](#) if this course is taken.

IDS 3234. Investigations in Physical Science. (2-4) 4 Credit Hours.

Prerequisites: Completion of Mathematics and Science Core Curriculum requirements. Integrated online lecture and laboratory course that provides learners with varied opportunities to build an understanding of intricate relationships commonly addressed in the fields of physics and chemistry, and to evaluate these relationships as a holistic system. Explorations of conceptual ideas will include varied methods of engagement, including hands-on and minds-on experimentation. Credit for [IDS 3234](#) is equivalent to credit for both [IDS 2403](#) and [IDS 3201](#). Credit cannot be earned for [IDS 2403](#) (or IDS 3203) and [IDS 3201](#) if this course is taken.

IDS 3713. Interdisciplinary Inquiry. (3-0) 3 Credit Hours.

Prerequisites: [IDS 2113](#), [IDS 3003](#), [IDS 3013](#), [IDS 3123](#), [WRC 1013](#), and [WRC 1023](#). An interdisciplinary study of thought in the fields of sciences, social studies, mathematics, language arts, and fine arts. Course experiences include modeling, practice, and analysis of modes of inquiry in the disciplines, and their implications for interdisciplinary inquiry. Students will demonstrate their ability to engage in interdisciplinary inquiry by means of writing a unique interdisciplinary and scholarly paper.

IDS 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

IDS 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for honors in the Department of Interdisciplinary Learning and Teaching during the last two semesters; consent of the Honors College. Supervised research and preparation for an honors thesis. May be repeated once with advisor's approval.

Interior Design (IDE)

IDE 2143. Architecture and Interior Assemblies. (3-0) 3 Credit Hours.

Prerequisite: COA 1133. The study of materials and assemblies as used in interior environments with an emphasis on qualities, characteristics, and production, and a focus on detail.

IDE 2153. Interior Materials and Assemblies. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as an ARC or IDE major.

Continued study of materials and assemblies as used in interior environments with an emphasis on ceiling, floor, and furniture systems, applied finishes, and specifications. (Formerly IDE 3153. Credit cannot be earned for both IDE 2153 and IDE 3153.)

IDE 2413. History of Interior Architecture I. (3-0) 3 Credit Hours.

Prerequisites: [WRC 1013](#), [WRC 1023](#) and enrollment as an ARC or IDE major. Introduction to art, architecture, interior design, and decorative arts from antiquity to the Industrial Revolution. Explores the varied ways that design reflects and serves the social, religious, and political life in the Western and non-Western world.

IDE 2423. History of Interior Architecture II. (3-0) 3 Credit Hours.

Prerequisites: [WRC 1013](#), [WRC 1023](#) and enrollment as an ARC or IDE major. Introduction to art, architecture, interior design, and decorative arts through the post-Industrial Revolution to the modern period. Explores the varied ways that design reflects and serves the social, religious, and political life in the Western and non-Western world. (Formerly titled "History of Design: Renaissance through Nineteenth Century.").

IDE 3013. Color and Light. (3-0) 3 Credit Hours.

Studies of psychological and physiological effects of color and light in the built environment. Light as a form determinant of interior space. Introduction to artificial illumination design.

IDE 3133. Interior Design Topics. (3-0) 3 Credit Hours.

Prerequisite: Enrollment as an ARC or IDE major. A study of current trends and issues in interior design.

IDE 3203. Details and Construction Graphics. (0-6) 3 Credit Hours.

Prerequisites: Enrollment as an ARC or IDE major. Project driven course focusing on design and graphic documentation of interior architecture and construction.

IDE 3236. Interior Design Studio I. (0-14) 6 Credit Hours.

Prerequisites: IDE 2126 or concurrent enrollment, [IDE 2143](#), and [IDE 2423](#). Interior design as the application of building construction systems and materials as key components in the art of shaping interior volumes. Project research and programming methods are applied and furniture selections are explored and integrated within a spatial context.

IDE 3246. Interior Design Studio II. (0-14) 6 Credit Hours.

Prerequisite: [IDE 2423](#) and ARC 3343. Interior design focused on integrating mechanical, acoustical, and lighting systems through a consideration of the relationship between human activities and various interior environments.

IDE 3433. Topics in Design Theory. (3-0) 3 Credit Hours.

Prerequisite: [IDE 2423](#). Introduction to design theories. May be repeated for credit when topics vary. (Formerly IDE 4423.).

IDE 4213. Furniture Design and Construction. (0-6) 3 Credit Hours.

Prerequisite: ARC 3216 or [IDE 3236](#). Focuses on the essential qualities of the elements of furniture design and construction, emphasizing human factors and the use of materials and connections.

IDE 4233. Computer Projects in Design. (2-2) 3 Credit Hours.

Prerequisite: [ARC 2513](#) or consent of instructor. Project-driven lecture/laboratory course exploring advanced issues associated with 3-D modeling, animation, photo-realistic visualization, and computer-aided manufacturing. Considers the role these processes play in architectural and interior design.

IDE 4266. Systems Integration Studio. (0-14) 6 Credit Hours.

Prerequisites: IDE 3153, [IDE 3246](#) and ARC 3353. Design and documentation of interior environments focusing on system integration and articulation of building assemblies. Includes complex programming, life safety issues, thermal control, lighting, electrical, acoustics, and water and waste management systems. (Formerly titled "Interior Design Systems Studio.").

IDE 4333. Practicum/Internship. (0-0) 3 Credit Hours.

Prerequisite: [IDE 3236](#) or consent of instructor. Offers students majoring in Interior Design participation in a variety of design development concerns. Students work under supervision in an approved internship to gain knowledge of their respective professional fields.

IDE 4513. Practice and Ethics. (3-0) 3 Credit Hours.

Prerequisite: IDE 2126. A study of the currently applied ethical, legal, and professional criteria for the practice of interior design. Issues investigated include forms of practice, client relationships, team leadership, office organization, and project management. A job shadowing component will be included when possible.

IDE 4816. International Studies Studio. (0-14) 6 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. An interior architecture studio associated with a study abroad program. (Formerly titled "Study Abroad: Studio.") (Same as [ARC 4816](#). Credit cannot be earned for both [IDE 4816](#) and [ARC 4816](#).)

IDE 4823. International Studies Theory Seminar. (3-0) 3 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. A lecture/seminar course associated with a study abroad program; involves field trips. (Formerly titled "Study Abroad: History/Theory.") (Same as [ARC 4823](#). Credit cannot be earned for both [IDE 4823](#) and [ARC 4823](#).)

IDE 4833. International Studies Drawing Seminar. (0-6) 3 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. A drawing course associated with a study abroad program; involves field trips. (Formerly titled "Study Abroad: Observational Drawing.") (Same as [ARC 4833](#). Credit cannot be earned for both [IDE 4833](#) and [ARC 4833](#).)

IDE 4843. International Studies History Seminar. (0-6) 3 Credit Hours.

Prerequisites: [ARC 2156](#) and [ARC 2166](#) or consent of instructor. A lecture/seminar course associated with a study abroad program; involves field trips. (Same as [ARC 4843](#). Credit cannot be earned for both [IDE 4843](#) and [ARC 4843](#).)

IDE 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor's degree.

IDE 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor's degree.

IDE 4916. Independent Study. (0-0) 6 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor's degree.

IDE 4953. Special Studies in Interior Architecture. (0-6) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours for [IDE 4953](#) or 12 hours for [IDE 4956](#), regardless of discipline, will apply to a bachelor's degree.

IDE 4956. Special Studies in Interior Architecture. (0-14) 6 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours for [IDE 4953](#) or 12 hours for [IDE 4956](#), regardless of discipline, will apply to a bachelor's degree.

Italian (ITL)**ITL 1014. Elementary Italian I. (3-2) 4 Credit Hours. (TCCN = ITAL 1411)**

Fundamentals of Italian offering the opportunity to develop listening, speaking, reading, and writing skills. Introduction to Italian culture. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

ITL 1024. Elementary Italian II. (3-2) 4 Credit Hours. (TCCN = ITAL 1412)

Prerequisite: [ITL 1014](#), the equivalent, an appropriate placement test score, or consent of instructor. Fundamentals of Italian offering the opportunity to develop listening, speaking, reading, and writing skills. Further study of Italian culture.

ITL 2013. Intermediate Italian I. (3-1) 3 Credit Hours. (TCCN = ITAL 2311)

Prerequisite: [ITL 1024](#), the equivalent, an appropriate placement test score, or consent of instructor. Continued practice in developing listening, speaking, reading, and writing skills. Grammar and further study of Italian culture.

ITL 2023. Intermediate Italian II. (3-1) 3 Credit Hours. (TCCN = ITAL 2312)

Prerequisite: [ITL 2013](#), the equivalent, an appropriate placement test score, or consent of instructor. Continued practice in developing listening, speaking, reading, and writing skills. Grammar review and further study of Italian culture.

ITL 2333. Italian Literature in English Translation. (3-0) 3 Credit Hours. (TCCN = ENGL 2331)
Major works of Italian literature across time, genres, and movements. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture. (Formerly ITL 3333. Credit cannot be earned for both [ITL 2333](#) and ITL 3333.).

Japanese (JPN)

JPN 1014. Elementary Japanese I. (3-2) 4 Credit Hours. (TCCN = JAPN 1411)

Fundamentals of Japanese offering the opportunity to develop basic speaking, listening, reading, and writing skills. Read and write Hiragana and Katakana. Introduction of Kanji and Japanese culture. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

JPN 1024. Elementary Japanese II. (3-2) 4 Credit Hours. (TCCN = JAPN 1412)

Prerequisite: [JPN 1014](#), the equivalent, the appropriate placement test score, or consent of instructor. Fundamentals of Japanese offering the opportunity to develop basic speaking, listening, reading, and writing skills. Further study of Japanese culture and Kanji.

JPN 2013. Intermediate Japanese I. (3-1) 3 Credit Hours. (TCCN = JAPN 2311)

Prerequisite: [JPN 1024](#), the equivalent, the appropriate placement test score, or consent of instructor. Continued opportunity to develop listening, speaking, reading, and writing skills through structural analysis of the Japanese language. Further study of Japanese culture and Kanji.

JPN 2023. Intermediate Japanese II. (3-1) 3 Credit Hours. (TCCN = JAPN 2312)

Prerequisite: [JPN 2013](#), the equivalent, the appropriate placement test score, or consent of instructor. Continued opportunity to develop listening, speaking, reading, and writing skills through structural analysis of the Japanese language. Further study of Japanese culture and Kanji.

JPN 3023. Advanced Language Skills. (3-0) 3 Credit Hours.

Prerequisite: [JPN 2023](#), the equivalent, the appropriate placement test score, or consent of instructor. Offers the opportunity to develop advanced-level oral and written communication skills in the Japanese language, along with enhanced comprehension skills in listening and reading. May be repeated for credit when topics vary.

JPN 3053. Business Japanese. (3-0) 3 Credit Hours.

Prerequisite: [JPN 2023](#), the equivalent, the appropriate placement test score, or consent of instructor. Offers the opportunity to develop speaking, reading, and writing skills in business fields. Emphasis on Japanese business manners and business terminology.

JPN 4213. Topics in Japanese Culture. (3-0) 3 Credit Hours.

Prerequisite: [JPN 2023](#), the equivalent, the appropriate placement test score, or consent of instructor. Selected topics of Japanese culture, such as Modernization, Westernization, current issues in U.S.-Japan relationships, contemporary cultural developments, or a linguistic topic. May be repeated for credit when topics vary.

Kinesiology (KIN)

KIN 1001. Individual Physical Activities. (0-3) 1 Credit Hour.

Practice in the techniques of individual physical activities. Sections focus on particular sports or fitness activities as indicated in the Schedule of Classes. May be repeated for credit, but not more than 6 semester credit hours of [KIN 1001](#) alone or in combination with [KIN 1101](#) will apply to a bachelor's degree.

KIN 1013. Freshman Topics in Kinesiology. (3-0) 3 Credit Hours.

This course is designed to help students acquire the tools and life skills necessary to succeed in college and the future. The curriculum is an overview of topics including: note and test taking, learning styles, concentration skills, stress management, communication, diversity, and how to choose a major and a career. The student will be oriented with the different aspects of Roadrunners for Life, UTSA's version of the NCAA CHAMPS/Life Skills Program. A maximum of 3 semester credit hours of freshman topics courses may apply to a bachelor's degree.

KIN 1101. Team Sports. (0-3) 1 Credit Hour.

Practice in the techniques of team sports. Sections focus on particular sports as indicated in the Schedule of Classes. May be repeated for credit, but not more than 6 semester credit hours of [KIN 1101](#) alone or in combination with [KIN 1001](#) will apply to a bachelor's degree.

KIN 2003. Computer Applications in Kinesiology and Health. (3-0) 3 Credit Hours.

Prerequisite: [KIN 2303](#) or [HTH 2413](#). Application of computer and multimedia technology in Kinesiology and Health disciplines.

KIN 2123. Fitness and Wellness Concepts. (3-0) 3 Credit Hours. (TCCN = KINE 1338)

Prerequisite: [KIN 2303](#) or consent of instructor. This course is designed to provide students with developmentally appropriate knowledge and skills in health and fitness. The course will address health-related issues in personal, interpersonal, and community settings. An individual fitness requirement may be required.

KIN 2141. Medical Terminology. (1-1) 1 Credit Hour.

Prerequisites: [KIN 2303](#) and admission to the Athletic Medicine Program. This course examines the word roots, prefixes, suffixes and terms used in medicine and clinical exercise. A major focus will be on the terms used in the major organ systems of the body, diseases, injuries, and medical treatments.

KIN 2303. Foundations of Kinesiology. (3-0) 3 Credit Hours. (TCCN = KINE 1301)

Study of the history and philosophy of physical activity, and an introduction to anatomy, physiology, biomechanics, motor behavior, and psychology of exercise and sport. This course will also introduce careers in kinesiology and the requirements for graduation with a degree in kinesiology. (Formerly titled "Cultural and Scientific Foundations of Kinesiology.").

KIN 2421. Outdoor Activities and Innovative Games. (1-2) 1 Credit Hour.

Prerequisite: [KIN 2303](#). Practice in delivering instructions of selected outdoor activities (hiking, orienteering, biking) and innovative games for all age groups. Weekend class field trips required. Laboratory fee will be assessed. (Formerly titled "Outdoor Activities and Lifetime Sports.").

KIN 2441. Management and Organization in Kinesiology and Sports. (1-1) 1 Credit Hour.

Prerequisite: [KIN 2303](#). Introduction to concepts and skills that will prepare the student to become an effective leader of physical fitness, sport and health, and physical education programs. (Formerly KIN 2423. Credit cannot be earned for both KIN 2423 and [KIN 2441](#).)

KIN 3001. Skill Analysis in Physical Activity: Individual Activities. (1-2) 1 Credit Hour.

Prerequisite: [KIN 3413](#). Practice in delivering developmentally appropriate physical activity instruction in a variety of selected individual activities such as golf, bowling, archery, and track and field.

KIN 3011. Skill Analysis in Physical Activity: Team Sports I. (1-2) 1 Credit Hour.

Prerequisite: [KIN 3413](#). Practice in delivering developmentally appropriate physical activity instruction in a variety of selected team sports, such as basketball, soccer, and baseball/softball.

KIN 3013. Theory of Coaching. (3-0) 3 Credit Hours.

This course will discuss the principles and philosophies of coaching sports. Domains will remain consistent with that of the National Standards for Sport Coaches and will focus on philosophy and ethics, safety and injury prevention, physical conditioning, growth and development, teaching and communication, sport skills and tactics, organization and administration, and evaluation.

KIN 3021. Skill Analysis in Physical Activity: Team Sports II. (1-2) 1 Credit Hour.

Prerequisite: [KIN 3413](#). Practice in delivering developmentally appropriate physical activity instruction in a variety of selected team sports, such as football, volleyball, and team handball.

KIN 3031. Skill Analysis in Physical Activity: Dual Sports. (1-2) 1 Credit Hour.

Prerequisite: [KIN 3413](#). Practice in delivering developmentally appropriate physical activity instruction in a variety of selected dual sports, such as badminton, tennis and handball.

KIN 3041. Skill Analysis in Physical Activity: Track and Field. (1-2) 1 Credit Hour.

Specialized activity instruction involving skills, drills, rules, regulations, and skill performance in a variety of selected track and field events.

KIN 3051. Group Fitness Instruction. (1-2) 1 Credit Hour.

Prerequisite: [KIN 2303](#) or consent of instructor. Practice in delivering a variety of appropriate aerobic, musculoskeletal fitness, and wellness activities for children and adults. (Formerly titled "Aerobic Fitness Instruction.").

KIN 3061. Foundational Movement. (1-2) 1 Credit Hour.

Prerequisite: [KIN 2303](#). Provide instruction in facilitating the foundational movement skills which provide the basis for all movement capacities and their application in specialized activities geared to the early childhood through adolescent stages. (Formerly titled "Rhythmical Activities and Dance.").

KIN 3071. Musculoskeletal Fitness Instruction. (1-2) 1 Credit Hour.

Prerequisite: [KIN 3313](#). Instructional techniques applied to resistance training, plyometrics, flexibility, and musculoskeletal conditioning activities.

KIN 3103. Motor Development. (3-0) 3 Credit Hours.

Prerequisite: [KIN 2303](#) or [HTH 3503](#). A study of motor, physical, and neuromuscular development across the human life span. Effects of social, cognitive, growth and maturation, and aging factors on motor development will be addressed. Directed field experience may be required.

KIN 3113. Scientific Principles of Physical Activity. (3-1) 3 Credit Hours.

Prerequisite: [KIN 3013](#) or consent of instructor. A study of the physiological and biomechanical principles of physical activity and human movement. Emphasis is placed on acute responses and chronic adaptations of the musculoskeletal and cardiorespiratory systems to physical activity.

KIN 3123. Early Childhood Development Through Movement. (3-0) 3 Credit Hours.

A study of movement development and the effects on cognitive and social development of young children. Students will learn to program and deliver developmentally appropriate strategies and activities to introduce and refine fundamental movement skills and health-related components of fitness. Task analysis and sequential delivery of concepts and skills will also be discussed. Some field work experiences may be required.

KIN 3213. First Aid and Injury Management. (3-0) 3 Credit Hours.

Prerequisite: [KIN 2303](#) or [KIN 3013](#). Study and application of first aid and treatment of common exercise-related injuries in sport and exercise environments. Additional training includes risk-management strategies for providing safe exercise environments, and management of exercise testing facilities. Upon successful completion of this course, the student will be eligible for certification in first aid and CPR. (Credit cannot be earned for both [KIN 3213](#) and HTH 2523.).

KIN 3303. Athletic Injuries and Training Procedures. (3-0) 3 Credit Hours.

Prerequisite: [KIN 3313](#) or equivalent. Prevention and care of athletic injuries. A study of training and conditioning for the team and individual. Techniques and procedures for emergencies: diagnostic, preventive, and remedial measures. Organization of the training room facility. Directed field experience may be required.

KIN 3313. Anatomy and Physiology for Kinesiology. (3-1) 3 Credit Hours.

Prerequisite: [KIN 2303](#) or [HTH 2413](#). A detailed study of anatomy and physiology of the human cardiorespiratory, musculoskeletal and nervous systems. Emphasis will be placed on the anatomical factors that cause human movement and application to common exercise-related injuries. Anatomy laboratory hours may be required.

KIN 3321. Biomechanics Laboratory. (1-1) 1 Credit Hour.

Prerequisite: [KIN 3313](#) and concurrent enrollment in [KIN 3323](#). Quantitative and qualitative evaluation of human movement through analysis of video and biomechanical data. Application of Biomechanics to sports performance enhancement and injury prevention. This lab will complement the content covered in [KIN 3323](#).

KIN 3323. Biomechanics. (3-0) 3 Credit Hours.

Prerequisite: [KIN 3313](#) or equivalent. The study of the human body in sports motion and sport objects in motion. The application of mechanical principles, kinematics, and kinetics. Biomechanics laboratory hours are required.

KIN 3413. Tactics. (3-0) 3 Credit Hours.

Prerequisite: [KIN 2303](#). Development, organization, and delivery of appropriate physical activities for children through the adolescent stage. Some fieldwork observation experiences may be required.

KIN 3431. Exercise Physiology Laboratory. (1-1) 1 Credit Hour.

Prerequisite: [KIN 3313](#) and concurrent enrollment in [KIN 3433](#). Laboratory exercises demonstrating principles of exercise physiology. Topics include metabolic, cardiorespiratory, and neuromuscular responses to physical activity and exercise.

KIN 3433. Exercise Physiology. (3-0) 3 Credit Hours.

Prerequisite: [KIN 3313](#) or equivalent. A study of the adaptation and effects of the body to physiological stress. Emphasis will be placed on the physiology of training, metabolism and work capacity, and electrocardiography.

KIN 3441. Graded Exercise Testing and Fitness Assessment Laboratory. (1-1) 1 Credit Hour.

Prerequisite: [KIN 3433](#) and concurrent enrollment in [KIN 3443](#). This course includes laboratory and clinical measurements of aerobic capacity, balance, body composition, electrocardiography, flexibility, muscular endurance, muscular strength, and pulmonary function. Students are required to demonstrate competence in administering health related physical fitness.

KIN 3443. Graded Exercise Testing and Fitness Assessment. (3-0) 3 Credit Hours.

Prerequisite: [KIN 3433](#). A study of the principles and concepts of fitness measurement. Topics include graded exercise testing, electrocardiography, assessment of aerobic capacity, body composition, flexibility, muscular strength, muscular endurance, and pulmonary function.. (Formerly titled "Fitness Testing and Exercise Prescription.").

KIN 3453. Fitness Programming and Exercise Prescription. (3-1) 3 Credit Hours.

Prerequisites: [KIN 3071](#), [KIN 3323](#), and [KIN 3433](#). A study and application of principles and concepts related to designing exercise programs. The target population includes apparently healthy adults and individuals with special considerations, including cardiovascular disease, pulmonary disease, obesity, diabetes, pregnancy, and children.

KIN 3463. Musculoskeletal Anatomy. (3-1) 3 Credit Hours.

Prerequisite: [KIN 3313](#) or equivalent, and admission to the Athletic Medicine Program. A detailed examination of the nervous, muscular, and skeletal systems. This course focuses on bones, bone markings, articulations, origins, insertions, actions, and innervations of these systems. The etiology and pathophysiology of common sport and exercise related injuries to the musculoskeleton will be introduced. Laboratory examination of the skeletal system may be required.

KIN 4023. Exercise Psychology. (3-0) 3 Credit Hours.

Prerequisite: [KIN 2303](#). An investigation of psychological processes and behaviors related to participation in exercise and physical activities. Psychological effects of exercise, motives for fitness, exercise adherence, and fitness counseling.

KIN 4043. Therapeutic Modalities. (3-0) 3 Credit Hours.

Prerequisites: [KIN 3303](#), [KIN 3463](#), and admission to the Athletic Medicine Program. This course is designed to introduce students to a variety of therapeutic modalities currently used in clinical rehabilitation. Students will learn the theoretical basis and application procedures for a variety of modalities including therapeutic heat and cold, electrotherapy, therapeutic massage, ultrasound, and laser/light therapy.

KIN 4113. Evaluation. (3-0) 3 Credit Hours.

Prerequisite: [KIN 3103](#). Application of test, measurement, and evaluation theory. Emphasis is on proper selection and administration of tests, appropriate evaluation of test results using basic statistical procedures, and assignment of grades. Field experience required.

KIN 4123. Psychosocial Aspects of Exercise and Sport. (3-0) 3 Credit Hours.

Prerequisite: [KIN 2303](#). A study of human behavior in exercise and sport. Emphasis is placed on understanding the psychosocial principles underlying group processes, performance enhancement, and health and well-being.

KIN 4143. Advanced Athletic Training. (3-0) 3 Credit Hours.

Prerequisites: [KIN 3303](#) and [KIN 3463](#), and admission to the Athletic Medicine Program. This course deals in depth with issues related to athletic training, including assessment of injuries, and proper taping and wrapping techniques.

KIN 4203. Teaching Secondary Physical Education. (3-1) 3 Credit Hours.

Prerequisites: [KIN 4343](#), [KIN 4423](#), and admission to the Teacher Certification Program. Examination of current trends, issues, and pedagogical approaches to the teaching and learning of physical education in the secondary school curriculum. Contemporary programming, behavior management strategies, and community outreach activities will be emphasized. Weekly fieldwork in the public schools at the secondary school level is required. Restricted course; advisor code required for registration.

KIN 4233. Advanced Topics in Exercise Physiology. (2-2) 3 Credit Hours.

Prerequisite: [KIN 3433](#). In-depth study of exercise physiology, emphasizing application of physiological principles of training for physical fitness and sport performance, graded exercise testing, and professional issues. This course includes introduction to research in exercise physiology.

KIN 4243. Musculoskeletal Rehabilitation. (3-1) 3 Credit Hours.

Prerequisites: [KIN 3303](#), [KIN 3463](#), and admission to the Athletic Medicine Program. This course examines various therapeutic exercises and programs used in the treatment and rehabilitation of exercise-related injuries.

KIN 4253. Exercise Nutrition. (3-0) 3 Credit Hours.

Prerequisite: [KIN 3433](#). This course will address the basic concepts of nutrition from a scientific basis, applying these concepts to understanding of food nutritional labeling, dietary recommendations for health and fitness, as well as exercise or sport performance enhancement.

KIN 4303. Teaching Elementary Physical Education. (3-1) 3 Credit Hours.

Prerequisites: [KIN 4343](#), [KIN 4423](#), and admission to the Teacher Certification Program. Examination of current trends, issues, and pedagogical approaches to teaching and facilitating learning of physical education in the elementary school curriculum. Contemporary programming, problem solving, and community outreach activities will be emphasized. Weekly fieldwork in the public schools at the elementary school level is required. Restricted course; advisor code required for registration.

KIN 4343. Movement Awareness. (3-0) 3 Credit Hours.

Prerequisite: [KIN 3413](#). Study of concepts of movement awareness and the elements of movement that are the basis of all movement capacities. Application of these concepts to the learning of motor skills will be included.

KIN 4401. Motor Learning Laboratory. (1-1) 1 Credit Hour.

Prerequisite: [KIN 3313](#), and concurrent enrollment in [KIN 4403](#). Laboratory exercises demonstrating the principles of motor learning and motor control. This lab will complement [KIN 4403](#).

KIN 4403. Motor Learning. (3-0) 3 Credit Hours.

Prerequisite: [KIN 3313](#) or an equivalent. Functional applications of motor control and learning theory in skill instruction and sports performance. Motor learning laboratory hours are required.

KIN 4413. Coaching Athletics. (3-0) 3 Credit Hours.

Theory of coaching relevant to athletics. Emphasis on organization and content involved in coaching sports. The sport content may vary in different semesters between baseball, basketball, football, soccer, softball, and volleyball. Course may be repeated for credit.

KIN 4423. Developmental/Adapted Physical Activity. (3-1) 3 Credit Hours.

Prerequisites: [KIN 3103](#) and [KIN 3413](#), or consent of instructor. A developmental and functional approach to the study of disabilities in physical activity. Legislation, pathologies, and adaptation principles. Field experience is required throughout the course.

KIN 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

KIN 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

KIN 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

KIN 4931. Clinical Applications of Athletic Injuries. (1-2) 1 Credit Hour.

Prerequisites: Consent of instructor and admission to the Athletic Medicine Program. This course provides practical applications in prevention, diagnosis, treatment, and rehabilitation of athletic injuries, and includes 300 hours of supervised field, laboratory and clinical experiences in athletic training. May be repeated for credit for a maximum of 6 semester credit hours.

KIN 4936. Internship in Kinesiology. (0-0) 6 Credit Hours.

Prerequisites: Student is required to have a cumulative grade point average of 2.0 or greater and must be within 13 semester credit hours of graduation. Supervised internship with appropriate agency in the field of kinesiology. No more than 6 semester credit hours of internship will apply to a bachelor's degree. (Credit cannot be earned for both [KIN 4936](#) and [HTH 4936](#).)

KIN 4943. Athletic Coaching Practicum. (0-0) 3 Credit Hours.

Prerequisites: First Aid and CPR certification and consent of instructor. Supervised coaching practicum with appropriate agency in the field of kinesiology. May be repeated for credit for a maximum of 6 semester credit hours. (Formerly titled "Practicum in Kinesiology.").

KIN 4953. Special Studies. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

KIN 4973. Wellness Counseling. (3-0) 3 Credit Hours.

Prerequisites: [KIN 3443](#) and [KIN 4253](#). Students will learn and apply counseling techniques to promote the adoption of health-promoting lifestyle behaviors in diverse populations. Basic counseling theories will be introduced.

KIN 4983. Applied Exercise Science. (3-1) 3 Credit Hours.

Prerequisites: [KIN 3323](#), [KIN 3433](#), [KIN 3443](#), [KIN 3453](#), and [KIN 4253](#). Capstone course and seminar for students pursuing training and certification in exercise science, and preparation for graduate studies.

KIN 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for honors in the Department of Health and Kinesiology during the last two semesters; consent of the Honors College. Supervised research and preparation of an honors thesis. May be repeated once for credit with advisor's approval.

Latin (LAT)**LAT 1114. Introductory Latin I. (3-2) 4 Credit Hours. (TCCN = LATI 1411)**

Fundamentals of Latin grammar and readings in Latin. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

LAT 1124. Introductory Latin II. (3-2) 4 Credit Hours. (TCCN = LATI 1412)

Prerequisite: [LAT 1114](#). Fundamentals of Latin grammar and readings in Latin.

LAT 1214. Self-Paced Introductory Latin. (4-0) 4 Credit Hours.

Fundamentals of Latin grammar and readings in Latin. Students take two semesters of this course to complete the first two semesters of Latin on a self-paced basis. May be repeated for credit, but not more than 8 semester credit hours may be used in any degree program. Students must demonstrate competency with a "C" or better before repeating this course for credit. Students cannot receive credit for both [LAT 1114](#) and a first semester of this course; students cannot receive credit for both [LAT 1124](#) and a second semester of this course.

LAT 2113. Intermediate Latin I. (3-0) 3 Credit Hours. (TCCN = LATI 2311)

Prerequisite: [LAT 1124](#) or the equivalent. Continued practice in reading Latin. Selections from Cicero, Sallust, Catullus, and/or Virgil. Review of Latin grammar and syntax.

LAT 2123. Intermediate Latin II. (3-0) 3 Credit Hours. (TCCN = LATI 2312)

Reading and in-depth analysis of a particular Latin author such as Ovid, Virgil, Cicero, Lucretius, Petronius, or Plautus.

LAT 2213. Self-Paced Intermediate Latin. (3-0) 3 Credit Hours.

Prerequisite: [LAT 1124](#) or the equivalent. Review of Latin grammar and syntax. Continued practice in reading Latin, including such authors as Catullus, Cicero, Lucretius, Ovid, Petronius, Plautus, Sallust, and Virgil. Students take two semesters of this course to complete the third and fourth semesters of Latin on a self-paced basis. May be repeated for credit, but not more than 8 semester credit hours may be used in any degree program. Students must demonstrate competency with a "C" or better before repeating this course for credit. Students cannot receive credit for both [LAT 2113](#) and a first semester of this course; students cannot receive credit for both [LAT 2123](#) and a second semester of this course.

LAT 3113. Selected Latin Authors. (3-0) 3 Credit Hours.

Close reading and critical analysis of a Latin text or texts, author, topic, or genre. May be repeated for credit when authors vary.

LAT 3213. Latin Epic Poetry. (3-0) 3 Credit Hours.

Prerequisite: Intermediate Latin II or equivalent. Students will read, analyze and discuss selections from Vergil's Aeneid and Ovid's Metamorphoses, setting the poems in the context of the historical and social events in Rome that inspired them as well as exploring their Greek precedents.

LAT 3223. Latin Lyric Poetry. (3-0) 3 Credit Hours.

Prerequisite: Intermediate Latin II or equivalent. Students will read, analyze and discuss the poetry of Catullus and Horace, setting the poems in the context of the historical and social events in Rome that inspired them and exploring the Greek precedents for the genre of lyric poetry.

LAT 3253. Republican Prose. (3-0) 3 Credit Hours.

Prerequisite: Intermediate Latin II or equivalent. An overview of the development of prose in the Republican era, with an emphasis on the works of Cicero and Caesar. Students consider the rhetorical and generic features of their composition and the historical social and political circumstances that produced them.

LAT 4013. Advanced Readings in Latin. (3-0) 3 Credit Hours.

Prerequisite: [LAT 2123](#) or the equivalent. Concentrated readings and interpretation of a selected Latin author, genre, or series of texts. May be repeated for credit when topics vary.

Legal Studies (LGS)**LGS 2013. Introduction to Legal Studies. (3-0) 3 Credit Hours.**

Prerequisite: [POL 1013](#). An introduction to legal studies from an interdisciplinary perspective, exploring historical and contemporary aspects of the content, operations, and effects of law in societies.

LGS 3013. Legal Research and Writing. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Provides students with the opportunity to explore the modes and sources of legal research, both traditional and electronic. [CRJ 3613](#) Legal Research and Writing may be substituted for [LGS 3013](#) in the LGS minor. (Same as [CRJ 3613](#). Credit cannot be earned for both [LGS 3013](#) and [CRJ 3613](#).)

LGS 3113. Minorities and the Law. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course examines the litigation, case law, legislation, and legal literature associated with African Americans and Mexican Americans in the United States. (Formerly titled "Blacks, Chicanos, and the Law.").

LGS 3213. Law School Studies. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Basic introduction to the primary subject areas covered in American law schools. Topics generally include Property, Civil Procedure, Contracts, Torts, Criminal Law, Family Law, Constitutional Law, and Professional Ethics. Topic coverage may extend to corporations, oil and gas, tax, or other more specialized topics. The course will better prepare students for the anticipated coursework and subject matter for the transition to law school.

LGS 3313. Science and the Law. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course will examine contemporary issues involving science and law. Students will have the opportunity to explore these issues through examination of (a) the governing legal structure (statutory, administrative and judicial), (b) historical, cultural, and political perspectives, (c) public policy, and (d) their societal and scientific impact. Course may include local issues.

LGS 3323. Constitutional Analysis I. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An analysis of constitutional cases, issues, and modes of interpretation focusing on governmental powers. Provides students the opportunity to hone analytical, critical reading, and writing skills and to increase substantive knowledge of constitutional law.

LGS 3333. Constitutional Analysis II. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An analysis of constitutional cases, issues, and modes of interpretation focusing on the Bill of Rights, individual freedoms, and equal protection. Provides students the opportunity to enhance analytical, critical-reading, and writing skills and to increase substantive knowledge of constitutional law.

LGS 3413. Regulatory Law and Enterprise. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course examines federal, state, and local administrative and regulatory engagement with Texan, American, and international enterprise. Students have the opportunity to explore law and policies affecting economic development, property, oil and gas, international trade, the Internet, and the environment.

LGS 4013. Issues in Law and Society. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#), [LGS 2013](#) or LGS 2623. Provides students with the opportunity to conduct research on selected issues associated with the law and society. May be repeated for credit when topics vary, with permission of the Director of the Institute for Law and Public Affairs.

LGS 4123. Legal and Philosophical Reasoning. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An intensive analysis of selected philosophical texts focusing on law and justice. Students are challenged to develop critical reading and thinking skills by studying the texts of philosophers such as Plato, Aristotle, Dworkin, Hart, and/or others who outline difficult arguments and unfamiliar ideas. Emphasis is placed on drawing reasoned conclusions, advocating positions, and expressing oneself in oral and written forms. (Same as [POL 4123](#). Credit cannot be earned for both [LGS 4123](#) and [POL 4123](#).)

LGS 4133. Analytical Reasoning, Logic, Argumentation, and Law School Admission. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course provides students with the opportunity to develop and master techniques of focused reading, analytical reasoning, logic, argumentation, and the drawing of reasoned conclusions, placed in the context and modes of questioning appropriate to law school admission and education. Skills learned are relevant not only to law school, but also to developing and assessing arguments throughout college, career, and life.

LGS 4223. Torts. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course provides students with the opportunity to analyze American tort law. Topics may include negligence, intentional torts, affirmative defenses, and legal damages, as well as vicarious products and strict liability. Students should be prepared to read, brief, and discuss case law.

LGS 4233. Federal Courts. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of the operations, procedures, holdings, and opinions of federal courts, designed to provide students with the opportunity to gain a sophisticated understanding of the role of the federal judiciary in our constitutional system.

LGS 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: [POL 1013](#); permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College. Independent reading, research, discussion, and writing under direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree. A maximum of 3 semester credit hours may be applied to the minor.

LGS 4933. Internship in Legal Studies. (0-0) 3 Credit Hours.

Prerequisites: [POL 1013](#); consent of internship coordinator. Supervised experience relevant to legal studies within selected community organizations. A maximum of 3 semester credit hours may be applied to the minor.

Linguistics (LNG)**LNG 3813. Introduction to Linguistics. (3-0) 3 Credit Hours.**

Basic principles of analysis and description of the structure of language, including sound system, word order, and meaning. Also, overview of selected subfields of linguistics, such as historical linguistics, sociolinguistics, language acquisition, and bilingualism. (Same as [ANT 3903](#) and [ENG 3343](#). Credit cannot be earned for more than one of these courses.).

LNG 3833. Sociolinguistics. (3-0) 3 Credit Hours.

The examination of the interrelationships among language, culture, and society. Topics may include language use in social context, language variation and change, maintenance and shift, and multilingual societies.

LNG 3843. Gender Issues in Language. (3-0) 3 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in 3000-level linguistics course. The examination and analysis of issues related to gender and language, such as the historical basis for grammatical gender, gender-based sociolinguistic differences, and recent research in gender-based expectations for language use.

LNG 4013. Topics in Linguistics. (3-0) 3 Credit Hours.

Prerequisite: One course in LNG or consent of instructor. An opportunity to explore linguistic topics in depth, including sociolinguistics, psycholinguistics, neurolinguistics, pragmatics, syntax, semantics, phonology, or phonetics. May be repeated for credit when topics vary. (Formerly LNG 3913. Credit cannot be earned for both [LNG 4013](#) and LNG 3913.).

Management (MGT)

MGT 3003. Business Communication and Professional Development. (3-0) 3 Credit Hours.

Prerequisites: [COM 1043](#) or [COM 1053](#), [WRC 1023](#), and classified as a prebusiness or declared major in the College of Business or approval of Department Chair and Dean of the College. This course examines basic interpersonal communication processes within written and oral channels, with practical applications for the business environment. Issues regarding cross-cultural communication, crisis communication, and ethical considerations in business are discussed. The course emphasizes three areas: 1) planning, researching, organizing, writing, editing, and revising business-related documents; 2) planning, organizing, and delivering oral presentations in a business setting; and 3) preparing for professional success in the business world, including career planning, networking, job searching, résumé preparation, and job application and interviewing. Written assignments and oral presentations are required. (Formerly MGT 3043. Credit cannot be earned for both [MGT 3003](#) and MGT 3043.).

MGT 3013. Introduction to Organization Theory, Behavior, and Management. (3-0) 3 Credit Hours.

A study of the complex role managers play in creating and maintaining organizations. Organization theory and behavior are explored within the context of changing technological, social, and political/legal environments and the internationalization of the economy. Some introduction to strategic analysis, planning, and decision making. Attention is given to the ethical dimensions of management and social responsibility.

MGT 3023. Understanding People and Organizations. (3-0) 3 Credit Hours.

Prerequisite: [MGT 3013](#) with a grade of "C-" or better. A critical examination of behavioral theory as it relates to the management of individuals, dyads, and groups in organizations. Investigation of the organization as an open system of tasks, structures, tools, and people in states of continuous change.

MGT 3123. Organizational Communication. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3013](#) with a grade of "C-" or better, and a declared major in the College of Business or approval of Department Chair and Dean of the College. Theory and research in organizational communication. The course will examine the barriers to effective organizational communication; group communication and decision making; and information flows through the formal and informal networks of organizations. The course will also stress the means of evaluating organizational communication effectiveness. (Same as [COM 3893](#). Credit cannot be earned for both [MGT 3123](#) and [COM 3893](#).).

MGT 3253. Interpersonal Communication. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. Theory and research of communication in personal and professional settings. The course stresses the social context of communication and emphasizes skills, knowledge, and motivation of verbal and nonverbal interactions. (Same as [COM 3383](#). Credit cannot be earned for both [MGT 3253](#) and [COM 3383](#).).

MGT 3613. Managing Human Resources. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3013](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. Analysis of how organizations attract, motivate, develop, and retain employees, and how they interact with organizations representing employees. Designed to provide students with an opportunity to understand the functional areas of human resource management and the integration of these functions into an effective and efficient human resource management system.

MGT 4023. Business Plan. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3013](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. This course requires students to work in a team where they propose a new business and develop a business plan for the business. The teams will learn to present and defend their plan and will compete in a business plan competition at the end of the semester. The course emphasizes development of the skills necessary to identify, value, and exploit entrepreneurial opportunities for the creation of wealth.

MGT 4073. International Management. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3013](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. A study of business and management practices in a global context. Topics include an introduction to international management, the role of the cultural, legal, and political environments in shaping management decision making, current developments in forming global business strategies, organizational designs, cross-cultural staffing, global communications and managerial control methodologies. Emphasis on thinking globally and competitively.

MGT 4083. Comparative International Management Practices. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3013](#), with a grade of "C-" or better and a declared major in the College of Business or department approval. The study of management practices of other countries, including their cultural, social, political and legal, and industrial economic perspectives. Emphasis on different international regions at different times and their impact on American and global management practices.

MGT 4103. Introduction to Healthcare Management. (3) 3 Credit Hours.

Prerequisite: Junior or senior standing, or consent of the instructor. This course will provide students with an understanding of the skills, knowledge and abilities needed to be successful leaders in the dynamic, complex and rewarding field of healthcare management. Topics include the economic, regulatory, political and social framework of the healthcare industry, as well as the roles and expectations of managers in planning, organizing, coordinating and overseeing the delivery of healthcare services. A broad spectrum of healthcare organizations and settings will be included with emphasis on practical relevance and interaction with local healthcare organizations.

MGT 4213. Designing Organizations. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [MGT 3013](#), and [MGT 3023](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. Study of the antecedents and consequences of organizational design and structure. Emphasis on the implications for managing behavior in a rapidly changing global environment.

MGT 4613. Compensating Employees. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3613](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. Analyzing, developing, implementing, administering, and performing ongoing evaluation of a total compensation and benefits system for all employee groups consistent with organizational goals. (Formerly MGT 3623. Credit cannot be earned for both [MGT 4613](#) and MGT 3623.).

MGT 4623. Staffing Organizations. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3613](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. Planning, developing,

implementing, administering, and performing ongoing evaluation of recruiting, hiring, orientation, and organizational exit to ensure that the workforce will meet the organization's goals and objectives.

MGT 4643. Human Resources Law. (3-0) 3 Credit Hours.

Prerequisites: [BLW 3013](#) and [MGT 3003](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. An analysis of historical and contemporary laws in the United States that affect the human resource management function. Integration of labor and employment law with the social and economic forces shaping the current labor-management environment.

MGT 4663. Training and Developing Employees. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3613](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. The processes of ensuring that the skills, knowledge, abilities, and performance of the workforce meet the current and future organizational and individual needs through developing, implementing, and evaluating activities and programs addressing employee training and development, change and performance management, and the unique needs of particular employee groups.

MGT 4803. Managing Human Resources for Competitive Advantage. (3-0) 3 Credit Hours.

Prerequisites: A grade of "C-" or better in [MGT 3003](#), [MGT 3613](#), and one of the following: [MGT 4613](#), [MGT 4623](#), or [MGT 4663](#); and a declared major in the College of Business or approval of Department Chair and Dean of the College. Analysis of how human resource management might aid in developing competitive advantage and what might be done to fulfill this potential. Emphasis is on the processes and activities used to formulate HR objectives, practices, and policies to meet the short-range and long-range organizational needs and opportunities, to guide and lead the change process, and to evaluate the contributions of human resources to organizational effectiveness. (Formerly titled "Strategic Human Resources Management.").

MGT 4893. Management Strategy. (3-0) 3 Credit Hours.

Prerequisites: [FIN 3014](#) and [MGT 3003](#); College of Business declared major in semester of graduation. Students are also required to meet all University regulations related to good academic standing and maintain a minimum grade point average of 2.0 in UTSA College of Business courses. Permission given through the College of Business Undergraduate Advising Center before registration. A study of the analytic tools and processes involved in the formulation and implementation of strategic choices in realistic organizational settings. Students are required to integrate their functional knowledge and understanding of the global environment with the concepts and principles of strategic management to determine effective ways to resolve complex problems concerning the relationship between the total organization and its environment. Creative analytical skills and effective communication in light of current management thinking are emphasized.

MGT 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: A 3.0 College of Business grade point average, [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MGT 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: A 3.0 College of Business grade point average, [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion,

and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MGT 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: A 3.0 College of Business grade point average, [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MGT 4923. Leading Organizations and Making Decisions. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3013](#) with a grade of "C-" or better and a declared major in the College of Business or department or instructor approval. This is an advanced course focusing on traditional and contemporary perspectives on leadership. Because the leader is seen as a decision maker, individual and organizational issues surrounding effective decision making are also addressed in detail.

MGT 4933. Internship in Management. (0-0) 3 Credit Hours.

[MGT 3003](#), a 2.5 UTSA grade point average, 9 semester credit hours of management courses, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for additional requirements and required forms. The opportunity for managerial work experience. Requires a semester-long experience in private business or a public agency and a written component. Opportunities and output requirements are developed in consultation with a faculty advisor and the Department Chair and require approval of both. Internship may be repeated once (for a total of 6 semester credit hours), provided the internships are with different organizations.

MGT 4943. Managing Effective Teams and Resolving Conflict. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [MGT 3013](#), and [MGT 3023](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. This is an advanced course focused on building the skills necessary to work effectively as part of a team. Conflict resolution techniques and effective negotiation techniques are examined in detail.

MGT 4951. Special Studies in Management. (1-0) 1 Credit Hour.

Prerequisites: [MGT 3003](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

MGT 4953. Special Studies in Management. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) with a grade of "C-" or better and a declared major in the College of Business or approval of Department Chair and Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

MGT 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: [MGT 3003](#). Enrollment limited to students applying for Honors in Management (see page 49). Supervised research and preparation of an honors thesis. May be repeated once for credit with advisor's approval.

Management of Technology (MOT)

MOT 4023. Essentials of Technology Management. (3-0) 3 Credit Hours.

Prerequisite: [MGT 3003](#) or approval of the Department Chair and the Dean of the College. [MGT 3003](#) is waived for nonbusiness students declaring Technology Management as a minor. This survey course provides an overview of the issues that impact technology management. All technology management subsystems are included: strategy, technology, resource, organizational, project, and people. The course is designed to help students develop the systems thinking necessary to successfully interact with the burgeoning technological world. The course will also provide the opportunity for students to develop the entrepreneurial skills important in managing the design, development, and commercialization of technological goods and services. (Formerly titled “Management of Technology.”).

MOT 4143. Introduction to Project Management. (3-0) 3 Credit Hours.

Prerequisite: [MGT 3003](#) or approval of the Department Chair and the Dean of the College. [MGT 3003](#) is waived for nonbusiness students declaring Technology Management as a minor. This introductory course presents concepts and techniques for the management of many types of projects including engineering, construction, product development, as well as science and technology projects. The course is designed to help students develop project planning skills including scope definition, scheduling, cost-estimating and risk assessment. The course will also provide the opportunity for students to develop skills in support of project leadership, team building and communication.

MOT 4203. Strategic Management of Technology and Innovation. (3-0) 3 Credit Hours.

Prerequisite: [MOT 4023](#) or approval of the Department Chair and the Dean of the College. This course examines the issues involved in the strategic management of technology in contemporary business organizations. The course will examine new product development, emerging technologies and product portfolios; and will explore the dynamics of innovation in the firm.

MOT 4313. Disruptive Innovations. (3-0) 3 Credit Hours.

Prerequisite: [MOT 4023](#) or approval of the Department Chair and the Dean of the College. This survey course focuses on technologies that may transform society and improve quality of life: the emphasis is on the nexus among biotechnology, information systems, materials, and renewable energy. The course will help students refine the systems thinking necessary to connect technology with users: it investigates the barriers that entrepreneurs face during commercialization. Cooperative learning is a defining characteristic of the course.

MOT 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: A 3.0 COB grade point average, [MOT 4023](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for the required forms. Independent research in a management of technology topic under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MOT 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: A 3.0 COB grade point average, [MOT 4023](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for the required forms. Independent research in a management of technology topic under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MOT 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: A 3.0 COB grade point average, [MOT 4023](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for the required forms. Independent research in a management of technology topic under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MOT 4951. Special Studies in Management of Technology. (1-0) 1 Credit Hour.

Prerequisites: [MOT 4023](#) and approval of the Department Chair and the Dean of the College. An organized course offering specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

MOT 4952. Special Studies in Management of Technology. (2-0) 2 Credit Hours.

Prerequisites: [MOT 4023](#) and approval of the Department Chair and the Dean of the College. An organized course offering specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

MOT 4953. Special Studies in Management of Technology. (3-0) 3 Credit Hours.

Prerequisites: [MOT 4023](#) and approval of the Department Chair and the Dean of the College. An organized course offering specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

Management Science (MS)**MS 1023. Business Statistics with Computer Applications I. (3-0) 3 Credit Hours.**

Prerequisites: A grade of "C-" or better in [IS 1403](#) and [MAT 1033](#), or equivalents. This is the first course in a sequence of three courses designed to introduce basic statistical and quantitative techniques for business and economics. This course examines analytical skills and statistical concepts important in business-oriented environments. Various statistical techniques will be presented to assist in solving problems encountered by organizations. Topics include, but are not limited to, descriptive statistics, measures of central tendency and dispersion, elementary probability theory, expected value, random variables, discrete and continuous distributions, sampling distributions, point and interval estimation, and hypothesis testing. Electronic spreadsheets will be utilized for analyzing and interpreting data.

MS 3043. Business Statistics with Computer Applications II. (3-0) 3 Credit Hours.

Prerequisites: A grade of "C-" or better in [MAT 1033](#), [IS 1403](#), and [MS 1023](#), or equivalents. This course builds on the foundations learned in [MS 1023](#). Statistical concepts include, but are not limited to, hypothesis testing concepts, goodness-of-fit tests, tests of independence, nonparametric tests, decision making under uncertainty, analysis of variance, correlation, linear and multiple regression, and time series. Electronic spreadsheets and statistical software will be utilized in analyzing and interpreting data and for hands-on assessment.

MS 3053. Management Science and Operations Technology. (3-0) 3 Credit Hours.

Prerequisites: A grade of "C-" or better in [MAT 1033](#), [IS 1403](#), [MS 1023](#), and [MS 3043](#), or equivalents. This is an introductory course in management science that emphasizes model building as a foundation for

rational decision making and problem solving across disciplines and functional areas. Topics include, but are not limited to, mathematical programming, network models, project management, multi-criteria decision making, inventory management, service operations and queuing models, Markov analysis, and simulation. Computer software is used to apply these techniques in the analysis of a wide variety of decision problems.

MS 3063. Decision Support Systems. (3-0) 3 Credit Hours.

This course focuses on applications of decision-support models and computer software to problems in business, government, and other types of organizations with an emphasis on emerging technologies. It emphasizes fundamentals of decision support systems and hands-on experience using computer-based technologies to support organizational decision making. The primary focus is on four essential areas: decision analysis, simulation, project analysis, and mathematical programming. Excel, Microsoft Project, WINQSB, Expert Choice, and Extend are some of the software packages utilized.

MS 3073. Business Analytics. (3) 3 Credit Hours.

This course is designed to provide an introduction to business analytics. It describes and interprets the basic concepts of business analytics, describes basic principles of data mining as a basic tool of business analytics, evaluates the difficulties presented by large databases, and plans, organizes and evaluates methods to prepare raw data. Comparison and contrasts among different business analytics techniques are examined, including different methods of data mining, and provides for interpreting, analyzing and validating results.

MS 3313. Business Applications of Statistics. (3-0) 3 Credit Hours.

This course emphasizes application of statistics in problem-solving situations involving management, marketing, human resources, finance, and operations management. Useful techniques include analysis of variance, simple and multiple regression, logistic regression, multiple discriminant analysis, factor analysis, cluster analysis, multidimensional scaling, and conjoint analysis. Students use computer software such as SPSS or SAS in their analyses.

MS 3403. Logistics Management. (3-0) 3 Credit Hours.

This course focuses on analyzing managerial decisions related to the movement and storage of supplies, work-in-process, and finished goods, examining the trade-offs encountered by managers: costs and service levels, level and modes of transportation used, warehousing and control of inventory levels, demand management and forecasting master production scheduling, just-in-time (JIT), materials requirements planning (MRP), MRP II, DRP, materials handling within warehouses, distribution of finished goods to customers, industrial packaging, and importance of logistics to the overall productivity of a firm are investigated. When available, an integrated software approach such as supply chain management (SCM) and enterprise resource planning (ERP) by SAP, Oracle or I2 will be adopted.

MS 3413. Purchasing and Inventory Management. (3-0) 3 Credit Hours.

This course explores the industrial purchasing cycle for materials acquisition and management. Determination of requirements, supplier qualifications, appraisals, source selection, buying practices, value analysis, policies, ethics, and international purchasing are included in this course. Inventory control concepts, techniques, and strategies for effective integration with basic finance, marketing, and manufacturing objectives are topics covered in this course. Models for dependent and independent demand inventory systems, material requirements planning systems, distribution requirements, planning techniques, and the classical reorder point inventory model are also included.

MS 4313. Six Sigma and Lean Operations. (3-0) 3 Credit Hours.

This course focuses on Six Sigma as a quality improvement methodology structured to reduce failure rates to a negligible level and on lean operations methodology structured to reduce waste. Materials

include an overview of lean management philosophy and fundamentals of DMAIC problem-solving methodology. Topics include project criteria and prioritization methods, process capability measures, scorecard development, Six Sigma tools, DOE, and sampling and analyzing process data.

MS 4323. Simulation Applications in Business. (3-0) 3 Credit Hours.

A study of the techniques for modeling and analysis of business processes using computer simulation and animation is the focus of this course. Selected example applications from supply chain management, financial, marketing, and operations functions are included. The computer simulations provide support for the management decision process.

MS 4333. Project Management. (3-0) 3 Credit Hours.

This course provides a practical examination of how projects are managed from start to finish. The emphasis is on planning and control to avoid common pitfalls and manage risk. Planning includes defining objectives, identifying activities, establishing precedence relationships, making time estimates, determining project completion times, and determining resource requirements. CPM/PERT networks are established, and computer software (Microsoft Project, WINQSB, and Excel) is used to monitor and control the project.

MS 4343. Production/Operations Management. (3-0) 3 Credit Hours.

This course focuses on the production and operations management function in business. It includes a review of the methods required for design, operation, and improvements of the systems that create products or services. Traditional topics in manufacturing and service operations are investigated including an introduction to supply chain management concepts.

MS 4353. Service Operations Management. (3-0) 3 Credit Hours.

This course is designed to provide an in-depth examination of operations management practices in service-oriented environments. The subjects introduced include topics from operations management, logistics, marketing, economics, and management demonstrated in a broad spectrum of service organizations. The course looks at strategic concepts in modern service management and presents analytical tools for business decision making. Topics include, but are not limited to, service quality, process design, facility location analysis and site selection, waiting line models, inventory management in services, demand forecasting, workforce scheduling, learning curve models, overbooking, service supply chain, and integrated service operations management. (Same as [MKT 4353](#). Credit cannot be earned for both [MS 4353](#) and [MKT 4353](#).)

MS 4363. Quality Management and Control. (3-0) 3 Credit Hours.

This course investigates the fundamental nature of quality and its implications for business. Topics include statistical methods for quality improvement in manufacturing and service operations. Emphasis is given to both the technical and managerial issues in understanding and implementing quality as a component for success in today's global business environment.

MS 4383. Applied Forecasting in Operations. (3-0) 3 Credit Hours.

This course introduces modern and practical methods for operations planning and decision making. Short-term forecasting of demand, personnel requirements, costs and revenues, raw material needs, and desired inventory levels are some of the topics included. Other topics covered include technological and environmental forecasting, decomposition methods, and monitoring (automatic procedures such as tracking signals).

MS 4543. Supply Chain Management. (3-0) 3 Credit Hours.

Principles, techniques and practices of corporate supply chain management are covered in this course. The focus is on the strategic coordination and information management that integrates supplier selection,

purchasing, transportation, inventory and warehousing, channel planning and configuration, production and distribution from procurement of raw material to customer satisfaction. Business decision models and techniques for facility location, production, inventory, transportation and other operational issues are presented. Currently available software will be surveyed and cases of successful implementations will be analyzed.

MS 4913. Independent Study in Management Science. (0-0) 3 Credit Hours.

Prerequisites for business majors: A 3.0 College of Business grade point average, permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms and additional requirements. Independent reading, research, discussion, and/or writing under the direction of a faculty member. This course may be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MS 4933. Internship in Management Science. (0-0) 3 Credit Hours.

Prerequisites for business majors: Permission in writing from the instructor, the Department Chair, and the Dean of the College of Business; and a 2.5 grade UTSA point average. See the College of Business Undergraduate Advising Center for required forms and additional requirements. Supervised full- or part-time work experience in management science. Offers opportunities for applying management science in private businesses or public agencies. May be repeated for credit, but not more than 6 semester credit hours will apply to a bachelor's degree.

MS 4951. Special Studies in Management Science. (1-0) 1 Credit Hour.

Prerequisite: Consent of instructor, Department Chair and Dean. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special studies may be repeated for credit when the topics vary.

MS 4953. Special Studies in Management Science. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor, Department Chair and Dean. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special studies may be repeated for credit when the topics vary.

Marketing (MKT)

MKT 3013. Principles of Marketing. (3-0) 3 Credit Hours.

Introduction to basic principles of marketing. An examination of market analysis methods and their use to develop the organization's product mix and the integration of the communication, distribution, and pricing strategies to achieve goals.

MKT 3043. Advertising. (3-0) 3 Credit Hours.

Prerequisite: [MKT 3013](#) with a grade of "C-" or better. The course stresses planning advertising strategy, developing messages, selecting media, and testing effectiveness. Also explores the theory, history, social and economic aspects, and problems of ethics and truth in advertising.

MKT 3063. Personal Selling. (3-0) 3 Credit Hours.

Prerequisite: [MKT 3013](#) with a grade of "C-" or better. Focuses on professional salesmanship. Fundamentals of persuasive interpersonal communication and buyer motivation are stressed as the foundation to effective selling. (Formerly MKT 3163. Credit cannot be earned for both [MKT 3063](#) and MKT 3163.).

MKT 3083. Marketing Research. (3-0) 3 Credit Hours.

Prerequisites: [MKT 3013](#) with a grade of "C-" or better, [MS 1023](#) or the equivalent, and [MS 3043](#) or the equivalent. Explores the techniques of marketing research as the means to discover opportunities for investing the firm's resources in its product offerings, including research design, sampling, data collection and analysis, and presentation of findings for marketing action.

MKT 3113. Retailing. (3-0) 3 Credit Hours.

Prerequisite: [MKT 3013](#) with a grade of "C-" or better. Examination of retailing as a specialized economic and social institution within the distribution process. Emphasis is on strategy and resource management for the retail firm; critical variables, forces, and processes are examined from a managerial perspective.

MKT 4063. Multicultural Marketing. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MKT 3013](#) with a grade of "C-" or better. Highlights marketing opportunities created by consumers whose marketplace choices and behaviors are shaped by their social identities as members of distinctive ethnic, age cohort, sexual orientation, and disability subcultures. Profiles the demographic, geographic, values, lifestyles, media usage, and unique market preferences of each group. Emphasizes best practices in multicultural marketing strategy, and delineates similarities to and differences from international marketing management.

MKT 4073. International Marketing. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MKT 3013](#) with a grade of "C-" or better. An overview of concepts, processes, and strategies necessary to offer goods and services successfully in the global marketplace. Focus is on analyzing and assessing political, economic, technological, cultural, and competitive climates in global markets; defining the nature of important needs within the consumer and/or business segments of the country; the selection of countries or regions for market expansion strategies; the selection of target customers; and the design of strategies to facilitate market entry and subsequent expansion.

MKT 4093. Consumer Behavior. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MKT 3013](#) with a grade of "C-" or better. Focus on the customer as a primary consideration in strategic marketing decisions. Analysis of personal and environmental variables in the customer's world as the basis for market segmentation and subsequent formulation of the marketing mix.

MKT 4143. Sports Marketing. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MKT 3013](#) with a grade of "C-" or better. An overview of the marketing concepts, practices, and processes involved in offering and promoting goods and services in the sports industry. Emphasis on developing an understanding of unique aspects of the sports industry and on adapting general marketing principles to the domain of sports marketing. (Formerly [MKT 4953](#) Special Studies in Marketing: Sports Marketing. Credit cannot be earned for both [MKT 4143](#) and [MKT 4953](#) on the same topic.).

MKT 4153. Ethics in Marketing. (3) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MKT 3013](#) with a grade of "C-" or better. Addresses the moral principles behind the operation and regulation of marketing including; advertising, international marketing, internet and social advertising, marketing research, personal selling, pricing and distribution channels, and product management.

MKT 4233. Integrated Marketing Communications. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MKT 3013](#) with a grade of “C-” or better. Focuses on managing and integrating communication aspects of marketing, including advertising, sales promotion, personal selling, and public relations.

MKT 4353. Service Operations Management. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MKT 3013](#) with a grade of “C-” or better. In-depth examination of operations management practices in service-oriented environments. Subjects embrace materials from operations management, logistics, marketing, economics, and management in a broad spectrum of service organizations. The course looks at strategic concepts in modern service management and presents analytical tools for business decision making. Topics include, but are not limited to, service quality, process design, facility location analysis and site selection, waiting line models, inventory management in services, demand forecasting, workforce scheduling, learning curve models, overbooking, service supply chain, and integrated service operations management. (Same as [MS 4353](#). Credit cannot be earned for both [MKT 4353](#) and [MS 4353](#). Marketing majors cannot take [MS 4353](#) as an upper-division Marketing elective.).

MKT 4763. Real Estate Marketing. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MKT 3013](#) with a grade of “C-” or better. Focuses on the processes involved in professionally marketing and selling real estate. Emphasis is on integrating the four elements of a marketing mix – promotion, place, product, and price – and showing how they are used within the real estate industry to create marketing strategies. (Same as [RFD 4763](#). Credit cannot be earned for both [MKT 4763](#) and [RFD 4763](#). Marketing majors cannot take [RFD 4763](#) as an upper-division Marketing elective.).

MKT 4893. Marketing Capstone. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [MKT 3013](#) with a grade of "C-" or better, senior standing, and 12 additional semester credit hours in marketing. Students are also required to meet all University regulations related to good academic standing and maintain a minimum grade point average of 2.0 in UTSA College of Business courses. Approval is obtained in the College of Business Undergraduate Advising Center. The course focuses on integrating marketing functions, processes, and concepts into coherent and effective marketing decision making. (Formerly titled “Marketing Strategy.”).

MKT 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: A 3.0 College of Business grade point average, [MGT 3003](#), [MKT 3013](#) with a grade of "C-" or better, 9 additional semester credit hours in marketing, senior standing, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

MKT 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: A 3.0 College of Business grade point average, [MGT 3003](#), [MKT 3013](#) with a grade of "C-" or better, 9 additional semester credit hours in marketing, senior standing, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

MKT 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: A 3.0 College of Business grade point average, [MGT 3003](#), [MKT 3013](#) with a grade of "C-" or better, 9 additional semester credit hours in marketing, senior standing, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MKT 4933. Internship in Marketing. (0-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [MKT 3013](#) with a grade of "C-" or better, a 2.5 UTSA grade point average, 9 additional semester credit hours in marketing, and permission in writing from the instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms and additional requirements. The opportunity to gain knowledge through the experiential activities of organizational life. Joint cooperation with business, government, and health science institutions in structuring and monitoring work experience aimed at supplementing the learning process. Opportunities are developed in consultation with the faculty advisor and Department Chair and require approval of both. Internship may be repeated once (for a total of 6 semester credit hours) provided the internships are with different organizations, but only 3 hours may count toward the 21 hours of marketing required for the major.

MKT 4951. Special Studies in Marketing. (1-0) 1 Credit Hour.

Prerequisites: [MGT 3003](#) and [MKT 3013](#) with a grade of "C-" or better. An organized course offering the opportunity for specialized study not normally available as part of the regular course offerings. Could include topics such as marketing channels of distribution, sales management, industrial marketing, current developments in marketing theory, and analysis of ethical, social, and public policy aspects of marketing. May be repeated for credit when topics vary, but not more than 6 semester credit hours will apply to a bachelor's degree.

MKT 4953. Special Studies in Marketing. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MKT 3013](#) with a grade of "C-" or better. An organized course offering the opportunity for specialized study not normally available as part of the regular course offerings. Could include topics such as marketing channels of distribution, sales management, industrial marketing, current developments in marketing theory, and analysis of ethical, social, and public policy aspects of marketing. May be repeated for credit when topics vary, but not more than 6 semester credit hours will apply to a bachelor's degree.

MKT 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: [MGT 3003](#). Enrollment limited to students applying for Honors in Marketing (see page 63). Supervised research and preparation of an honors thesis. May be repeated once for credit with advisor's approval.

Mathematics (MAT)**MAT 0203. Basic Mathematics. (3-0) 3 Credit Hours.**

A course intended for students with minimal mathematical skills who need a comprehensive review before they can successfully complete an algebra course. Topics include the Fundamental Mathematics and Geometry objectives of the Texas Higher Education Assessment (THEA), with an introduction to algebra. Intensive review and maintenance of computational skills with integers, fractions, decimals, percentages, ratios, and proportions; reading and interpreting information presented in graphs, tables, and

charts; solving word problems, elementary algebraic equations, problems with two- and three-dimensional geometric figures; and inductive and deductive reasoning skills. Course does not count toward any degree at UTSA. This course may be repeated. (Formerly MTC 0103.)

MAT 0213. Intermediate Algebra. (3-0) 3 Credit Hours.

Introductory algebra course that includes the Texas Higher Education Assessment (THEA) Algebra and Problem Solving objectives. Operations with algebraic expressions; solving one- and two-variable equations; solving word problems involving one and two variables; graphing number relationships; and solving problems involving quadratic equations. Course does not count toward any degree at UTSA. This course may be repeated. (Formerly MTC 0113.)

MAT 1023. College Algebra with Applications. (3-0) 3 Credit Hours. (TCCN = MATH 1314)

Prerequisite: Satisfactory performance on a placement examination. Topics include algebraic expressions; equations; inequalities over the real numbers; relations, functions and graphs; polynomial and rational functions; systems of linear equations and inequalities; complex numbers; and matrices and determinants. A wide range of applications will be included in this course. Students majoring in areas that require [MAT 1214](#) Calculus I are encouraged to take [MAT 1073](#) instead of [MAT 1023](#). (Formerly MTC 1023. Credit can be earned for only one of the following: [MAT 1023](#), MTC 1023, MAT 1063, MTC 1073, or [MAT 1073](#).) This course is designed for majors outside sciences and engineering and will not serve as a prerequisite for [MAT 1093](#). May apply toward the Core Curriculum requirement in Mathematics.

MAT 1033. Algebra with Calculus for Business. (3-0) 3 Credit Hours. (TCCN = MATH 1325)

Prerequisite: Satisfactory performance on a placement examination. An introduction to business calculus with an emphasis on the algebra of functions. Concentration is on the algebraic manipulations of functions and includes volume and profit functions, both linear and quadratic; root finding and graphical analysis; matrices; and differentiation and integration. (Formerly MTC 1033. Credit cannot be earned for both [MAT 1033](#) and MTC 1033.) May apply toward the Core Curriculum requirement in Mathematics.

MAT 1043. Introduction to Mathematics. (3-0) 3 Credit Hours. (TCCN = MATH 1332)

Prerequisite: Satisfactory performance on a placement examination. This course is designed primarily for the liberal arts major to satisfy the Core Curriculum mathematics requirement. Topics may include logic; proofs; deductive and inductive reasoning; number theory; fundamentals of statistics; basic statistical graphs; causal connections; financial management; functions; linear graphs and modeling; exponential growth and decay; logarithms; fundamentals of probability; fundamentals of geometry; and basic ideas from trigonometry, calculus, and discrete mathematics. (Formerly MTC 1043. Credit cannot be earned for both [MAT 1043](#) and MTC 1043.) May apply toward the Core Curriculum requirement in Mathematics.

MAT 1073. Algebra for Scientists and Engineers. (3-0) 3 Credit Hours. (TCCN = MATH 1314)

Prerequisite: Satisfactory performance on a placement examination. This course is designed to prepare the student for [MAT 1093](#) Precalculus and [MAT 1214](#) Calculus I. Topics may include algebraic expressions; equations; inequalities over the real numbers; relations; functions; polynomial and rational functions; logarithmic and exponential functions; systems of linear equations and inequalities; matrices and determinants; complex numbers; sequences; series binomial expansion; mathematical induction; permutations, and combinations. (Formerly MTC 1073. Credit can be earned for only one of the following: [MAT 1073](#), MTC 1073, MAT 1063, MTC 1023, or [MAT 1023](#).) May apply toward the Core Curriculum requirement in Mathematics.

MAT 1093. Precalculus. (3-0) 3 Credit Hours. (TCCN = MATH 2312)

Prerequisite: [MAT 1073](#) or the equivalent course or satisfactory performance on a placement examination. Exponential functions, logarithmic functions, trigonometric functions, complex numbers,

DeMoivre's theorem, and polar coordinates. May apply toward the Core Curriculum requirement in Mathematics.

MAT 1153. Essential Elements in Mathematics I. (3-0) 3 Credit Hours. (TCCN = MATH 1350)

Numeration systems; properties of the systems of whole numbers, integers, rational numbers, and real numbers; problem solving; logic. May not be applied toward a major in mathematics. (Credit cannot be earned for both [MAT 1153](#) and MAT 1143.).

MAT 1163. Essential Elements in Mathematics II. (3-0) 3 Credit Hours. (TCCN = MATH 1351)

Prerequisite: [MAT 1153](#). Algebra, statistics and probability; geometric shapes; measurement; coordinate and transformational geometry. May not be applied toward a major in mathematics.

MAT 1193. Calculus for the Biosciences. (3-0) 3 Credit Hours. (TCCN = MATH 2313)

Prerequisite: [MAT 1093](#) or an equivalent course or satisfactory performance on a placement examination. An introduction to calculus is presented using discrete-time dynamical systems and differential equations to model fundamental processes important in biological and biomedical applications. Specific topics to be covered are limits, continuity, differentiation, antiderivatives, definite and indefinite integrals, the fundamental theorem of calculus, differential equations, and the phase-plane. (Formerly MAT 1194. Credit can be earned for only one of the following: [MAT 1193](#), MAT 1194, or [MAT 1214](#).) May apply toward the Core Curriculum requirement in Mathematics.

MAT 1203. Calculus Concepts and Applications. (3-0) 3 Credit Hours.

This course is primarily for students pursuing a degree in Interdisciplinary Studies and/or seeking grades 4–8 teacher certification. The course will include the following calculus concepts: functions, limits, derivatives, and integrals. Applications and the use of technology are incorporated throughout the course. This course may not be applied toward a major in mathematics and will not meet the prerequisite for [MAT 1224](#) Calculus II.

MAT 1214. Calculus I. (4-0) 4 Credit Hours. (TCCN = MATH 2413)

Prerequisite: [MAT 1093](#) or an equivalent course or satisfactory performance on a placement examination. An introduction to the concepts of limit, continuity and derivative, mean value theorem, and applications of derivatives such as velocity, acceleration, maximization, and curve sketching; introduction to the Riemann integral and the fundamental theorem of calculus. (Credit can be earned for only one of the following: [MAT 1214](#), [MAT 1193](#), or MAT 1194.) May apply toward the Core Curriculum requirement in Mathematics.

MAT 1224. Calculus II. (4-0) 4 Credit Hours. (TCCN = MATH 2414)

Prerequisite: [MAT 1193](#) or [MAT 1214](#). Methods of integration, applications of the integral, sequences, series, and Taylor expansions. (Formerly MAT 1223. Credit cannot be earned for both [MAT 1224](#) and MAT 1223.).

MAT 2214. Calculus III [TCCN: MATH 2415.]. (4-0) 4 Credit Hours. (TCCN = MATH 2415)

Prerequisite: [MAT 1224](#). Vectors, functions of several variables, partial derivatives, line, surface and volume integrals, Green's, Stokes' and the Divergence theorems. (Formerly MAT 2213. Credit cannot be earned for both [MAT 2214](#) and MAT 2213.).

MAT 2233. Linear Algebra. (3-0) 3 Credit Hours. (TCCN = MATH 2318)

Prerequisite: [MAT 1224](#) or [EGR 2323](#). Vector spaces and matrix algebra, matrices and determinants, characteristic values of matrices, and reduction to canonical forms. Emphasis on applications.

MAT 3013. Foundations of Mathematics. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1214](#). Development of theoretical tools for rigorous mathematics. Topics may include mathematical logic, propositional and predicate calculus, set theory, functions and relations, cardinal and ordinal numbers, Boolean algebras, and construction of the natural numbers, integers, and rational numbers. Emphasis on theorem proving. (Formerly MAT 2243. Credit cannot be earned for [MAT 3013](#) and MAT 2243.).

MAT 3103. Data Analysis and Interpretation. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1093](#) or consent of instructor. Measurement, sampling, summarizing and displaying data, types of data, inferential methods, nonparametric methods, qualitative research designs and methods, interpreting research results, and research design. Applications to research techniques in school-based settings will be emphasized. May not be applied toward the Mathematics Concentration of the B.S. degree in Mathematics.

MAT 3123. Fundamentals of Geometry. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1093](#) or consent of instructor. A survey of geometric concepts, including axiomatic development of advanced Euclidean geometry, coordinate geometry, non-Euclidean geometry, three-dimensional geometry, and topology. May not be applied toward the Mathematics Concentration of the B.S. degree in Mathematics.

MAT 3213. Foundations of Analysis. (3-0) 3 Credit Hours.

Prerequisites: [MAT 1224](#) and [MAT 3013](#). Axiomatic definition of real numbers, including order properties and completeness; infinite sequences and their convergence; basic notions related to series and their convergence; functions and function limits. Introduction to topology of the real line. Emphasis on theorem proving.

MAT 3223. Complex Variables. (3-0) 3 Credit Hours.

Prerequisites: [MAT 2214](#) and [MAT 3013](#). An introduction to complex variables, including elementary functions, line integrals, power series, residues and poles, and conformal mappings.

MAT 3233. Modern Algebra. (3-0) 3 Credit Hours.

Prerequisites: [MAT 1214](#) and [MAT 3013](#) or consent of instructor. Topics will include the development of groups, integral domains, fields, and number systems, including the complex numbers. Divisibility, congruences, primes, perfect numbers, and some other problems of number theory will be considered.

MAT 3273. Applied Mathematics for Sciences and Engineering. (3-0) 3 Credit Hours.

Prerequisite: [MAT 2214](#) or [MAT 3613](#) or consent of instructor. Mathematical applications in biology, physics, engineering or other scientific disciplines. Topics may employ techniques of complex analysis, harmonic analysis, Fourier series, Fourier transforms, and partial differential equations.

MAT 3613. Differential Equations I. (3-0) 3 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in [MAT 2233](#). Basic notions of differential equations, solution of first-order equations and linear equations with constant coefficients, nth-order initial value problems, Laplace transforms, and may include additional topics such as power series solutions of differential equations, linear systems, and stability.

MAT 3623. Differential Equations II. (3-0) 3 Credit Hours.

Prerequisite: [MAT 3613](#). Continuation of [MAT 3613](#). May include topics in stability, linear systems, power series solutions, partial differential equations, and boundary value problems.

MAT 3633. Numerical Analysis. (3-0) 3 Credit Hours.

Prerequisites: [MAT 2233](#), [MAT 3213](#), and one of the following: [CS 1063](#), [CS 1073](#), [CS 1713](#), or [CS 2073](#). Solution of linear and nonlinear equations, curve-fitting, and eigenvalue problems.

MAT 3653. Stochastic Calculus. (3-0) 3 Credit Hours.

Prerequisite: [STA 3513](#). Probability, random walk, Brownian motion, stationary and evolutionary processes and stochastic differential equations.

MAT 4013. Graphing Calculator Topics. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1214](#) or consent of instructor. Mathematical topics from algebra, trigonometry, calculus, modeling, and probability and statistics will be investigated using the graphing calculator. Assessment and evaluation techniques using technology will also be included. May not be applied toward the Mathematics Concentration of the B.S. degree in Mathematics.

MAT 4113. Computer Mathematical Topics. (3-0) 3 Credit Hours.

hours credit. Prerequisite: [MAT 1214](#). Mathematical topics from algebra, Euclidean and non-Euclidean geometry, number theory, and probability and statistics will be investigated using Geometer's Sketchpad and a variety of Web-based mathematics resources. Course will also include the application of software to the solution of a variety of geometric and algebraic problems. May not be applied toward the Mathematics Concentration of the B.S. degree in Mathematics.

MAT 4123. History of Mathematics. (3-0) 3 Credit Hours.

Prerequisites: [MAT 3233](#) or [MAT 4233](#), and either [MAT 3123](#) or [MAT 4263](#). Selected subjects in mathematics developed through historical perspectives and biographies. May not be applied toward the Mathematics Concentration of the B.S. degree in Mathematics.

MAT 4213. Real Analysis I. (3-0) 3 Credit Hours.

Prerequisite: [MAT 3213](#). Continuous functions, uniform continuity; theory of differentiation; applications of the derivative to properties of functions; antiderivatives; Riemann integral; connection between differentiation and integration.

MAT 4223. Real Analysis II. (3-0) 3 Credit Hours.

Prerequisite: [MAT 4213](#). Lebesgue integral on the real line; n-dimensional spaces; vectors; calculus of functions of several variables; multidimensional integration.

MAT 4233. Modern Abstract Algebra. (3-0) 3 Credit Hours.

Prerequisites: [MAT 2233](#) and [MAT 3013](#). An in-depth study of groups and rings.

MAT 4253. Number Theory. (3-0) 3 Credit Hours.

Prerequisite: [MAT 3233](#) or [MAT 4233](#). The theory of primes, congruences, and related subjects.

MAT 4263. Geometry. (3-0) 3 Credit Hours.

Prerequisite: [MAT 3013](#). A study of non-Euclidean geometries, including spherical geometry, hyperbolic geometry and others.

MAT 4273. Topology. (3-0) 3 Credit Hours.

Prerequisite: [MAT 3213](#). Set theory, including cardinal and ordinal numbers. Topological properties of the real-line and metric spaces.

MAT 4303. Capstone Course for Mathematics. (3-0) 3 Credit Hours.

Prerequisites: Consent of instructor or one each from [MAT 3123](#) or [MAT 4263](#), [MAT 3233](#) or [MAT 4233](#), and [MAT 4013](#) or [MAT 4113](#). This course is for any interested mathematics major, particularly for those students who intend to pursue secondary certification in Mathematics. The goals of the course are to enable students to build connections among the mathematical areas they have studied and between undergraduate mathematics and high school mathematics, to develop their understanding of mathematics as an integrated discipline, and to strengthen their oral and written communication skills in mathematics. May not be applied toward the Mathematics Concentration of the B.S. degree in Mathematics.

MAT 4313. Applied Combinatorics. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1224](#). Permutations, combinations, arrangements, selections, distributions, generating functions, inclusion-exclusion principle.

MAT 4323. Applied Graph Theory. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1224](#). Isomorphism, planarity, computer representation of graphs, covering circuits and graph colorings, Euler and Hamiltonian graphs, trees and searching network algorithms (shortest paths, connectivity, traveling salesman, network flow, matching, sorting, etc.).

MAT 4353. Mathematical Foundations of Cryptography. (3-0) 3 Credit Hours.

Prerequisite: [MAT 3233](#) or [MAT 4233](#) or consent of instructor. Congruences and residue class rings, Fermat's Little Theorem, the Euler phi-function, the Chinese Remainder Theorem; complexity; symmetric-key cryptosystems; cyclic groups, primitive roots, discrete logarithms, one-way functions; public-key cryptosystems (Diffie-Hellman key exchange, RSA, Rabin, El Gamal); digital signatures; and other groups (finite fields, elliptic curves).

MAT 4803. Statistical Quality Control. (3-0) 3 Credit Hours.

Prerequisite: STA 1993 or [STA 3513](#). Statistical methods are introduced in terms of problems that arise in manufacturing and their applications to the control of manufacturing processes. Topics include control charts and acceptance sampling plans. (Same as [STA 4803](#). Credit cannot be earned for both [MAT 4803](#) and [STA 4803](#).)

MAT 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

MAT 4953. Special Studies in Mathematics. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. May be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

MAT 4993. Honors Research. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for College Honors during their last two semesters; approval by the College Honors Committee. Supervised research and preparation of an honors thesis. May be repeated once with approval.

Mechanical Engineering (ME)

ME 1302. Introduction to Mechanical Engineering. (2-0) 2 Credit Hours. (TCCN = ENGR 1201)
Engineering ethics, principles and fundamentals of engineering design, decision-making processes in cases of mechanical engineering design. (Formerly ME 1301. Credit cannot be earned for both [ME 1302](#) and ME 1301.).

ME 1402. Mechanical Engineering Practice and Graphics. (1-3) 2 Credit Hours. (TCCN = ENGR 1204)

Prerequisite: [ME 1302](#). Introduction to engineering graphics: geometric constructions, multi-view drawing, dimensioning, sections, pictorials and auxiliary views. Computer-aided design, generation of mechanical drawings, and design projects. (Formerly ME 1403. Credit cannot be earned for both [ME 1402](#) and ME 1403.) (Formerly titled "Engineering Graphics.").

ME 2173. Numerical Methods. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1224](#). Introduction to the fundamentals of syntax and debugging techniques for interpreted and structured programming languages with an emphasis on engineering applications. Cross-platform interchange of data and use of visualization tools for effective communication of computational results. Error and computer arithmetic, root finding, interpolation and extrapolation, curve-fitting, matrix manipulation, numerical integration, solution methods for systems of linear equations and differential equations. (Formerly ME 3173. Credit cannot be earned for both ME 3173 and [ME 2173](#).).

ME 3113. Measurements and Instrumentation. (3-1) 3 Credit Hours.

Prerequisites: [EE 2213](#), [EGR 2513](#), PHY 1911, and PHY 1931. Fundamentals of measurement systems, descriptive statistics, probability, error, error propagation, confidence intervals, hypothesis testing, correlation, linear regression, data acquisition.

ME 3244. Materials Engineering and Laboratory. (3-3) 4 Credit Hours.

Prerequisites: [CHE 1103](#) and [EGR 2103](#). Fundamentals in structures, properties, fabrication, and mechanical behavior of engineering materials. Investigation of the properties of engineering materials, with emphasis on metals, sample preparation, metallography, and foundry processes. (Formerly ME 3241 and ME 3243. Credit cannot be earned for [ME 3244](#) and ME 3241/ME 3243. Prior completion of ME 3241 and ME 3243 can be substituted for this course.).

ME 3263. Manufacturing Engineering. (3-0) 3 Credit Hours.

Prerequisite: [EGR 2513](#). An integrated coverage of mechanical properties of materials, tolerances, measurement and quality assurance, manufacturing processes, and manufacturing systems, fundamental definitions, design for manufacturing, and mathematical models, hands-on applications related to measurement and manufacturing processes. (Formerly titled "Materials Processing.").

ME 3293. Thermodynamics I. (3-0) 3 Credit Hours.

Prerequisites: [EGR 2103](#) and [MAT 1224](#). Heat, work, equations of state, thermodynamics systems, control volume, first and second laws of thermodynamics, applications of the laws of thermodynamics, reversible and irreversible processes, and introduction to basic thermodynamic cycles.

ME 3323. Mechanical Vibration. (3-0) 3 Credit Hours.

Prerequisites: [EGR 2323](#) and [EGR 2513](#). Free and forced vibrations, single and multiple degree of freedom systems, damping, matrix methods, time-domain and frequency-domain. Applications in the transmission and control of vibration.

ME 3513. Mechanism Design. (3-0) 3 Credit Hours.

Prerequisite: [EGR 2513](#). Introduction to mechanisms, graphical and linear analytical methods for kinematic synthesis mechanisms; cam design; gearing fundamentals, force analysis, ordinary and planetary gear trains; and computer-aided design projects.

ME 3543. Dynamic Systems and Control. (3-0) 3 Credit Hours.

Prerequisites: [EE 2213](#), [EGR 2513](#) and [EGR 3323](#). Introduction to modeling and control of dynamic physical systems, analysis and design of control systems for mechanical, electrical, manufacturing, fluid, and thermal systems. (Formerly ME 4522 and ME 4523. Credit cannot be earned for more than one of the following: [ME 3543](#), ME 4522, or ME 4523.)

ME 3663. Fluid Mechanics. (3-0) 3 Credit Hours.

Prerequisites: [EGR 2323](#), [EGR 2513](#) and [ME 3293](#). Fluid properties, fluid statics, integral and differential analysis of fluid flow, viscous laminar and turbulent flow in conduits, dimensional analysis, boundary layer concepts, drag and lift.

ME 3813. Mechanics of Solids. (3-0) 3 Credit Hours.

Internal forces and deformations in solids, stress, strain and their relations, torsion, stresses and deflections in beams, and elastic behavior of columns.

ME 3823. Machine Element Design I. (3-0) 3 Credit Hours.

Prerequisites: [ME 1402](#), [ME 3244](#) (or ME 3241 and ME 3243 in previous catalogs), and [ME 3813](#). Introduction to design of machine elements, pressurized cylinders, press and shrink fits, curved beams and contact stresses, static and fatigue theories of failure, shafts and shaft components, welded and bolted connections, mechanical springs, and computer-aided design projects. (Formerly ME 4423. Credit cannot be earned for both [ME 3823](#) and ME 4423.)

ME 4183. Compressible Flow and Propulsion Systems. (3-0) 3 Credit Hours.

Prerequisites: [ME 3293](#) and [ME 3663](#). Application of mass, energy, and force balance to compressible fluids, analysis of one-dimensional steady flow, isentropic flow, adiabatic flow, flow with heat addition, supersonic flow, and shock waves. Introduction to the analysis and design of air-breathing engines for aeronautical transportation. (Formerly EGR 4183. Credit cannot be earned for both [ME 4183](#) and EGR 4183.)

ME 4243. Intermediate Materials Engineering. (3-0) 3 Credit Hours.

Prerequisites: [ME 3244](#) (or ME 3241 and ME 3243 in previous catalogs) and [ME 3813](#). Selected topics in macroscopic and microscopic aspects of the mechanical behavior of metals, ceramics, polymers and composites, introduction to dislocation theory, temperature dependent deformations, engineering failures, and fracture mechanics.

ME 4293. Thermodynamics II. (3-0) 3 Credit Hours.

Prerequisites: [EGR 2323](#) and [ME 3293](#). Energy and availability analysis, reactive and nonreactive mixtures, moist air properties, psychometric systems and analysis, vapor and gas power cycles, refrigeration and heat-pump cycles, thermodynamic relations, and chemical equilibria.

ME 4313. Heat Transfer. (3-0) 3 Credit Hours.

Prerequisites: [EGR 3323](#) and [ME 3663](#). Generalized potential distribution and gradients, transient and steady heat transfer including conduction, forced and free convection, radiation, and thermal boundary layers.

ME 4323. Thermal Systems Design. (3-0) 3 Credit Hours.

Prerequisite: [ME 4313](#). Application of basic thermodynamics, fluid mechanics, heat transfer, and computer methods to the design of heat exchangers, coils, fans, pumps, and thermal energy systems.

ME 4343. Heating, Air Conditioning, and Refrigeration Design. (3-0) 3 Credit Hours.

Prerequisites: [ME 4293](#) and [ME 4313](#). Moist air properties, human comfort, solar radiation, heating loads, design selection, construction, and operation of air conditioning equipment, and duct design.

ME 4373. Separation Processes. (3-0) 3 Credit Hours.

Prerequisites: [ME 4293](#) and [ME 4313](#). Rate- and equilibrium-controlled separation, mass transfer, phase equilibrium, absorption, distillation, extraction, adsorption and membranes.

ME 4433. Machine Element Design II. (3-0) 3 Credit Hours.

Prerequisite: [ME 3823](#). Design of spur, helical, bevel and worm gears; journal and rolling bearings; design of couplings, clutches, brakes, and flywheels; and computer-aided design projects.

ME 4543. Mechatronics. (2-3) 3 Credit Hours.

Prerequisites: [ME 3113](#) and [ME 3543](#). Study of electromechanical design as coupled with control systems; integration of sensors; topics in input signal conditions (aliasing, quantization, etc.). Lab will include use of MATLAB® and Simulink®, modeling and hardware-in-the-loop testing.

ME 4553. Automotive Vehicle Dynamics. (3-0) 3 Credit Hours.

Prerequisites: [EGR 2323](#) and [EGR 2513](#). Dynamics and control of automotive systems, handling, tires, suspension, steering, and aerodynamic forces.

ME 4563. Computer Integrated Manufacturing. (3-0) 3 Credit Hours.

Prerequisite: [ME 3263](#). Fundamental concepts and models related to computer-aided design, computer-aided process planning, computer-aided manufacturing, production planning and scheduling, and manufacturing execution systems. Laboratory work includes computer-aided applications and programming of automated production equipment.

ME 4573. Facilities Planning and Design. (3-0) 3 Credit Hours.

Prerequisite: [ME 3263](#). Product, process, and schedule design, flow, space, and activity relationships, material handling, layout planning models and design algorithms, and warehouse operations.

ME 4583. Enterprise Process Engineering. (3-0) 3 Credit Hours.

Prerequisite: [ME 3263](#). Fundamental concepts, methodologies, and tools for the design, engineering and continuous improvement of enterprises. Topics include Six Sigma for process design and improvement, lean manufacturing fundamentals, value-stream mapping, performance evaluation, and other contemporary enterprise process engineering approaches.

ME 4593. Alternative Energy Sources. (3-0) 3 Credit Hours.

Prerequisites: [ME 4293](#) and [ME 4313](#). Solar, nuclear, wind, hydrogen, and geothermal energy sources. Resources, production, utilization, economics, sustainability, and environmental considerations. (Formerly ME 3593. Credit cannot be earned for both ME 3593 and [ME 4593](#).)

ME 4603. Finite Element Analysis. (3-0) 3 Credit Hours.

Prerequisites: [EGR 3323](#), [ME 2173](#) and [ME 3823](#). Finite element method fundamentals, advanced geometric modeling of mechanical components and systems, and finite element modeling of components.

ME 4613. Power Plant System Design. (3-0) 3 Credit Hours.

Prerequisites: [ME 4293](#) and [ME 4313](#). Application of thermodynamics and fluid mechanics to the design of vapor and gas-turbine power plant systems including boilers, condensers, turbines, pumps, compressors, and cooling towers.

ME 4623. Internal Combustion Engines. (3-0) 3 Credit Hours.

Prerequisites: [ME 4293](#) and [ME 4313](#). Application of thermodynamic cycles in design, analysis, and modeling of internal combustion engines including spark-ignition and compression-ignition cycles, thermochemistry, fuels, combustion, emissions, and pollution.

ME 4643. Pressure Vessel and Piping Design. (3-0) 3 Credit Hours.

Prerequisites: [ME 3663](#) and [ME 3813](#). ASME Section XIII Boiler and Pressure Vessel code, inspection, maintenance, repair, and modification of pressure vessels. Piping design and construction.

ME 4653. Oil and Gas Engineering and Reservoir Geomechanics. (3-0) 3 Credit Hours.

Prerequisites: [ME 3663](#) and [ME 3813](#). Introduction to the oil and gas industry, Measurement; deformation mechanisms in rock; rock fracture description and analysis; wellbore stresses and failure; wellbore stability analysis; fault stability analysis; depletion-induced reservoir deformation; and hydraulic fracturing.

ME 4723. Reliability and Quality Control in Engineering Design. (3-0) 3 Credit Hours.

Prerequisite: [ME 3113](#). Introduction to statistical methods in reliability and probabilistic engineering design methodology, statistical quality control and inspection, life prediction and testing, and design optimization.

ME 4733. Mechanical Engineering Laboratory. (2-3) 3 Credit Hours.

Prerequisites: [ME 3113](#) and [ME 3813](#). Completion of or concurrent enrollment in [ME 4313](#) is required. Transducers and signal conditioning, strain, force, acceleration, controls, vibration, rotating machinery, fluid flow, heat transfer, thermodynamics, internal combustion engines, and design of experiments. (Formerly ME 4702. Credit cannot be earned for ME 4702 and [ME 4733](#). Prior completion of ME 4702 and ME 4802 can be substituted for this course.).

ME 4773. Fundamentals of Robotics. (3-0) 3 Credit Hours.

Prerequisite: [ME 3543](#). Fundamental analysis and control methods of robot manipulators will be taught in this course. Kinematics and dynamics of robotic systems will be studied. Project for the design and analysis of a robotic system with practical application is expected.

ME 4812. Senior Design I. (2-0) 2 Credit Hours.

Prerequisites: [ME 3263](#), [ME 3543](#) and [ME 3823](#). Completion of or concurrent enrollment in [ME 4313](#), [ME 4543](#) (or [ME 3513](#) in previous catalogs) and [ME 4733](#) required. Design project proposals, computer-aided synthesis, analysis, and modeling of an open-ended problem development and presentation of conceptual designs. Industrial cooperation is encouraged. (Formerly ME 4811. Credit cannot be earned for both ME 4811 and [ME 4812](#).).

ME 4813. Senior Design II. (2-3) 3 Credit Hours.

Prerequisite: [ME 4812](#). Development of a working design of an instructor-approved design project using computer-aided synthesis, analysis, modeling, and optimization methods. Industrial cooperation encouraged. Considerations of safety, reliability, environmental, and economic constraints, and ethical and social impacts.

ME 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisite: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ME 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisite: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ME 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisite: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

ME 4953. Special Studies in Mechanical Engineering. (3-0) 3 Credit Hours.

Prerequisite: Will depend on the topic. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

ME 4963. Mechanical Engineering Applications to Biomedical Systems. (3-0) 3 Credit Hours.

Prerequisites: [EGR 2513](#), [ME 3663](#) and [ME 3813](#). Applications of dynamics, solid mechanics and fluid mechanics to biomedical systems. (Formerly titled "Bioengineering.").

Media Studies (MES)**MES 3113. Film Studies. (3-0) 3 Credit Hours.**

Prerequisite: [WRC 1023](#) or the equivalent. [CSH 2113](#) recommended. Advanced analysis of selected films according to genre, director, or national cinema. May be repeated for credit when topics vary.

MES 3333. Digital Video Production. (2-3) 3 Credit Hours.

Prerequisite: [WRC 1023](#) or the equivalent. Theory and practice of digital video production for the humanities. Writing a storyboard, shooting a story, and editing using professional equipment. May be repeated for credit when topics vary.

MES 4333. Digital Video Practicum. (3-2) 3 Credit Hours.

Prerequisite: [MES 3333](#) or consent of instructor. Advanced digital video production for the humanities. Specialized community service projects. May be repeated for credit when topics vary.

Mexican American Studies (MAS)

MAS 2013. Introduction to Chicano(a) Studies. (3-0) 3 Credit Hours. (TCCN = HUMA 1305)

An introduction to the field of Chicano(a) studies from its inception to the present. Chicano(a) studies and scholarship are explored through multidisciplinary concepts, theory, and methodologies, providing differing interpretations of the Chicano and Chicana experience in the United States. (Formerly BBL 2013. Credit cannot be earned for both [MAS 2013](#) and BBL 2013.).

MAS 2023. Latino Cultural Expressions. (3-0) 3 Credit Hours. (TCCN = HUMA 1311)

An introductory overview of Hispanic visual, performing, and folk arts from their origins in the Iberian peninsula, through the later blending of cultures and their parallelism during revolutionary periods, to contemporary Latino expressions in the United States. (Same as [BBL 2023](#). Credit cannot be earned for both [MAS 2023](#) and [BBL 2023](#).).

MAS 2033. Multiculturalism in the Southwest. (3-0) 3 Credit Hours.

A panoramic study of the concept of culture and the social dynamics of exchange among those ethnic groups that determine the multicultural milieu of the Southwest. Examination of cultural differences and similarities among all peoples of the region and the role of multiculturalism in politics, education, economics, religion, and everyday life. (Same as [BBL 2033](#). Credit cannot be earned for both [MAS 2033](#) and [BBL 2033](#).).

MAS 3003. Musical Mestizaje. (3-0) 3 Credit Hours.

Designed to examine Mexican American experience at the borders where the cultural form of music becomes a way of expressing cultural contact, tension, conflict as well as accommodation and resistance. Music becomes a site of excavating issues of inheritance as well as understanding the dynamics of creative expression. Course reflects historical and social contexts to engage the cultural production of the genres and themes of music found in Mexican American communities.

MAS 3013. Chicana/o Queer Communities, Identities and Theories. (3-0) 3 Credit Hours.

Through an intersectional lens that addresses gender and sexuality in conjunction with race and class, this course examines concepts of identity, community, and belonging for and by Mexican American lesbian, bisexual, transgender, intersex and queer communities. Topics may include language, migration, history, health, family and kinship.

MAS 3023. Historical Legacies: Chicanas/os in Education. (3-0) 3 Credit Hours.

This course presents key texts that are central to the study of Chicanas/os in education. This course critically examines the historical legacies and contemporary experiences of Chicana/o children and youth in U.S. educational institutions. The course will present various theoretical perspectives that problematize the pervasive history of educational inequality and patterns of academic attainment and achievement throughout the educational pipeline. Special attention will be given to the pervasive history of segregation, tracking, language oppression, and assimilationist ideologies and practices, as well as the current struggles for educational justice in Chicana/o schools and communities.

MAS 3033. Mexican Americans in the Southwest. (3-0) 3 Credit Hours.

Historical foundations of the United States–Mexico biculturalism in the Southwest. An examination of the historical forces that created and shaped the Mexican American people as a bicultural community. Attention is given to Mexican American contributions in arts, economics, literature, and politics. (Same as [BBL 3033](#). Credit cannot be earned for both [MAS 3033](#) and [BBL 3033](#).).

MAS 3043. Social Psychological Considerations in Mexican American Communities. (3-0) 3 Credit Hours.

A cross-cultural and social psychological study of human development, interethnic communication, stereotyping, learning styles, or other topics relevant to the bicultural setting. (Same as [BBL 3043](#). Credit cannot be earned for both [MAS 3043](#) and [BBL 3043](#).)

MAS 3413. Mexican American Family. (3-0) 3 Credit Hours.

This course offers an examination of the social status of Mexican Americans and their relationship to the dominant society. Issues may include the position of Mexican Americans in economic, political, and status hierarchies and the major factors limiting mobility within these systems. (Formerly BBL 3413. Same as [SOC 3413](#). Credit cannot be earned for more than one of the following: BBL 3413, [MAS 3413](#), or [SOC 3413](#).)

MAS 4083. Research Seminar in Mexican American Studies. (3-0) 3 Credit Hours.

Provides students the opportunity to compare, contrast, and integrate social science theory and methods, and guides students in the conduct of sociocultural research in the Mexican American community. Emphasis will be given to qualitative and ethnographic methods and theory. (Formerly BBL 4083. Credit cannot be earned for both [MAS 4083](#) and BBL 4083.)

MAS 4931. Internship in Mexican American Studies. (0-0) 1 Credit Hour.

A supervised experience, relevant to the student's program of study within selected community organizations and agencies. Must be taken on a credit/no-credit basis.

MAS 4932. Internship in Mexican American Studies. (0-0) 2 Credit Hours.

A supervised experience, relevant to the student's program of study within selected community organizations and agencies. Must be taken on a credit/no-credit basis.

MAS 4933. Internship in Mexican American Studies. (0-0) 3 Credit Hours.

A supervised experience, relevant to the student's program of study within selected community organizations and agencies. Must be taken on a credit/no-credit basis.

MAS 4953. Special Studies in Mexican American Studies. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. To apply credit earned in [MAS 4953](#) toward a minor, consent of the academic advisor in the COEHD Advising and Certification Center is required.

MAS 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for Honors in Mexican American Studies during their last two semesters; completion of honors examination and consent of the Honors College. Supervised research and preparation of an honors thesis. May be repeated once with thesis advisor's approval.

Military Science (MSC)

MSC 1001. Introduction to Army ROTC Laboratory. (0-2) 1 Credit Hour.

Corequisite: Concurrent enrollment in [MSC 1012](#). This two hour mandatory laboratory applies and reinforces classroom instruction with outdoor, hands-on training on campus. In addition, it provides an

opportunity to experience unique training opportunities unavailable to the general public at nearby Camp Bullis.

MSC 1012. Introduction to Army ROTC. (2-0) 2 Credit Hours.

Introduces personal challenges and competencies that are critical for effective leadership. Focuses on the personal development of life skills such as goal setting, time management, physical fitness, and stress management as they relate to leadership, officership, and the Army profession. Increase self-confidence through team study and activities in basic drill, rappelling, leadership reaction course, first aid, making presentations, and basic marksmanship. Learn fundamental concepts of professional leadership in classroom and outdoor laboratory environments. Students attend two hours of lecture, a required two hours of leadership laboratory ([MSC 1001](#)) plus participate in organized physical fitness training. Students will have an opportunity to participate in one weekend exercise; additional weekend exercises may be offered. Concurrent enrollment in [KIN 1001](#) Ind PhysAct: AROTC is recommended. (Formerly MSC 1011. Credit cannot be earned for both [MSC 1012](#) and MSC 1011.).

MSC 1101. Introduction to Tactical Leadership Laboratory. (0-2) 1 Credit Hour.

Corequisite: Concurrent enrollment in [MSC 1122](#). This two hour mandatory laboratory applies and reinforces classroom instruction with outdoor, hands-on training on campus. In addition, it provides an opportunity to experience unique training opportunities unavailable to the general public at nearby Camp Bullis.

MSC 1122. Introduction to Tactical Leadership. (2-0) 2 Credit Hours.

Overviews leadership fundamentals such as setting direction, problem solving, listening, presenting briefs, providing feedback, and using effective writing skills. Students will explore dimensions of leadership attributes and core leader competencies in the context of practical, hands-on, and interactive exercises and will learn and apply principles of effective leading. Reinforce self-confidence through participation in physically and mentally challenging exercises with upper-division ROTC students. Develop communication skills to improve individual performance and group interaction. Relate organizational ethical values to leadership effectiveness. Students attend two hours of lecture, a required two hours of leadership laboratory ([MSC 1101](#)) plus participate in organized physical fitness training. Students will have an opportunity to participate in one weekend exercise; additional weekend exercises may be offered. Concurrent enrollment in [KIN 1001](#) Ind PhysAct: AROTC is recommended. (Formerly MSC 1021. Credit cannot be earned for both [MSC 1122](#) and MSC 1021.).

MSC 2011. Foundations of Leadership Laboratory. (0-2) 1 Credit Hour.

Corequisite: Concurrent enrollment in [MSC 2012](#). This two hour mandatory laboratory applies and reinforces classroom instruction with outdoor, hands-on training on campus. In addition, it provides an opportunity to experience unique training opportunities unavailable to the general public at nearby Camp Bullis.

MSC 2012. Foundations of Leadership. (2-0) 2 Credit Hours.

Explores the dimensions of creative and innovative tactical leadership strategies and styles by examining team dynamics and two historical leadership theories that form the basis of the Army leadership framework (trait and behavior theories). Students practice aspects of personal motivation and team building in the context of planning, executing, and assessing team exercises and participating in leadership labs. Focus is on continued development of the knowledge of leadership attributes and core leader competencies through an understanding of Army rank, structure, duties and basic aspects of oral presentations, concise writing, advanced first aid, land navigation, basic rifle marksmanship and basic military squad tactics. Students attend lecture and a required leadership laboratory ([MSC 2011](#)) plus participate in physical fitness training. Students will have an opportunity to participate in one weekend

exercise; additional weekend exercises may be offered. Concurrent enrollment in [KIN 1001](#) Ind PhysAct: AROTC is recommended.

MSC 2021. Foundations of Tactical Leadership Laboratory. (0-2) 1 Credit Hour.

Corequisite: Concurrent enrollment in [MSC 2022](#). This two hour mandatory laboratory applies and reinforces classroom instruction with outdoor, hands-on training on campus. In addition, it provides an opportunity to experience unique training opportunities unavailable to the general public at nearby Camp Bullis.

MSC 2022. Foundations of Tactical Leadership. (2-0) 2 Credit Hours.

Examines the challenges of leading tactical teams in the complex Contemporary Operating Environment (COE). The course highlights dimensions of terrain analysis, patrolling, and operation orders. Further study of the theoretical basis of the Army Leadership Requirements Model explores the dynamics of adaptive leadership in the context of military operations. [MSC 2022](#) provides a smooth transition into [MSC 3013](#). Students have an opportunity to develop greater self-awareness as they assess their own leadership styles and practice communication and team-building skills. COE case studies give insight into the importance and practice of teamwork and tactics in real-world scenarios. Students attend lecture and a required leadership laboratory ([MSC 2021](#)) plus participate in physical fitness training. Students will have an opportunity to participate in one weekend exercise; additional weekend exercises may be offered. Concurrent enrollment in [KIN 1001](#) Ind PhysAct: AROTC is recommended.

MSC 3011. Leading Small Organizations I Laboratory. (0-2) 1 Credit Hour.

Corequisite: Concurrent enrollment in [MSC 3013](#). This two hour mandatory laboratory applies and reinforces classroom instruction with outdoor, hands-on training on campus. In addition, it provides an opportunity to experience unique training opportunities unavailable to the general public at nearby Camp Bullis.

MSC 3013. Leading Small Organizations I. (3-0) 3 Credit Hours.

Prerequisites: [MSC 1012](#), [MSC 1122](#), [MSC 2012](#), and [MSC 2022](#), or consent of instructor. Series of practical opportunities to lead small groups, receive personal assessments and encouragement, and lead in increasingly complex situations. Uses small unit tactics and opportunities to plan and conduct training for lower-division students both to develop such skills and as vehicles for practicing leading. Students attend three hours of lecture, two hours of leadership laboratory ([MSC 3011](#)) and organized physical fitness training weekly. Students will have an opportunity to participate in one weekend exercise; additional weekend exercises may be offered. Concurrent enrollment in [KIN 1001](#) Ind PhysAct: AROTC is recommended.

MSC 3021. Leading Small Organizations II Laboratory. (0-2) 1 Credit Hour.

Corequisite: Concurrent enrollment in [MSC 3023](#). This two hour mandatory laboratory applies and reinforces classroom instruction with outdoor, hands-on training on campus. In addition, it provides an opportunity to experience unique training opportunities unavailable to the general public at nearby Camp Bullis.

MSC 3023. Leading Small Organizations II. (3-0) 3 Credit Hours.

Prerequisite: [MSC 3013](#) or consent of instructor. Continues methodology of [MSC 3013](#). Students will analyze tasks and prepare written or oral guidance for team members to accomplish tasks. Students will also delegate tasks and supervise; plan for and adapt to the unexpected in organizations under stress; examine and apply lessons from leadership case studies; and examine the importance of ethical decision making in setting a positive climate that enhances team performance. Students attend three hours of lecture, two hours of leadership laboratory ([MSC 3021](#)) and organized physical fitness training weekly.

Students will have an opportunity to participate in one weekend exercise; additional weekend exercises may be offered. Concurrent enrollment in [KIN 1001](#) Ind PhysAct: AROTC is recommended.

MSC 3033. American Military History. (3-0) 3 Credit Hours.

Prerequisites: [MSC 1012](#), [MSC 1122](#), [MSC 2012](#), and [MSC 2022](#), or consent of instructor. A comprehensive, but brief account of the US Army from past to present. Integrates the basic knowledge of American military history into the future officer's education. This is an Army standardized, mandatory course that is a part of pre-commissioning training for contracted US Army ROTC cadets. Employs American military history as a tool for studying military professionalism and applying critical-thinking skills and decision-making skills to military problems. Analyzes the definition of Military History, the theory and practice of war, and the American Military System as an intellectual framework for applying critical-thinking skills and problem-solving skills to the study of historical military problems.

MSC 4011. Adaptive Leadership Laboratory. (0-2) 1 Credit Hour.

Corequisite: Concurrent enrollment in [MSC 4013](#). This two hour mandatory laboratory applies and reinforces classroom instruction with outdoor, hands-on training on campus. In addition, it provides an opportunity to experience unique training opportunities unavailable to the general public at nearby Camp Bullis.

MSC 4013. Adaptive Leadership. (3-0) 3 Credit Hours.

Prerequisite: [MSC 3023](#) or consent of instructor. Students will plan, conduct, and evaluate activities of the ROTC cadet organization; articulate goals and put plans into action; assess organizational cohesion and develop strategies to improve it; develop confidence in leadership skills and resource management; learn and apply various Army policies and programs. Students will study how Army values and leader ethics are applied in the Contemporary Operating Environment and how these values and ethics are relevant to everyday life. Students will study the Army officer's role in the Uniform Code of Military Justice, the counseling of subordinates, administrative actions and the management of an Army officer's career. Students attend three hours of lecture, two hours of leadership laboratory ([MSC 4011](#)) and organized physical fitness training weekly. Students will have an opportunity to participate in one weekend exercise; additional weekend exercises may be offered. Concurrent enrollment in [KIN 1001](#) Ind PhysAct: AROTC is recommended.

MSC 4021. Leadership in a Complex World Laboratory. (0-2) 1 Credit Hour.

Corequisite: Concurrent enrollment in [MSC 4023](#). This two hour mandatory laboratory applies and reinforces classroom instruction with outdoor, hands-on training on campus. In addition, it provides an opportunity to experience unique training opportunities unavailable to the general public at nearby Camp Bullis.

MSC 4023. Leadership in a Complex World. (3-0) 3 Credit Hours.

Prerequisite: [MSC 4013](#) or consent of instructor. Continues the methodology from [MSC 4013](#). Students will identify and resolve ethical dilemmas; refine counseling and motivating techniques; examine tradition and law as related to leadership as an Army officer; prepare for a future as a successful Army lieutenant. Students attend three hours of lecture, two hours of leadership laboratory ([MSC 4021](#)) and organized physical fitness training weekly. Students will have an opportunity to participate in one weekend exercise; additional weekend exercises may be offered. Concurrent enrollment in [KIN 1001](#) Ind PhysAct: AROTC is recommended.

MSC 4033. Practical Leadership. (3-0) 3 Credit Hours.

Prerequisite: [MSC 4023](#) or consent of instructor. Performance-oriented instruction and preparation for commissioning. Additional development of students' ability to plan, coordinate, and direct the efforts of

Army small-unit organizations in the execution of tactical missions; planning and execution of leadership laboratories.

Multidisciplinary Studies (MDS)

MDS 4983. Senior Seminar for Multidisciplinary Studies. (3-0) 3 Credit Hours.

Prerequisites: Declared major in Multidisciplinary Studies in semester of graduation and permission of the Multidisciplinary Studies Program Coordinator. The seminar surveys topics in ethics, reinforces writing and communication skills through oral and written presentations and discussions, demonstrates student's progress through a capstone portfolio, and culminates in a senior project approved by the instructor.

Music (MUS)

MUS 1102. Aural Skills I. (2-0) 2 Credit Hours. (TCCN = MUSI 1216)

Enrollment is limited to music majors and minors. Offers the opportunity for training in sight-singing, aural skills, and keyboard application. Should be taken concurrently with [MUS 1112](#). May not be attempted more than three times.

MUS 1112. Basic Skills of Music I. (2-1) 2 Credit Hours. (TCCN = MUSI 1211)

Enrollment is limited to music majors and minors. A survey of fundamentals and concepts of music. Emphasis on rudiments and melody, with an introduction to harmony. Materials from a variety of style periods are studied. Should be taken concurrently with [MUS 1102](#). May not be attempted more than three times.

MUS 1122. Aural Skills II. (2-0) 2 Credit Hours. (TCCN = MUSI 1217)

Prerequisite: [MUS 1102](#) or the equivalent. Enrollment is limited to music majors and minors. Offers the opportunity to continue training in sight-singing and aural skills, with emphasis on rhythmic, melodic, and harmonic materials. Should be taken concurrently with [MUS 1132](#). May not be attempted more than three times.

MUS 1132. Basic Skills of Music II. (2-1) 2 Credit Hours. (TCCN = MUSI 1212)

Prerequisite: [MUS 1112](#) or the equivalent. Enrollment is limited to music majors and minors. Offers the opportunity for development of harmonic analytical and writing skills. Analytical techniques are applied to music from a variety of style periods, and includes an introduction to small forms. May not be attempted more than three times.

MUS 1141. Beginning Composition. (0-0) 1 Credit Hour. (TCCN = MUSI 1286)

Prerequisites: [MUS 1102](#) and [MUS 1112](#) or their equivalents. An introduction to the fundamentals and techniques of composition, including development of listening skills, notation, and improvisational aspects of generating original creative ideas. Seminar attendance is required.

MUS 1511. Music Performance-Secondary Instrument. (0-0) 1 Credit Hour.

Enrollment is limited to music majors. Placement by audition. Private instruction for students desiring to or required to study the following as a secondary instrument: bassoon, clarinet, contrabass, cornet, electric bass, euphonium, flute, classical guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, or voice. Seminar attendance may be

required. Concurrent enrollment in an assigned University ensemble is required. May be repeated for credit.

MUS 1512. Music Performance-Private Instruction. (0-0) 2 Credit Hours.

Enrollment is limited to music majors. Placement by audition. Private instruction for all first-semester students, both freshmen and transfer students, desiring to or required to study the following instruments: bassoon, clarinet, contrabass, cornet, electric bass, euphonium, flute, classical guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, or voice. Seminar attendance may be required. Students must earn a grade of “C-” or higher to progress to [MUS 1542](#). Concurrent enrollment in an assigned University ensemble is required. May be repeated for credit a maximum of two semesters.

MUS 1521. Class Piano 1. (0-0) 1 Credit Hour. (TCCN = MUSI 1181)

Prerequisite: Music major or consent of instructor. Focuses on the development of functional keyboard skills for the non-keyboard music major. Emphases include solo and ensemble repertoire, technique, sight reading, transposition, harmonization, improvisation, and accompanying.

MUS 1531. Class Voice. (1-0) 1 Credit Hour. (TCCN = MUSI 1183)

For students with no previous vocal training. Offers the opportunity for development of fundamentals of voice technique through in-class performances of suitable songs. May be repeated for credit.

MUS 1542. Music Performance-Private Instruction I. (0-0) 2 Credit Hours.

Prerequisite: Successful completion of [MUS 1512](#) with a grade of “C-” or better or placement by audition. Limited to music majors. Private instruction for students desiring to or required to study the following instruments: bassoon, clarinet, contrabass, cornet, electric bass, euphonium, flute, classical guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, or voice. Seminar attendance may be required. Concurrent enrollment in an assigned University ensemble is required. May be repeated for credit a maximum of three semesters.

MUS 1552. Functional Piano for Keyboard Principals. (0-0) 2 Credit Hours.

Prerequisite: Music major with piano or organ as the principal instrument or consent of instructor. Offers the opportunity for development of keyboard skills, harmonization, transposition, and improvisation of accompaniments to melodies, sight-reading, score reading, and multiple-part reading.

MUS 1621. Class Piano 2. (0-0) 1 Credit Hour.

Prerequisite: [MUS 1521](#) or the equivalent. Continues the development of functional keyboard skills for the non-keyboard music major. Emphases include solo and ensemble repertoire, technique, sight reading, transposition, harmonization, improvisation, and accompanying.

MUS 2001. Concert Music. (1-0) 1 Credit Hour.

Prerequisite: Music major or minor. Required attendance at a selected number of approved music concerts and recitals as determined by the Department of Music. May be repeated for credit.

MUS 2102. Aural Skills III. (2-0) 2 Credit Hours. (TCCN = MUSI 2216)

Prerequisite: [MUS 1122](#) or the equivalent. Enrollment is limited to music majors. Offers the opportunity to continue training in sight-singing and aural skills, with emphasis on rhythmic, melodic, and harmonic materials applied to the literature and theory drawn from [MUS 2152](#). Should be taken concurrently with [MUS 2152](#). May not be attempted more than three times.

MUS 2112. Aural Skills IV. (2-0) 2 Credit Hours. (TCCN = MUSI 2217)

Prerequisite: [MUS 2102](#) or the equivalent. Enrollment is limited to music majors. Application of skills to materials drawn from [MUS 2162](#) Basic Skills of Music IV. Should be taken concurrently with [MUS 2162](#). May not be attempted more than three times.

MUS 2122. Aural Skills Review. (0-0) 2 Credit Hours.

Review of aural skills materials for incoming transfer students and other music majors. Designed to satisfy deficiencies indicated by the aural skills proficiency exam. Offers an overview of sight-singing methodology and ear training techniques, with an emphasis on rhythmic, melodic, and harmonic materials drawn from common-practice literature.

MUS 2132. Introduction to Improvisation. (0-0) 2 Credit Hours. (TCCN = MUSI 1263)

Prerequisites: Music major status or concurrent enrollment in [MUS 3771](#) or [MUS 4581](#): Jazz Combos. Private instruction for development of creative skills applied to melodic, rhythmic, and harmonic elaboration techniques adapted to the student's instrument. Laboratory attendance may be required. May be repeated for credit a maximum of three semesters.

MUS 2141. Composition II. (0-0) 1 Credit Hour.

Prerequisites: [MUS 1102](#), [MUS 1112](#), and MUS 1142. Private study of the fundamentals of composition through small forms. Seminar attendance is required. May be repeated for credit. (Formerly MUS 2142. Credit cannot be earned for both [MUS 2141](#) and MUS 2142.).

MUS 2152. Basic Skills of Music III. (2-1) 2 Credit Hours. (TCCN = MUSI 2211)

Prerequisite: [MUS 1132](#) or the equivalent. Enrollment is limited to music majors. A survey of the chromatic materials of music with an emphasis on writing and analytical skills. Includes an introduction to large-scale form. Should be taken concurrently with [MUS 2102](#). May not be attempted more than three times.

MUS 2162. Basic Skills of Music IV. (2-1) 2 Credit Hours. (TCCN = MUSI 2212)

Prerequisite: [MUS 2152](#) or the equivalent. Enrollment is limited to music majors. The continued study of chromatic materials of music, large-scale forms, and an introduction to analytical techniques for early 20th-century music. Should be taken concurrently with [MUS 2112](#). May not be attempted more than three times.

MUS 2183. Jazz Skills. (0-0) 3 Credit Hours.

Prerequisites: [MUS 1122](#) and [MUS 1132](#), or their equivalents. The study of harmonic, melodic, rhythmic and formal elements of jazz as applied to improvisation, performance, arranging, and composition. (Formerly MUS 2182. Credit may not be earned for both [MUS 2183](#) and MUS 2182.).

MUS 2232. Introduction to Guitar Literature. (0-0) 2 Credit Hours.

Prerequisite: Music major status. An introductory study of the history and literature of the modern concert guitar and its historical predecessors. Designed to improve students' understanding of the solo repertoire for their instrument throughout the 16th–20th centuries.

MUS 2243. World Music in Society. (3-0) 3 Credit Hours. (TCCN = MUSI 1307)

A survey of the music cultures of Africa, the Americas, Asia and Oceania. Music traditions are studied from a perspective that emphasizes music as an integral part of society and culture. May be applied toward the Core Curriculum requirement in Creative Arts. (Formerly MUS 2252. Credit may not be earned for both [MUS 2243](#) and MUS 2252.).

MUS 2263. Introduction to the Music Industry. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor required for non-music majors. A survey of the various structures and facets of the modern American music industry, focusing on how music and commerce have intersected in our society throughout the 20th century and into the present. Topics include intellectual property (copyright, licensing, publishing), artist management, concert promotion, arts administration, recording industry, broadcast music, and music on the Internet.

MUS 2273. Introduction to Music Nonprofit Organizations. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor required for non-music majors or non-music minors. An introduction to the world of nonprofit music organizations, with an emphasis on classical music presentation. Focused on strategies of management, financial structuring, artistic direction, and marketing, primarily within the context of opera companies, symphony orchestras, ballet companies, and chamber music organizations. Includes an examination of the challenges of audience development and discussion of classical music's role in contemporary society.

MUS 2403. Conducting I. (3-1) 3 Credit Hours.

Prerequisite: [MUS 1132](#) or the equivalent. Fundamentals of beat patterns, score mechanics and score reading, regular and irregular meters, gesture design, left-hand cueing, and rehearsal techniques. Instrumental Music Laboratory attendance may be required.

MUS 2413. Conducting II. (3-1) 3 Credit Hours.

Prerequisite: [MUS 2403](#) or the equivalent. Offers the opportunity for continued training in conducting, emphasizing score reading, rehearsal techniques, expressive conducting, score interpretation, and repertoire. Topics include Choral Conducting and Instrumental Conducting. For instrumental topic, Instrumental Music Laboratory attendance may be required.

MUS 2421. Class Piano 3. (0-0) 1 Credit Hour.

Prerequisite: [MUS 1621](#) or the equivalent. Continues the development of functional keyboard skills for the non-keyboard music major. Emphases include solo and ensemble repertoire, technique, sight reading, transposition, harmonization, improvisation, and accompanying. Also focuses on developing multiple-part sight reading skills.

MUS 2501. Accompanying. (0-2) 1 Credit Hour.

Enrollment is limited to music majors. The study of the skills and aesthetic principles needed to accompany vocal and instrumental music. Practical experience may be accomplished through accompanying. Intended for piano principals and piano performance majors. May be repeated for credit.

MUS 2521. Class Piano 4. (0-0) 1 Credit Hour.

Prerequisite: [MUS 2421](#) or the equivalent. Continues the development of functional keyboard skills for the non-keyboard music major. Emphases include solo and ensemble repertoire, technique, sight reading, transposition, harmonization, improvisation, and accompanying. Also focuses on developing multiple-part sight reading skills.

MUS 2542. Music Performance-Private Instruction II. (0-0) 2 Credit Hours.

Prerequisite: [MUS 1542](#) or placement by audition. Enrollment is limited to music majors. Private instruction for students desiring to or required to study the following instruments: bassoon, clarinet, contrabass, cornet, electric bass, euphonium, flute, classical guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, or voice. Seminar attendance may be required. Concurrent enrollment in an assigned University ensemble is required. May be repeated for credit a maximum of three semesters.

MUS 2601. Diction Survey. (1-1) 1 Credit Hour. (TCCN = MUSI 1162)

Enrollment is limited to music majors. A survey of English and foreign language pronunciation as applied to performance. (Formerly MUS 3501. Credit cannot be earned for both [MUS 2601](#) and MUS 3501.).

MUS 2603. Beginning Guitar. (3-0) 3 Credit Hours.

An introductory course intended primarily for the non-Music major. Emphasis will be on music in the first position (through the fourth fret) while students learn technical aspects as defined by the early 19th-century guitar masters.

MUS 2613. Intermediate Guitar. (3-0) 3 Credit Hours.

Prerequisite: [MUS 2603](#) or the equivalent. Designed primarily for the non-Music major. Continued study of rudimentary classical guitar repertoire and basic elements of classical guitar technique.

MUS 2623. Fundamentals of Music for the Non-Music Major. (3-0) 3 Credit Hours. (TCCN = MUSI 1301)

A study of traditional music notation and the fundamentals of music theory. Topics will include music reading, rhythmic notation, intervals, scales, triads, and key signatures. Emphasis is placed on the historical development of music notation and music theoretical systems and their applications to both classical and popular music. May be applied toward the Core Curriculum requirement in Creative Arts.

MUS 2633. American Roots Music. (3-0) 3 Credit Hours. (TCCN = MUSI 1310)

A survey of Blues, Country and Western, Gospel, Cajun, Zydeco, Conjunto, Tejano, Reggae, Native American, and other uniquely American genres of music that evolved from regional, home-grown traditions into the mass market phenomenon of American popular music today. Designed to provide the opportunity for students to increase their awareness of the diversity of American traditional music, from the pioneers who originated the styles to the contemporary popular music artists influenced by them. May be applied toward the Core Curriculum requirement in Creative Arts.

MUS 2663. History and Styles of Jazz. (3-0) 3 Credit Hours. (TCCN = MUSI 1310)

A survey of the evolution of jazz styles, contributions of important performers, and musical techniques involved in the creation and performance of jazz music.

MUS 2673. History and Styles of Rock. (3-0) 3 Credit Hours. (TCCN = MUSI 1310)

A survey of the evolution of rock styles, contributions of important performers, and musical techniques involved in the creation and performance of rock music. May be applied toward the Core Curriculum requirement in Creative Arts.

MUS 2683. Masterpieces of Music. (3-0) 3 Credit Hours. (TCCN = MUSI 1306)

A study of individual works selected from and representative of the musical traditions of the Western world. Includes background information on social setting and function, historical importance, aesthetics, and composers' biographies. May be applied toward the Core Curriculum requirement in Creative Arts.

MUS 2693. The Music of Latin America and the Caribbean. (3-0) 3 Credit Hours. (TCCN = MUSI 1307)

Surveys the folk, popular, and classical musical traditions of Latin America, with special emphasis on the principal regions of Mexico, Brazil, Argentina, and the Andes. May be applied toward the Core Curriculum requirement in Creative Arts. (Formerly MUS 1213. Credit cannot be earned for both [MUS 2693](#) and MUS 1213.).

MUS 2743. Music and Film. (3-0) 3 Credit Hours. (TCCN = MUSI 1306)

A survey of the evolving role of music in film. Students will have the opportunity to develop an understanding of how film music is created, manufactured, and consumed by exploring various creative, technological, industrial, economic, historical, social, and cultural factors. May be applied toward the Core Curriculum requirement in Creative Arts.

MUS 3013. Digital Music Production. (3-0) 3 Credit Hours.

Survey of concepts and development of skills related to current computer-based music production. Topics include MIDI and audio sequencing, tonal synthesis, acoustics, digital audio editing, sound processing, basic live recording, and music distribution. This is the entry course for UTSA's Certificate in Music Technology program. (Formerly MUS 3313. Credit cannot be earned for both [MUS 3013](#) and MUS 3313.).

MUS 3103. Audio Technology I. (3-0) 3 Credit Hours.

Fundamental concepts of digital and analog audio recording. Topics will include a historical survey of audio technology, critical listening, terminology, digital audio systems, signal flow, microphone selection and placement, techniques for live stereo recording, basic processing and effects, and an introduction to current standard workflows for recording, editing, and mixing. (Formerly MUS 3153. Credit cannot be earned for both [MUS 3103](#) and MUS 3153.).

MUS 3113. Tonal Analysis Review. (3-0) 3 Credit Hours.

Prerequisite: [MUS 2162](#) or the equivalent. Review of tonal analysis for incoming transfer students and other music majors. Designed to satisfy deficiencies indicated by the music theory proficiency exam. Offers an overview of harmony and form, with an emphasis on binary form, ternary form, rondo form, sonata-allegro form, and contrapuntal techniques.

MUS 3123. Introduction to Electronic and Computer Music. (0-0) 3 Credit Hours.

Prerequisite: Consent of instructor required for non-music majors. Private study serving as a conceptual and practical introduction to digital audio workstation software, synthesizers, sequencers, and other audio hardware and software for the purpose of creating original compositions, with an emphasis on sound-processing techniques and timbral manipulation. Includes a survey of the history and literature of electronic music.

MUS 3133. Analysis of Twentieth-Century Music. (3-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#), or their equivalents. Analysis of forms and structures drawn from the literature and repertoire of the 20th century. Beginning with a review of late tonal practices, such styles and techniques as Impressionism, atonality, serialism, and pre- and post-serial tonality are studied in depth.

MUS 3143. Orchestration. (3-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#), or their equivalents. Applied instrumentation emphasizing idiomatic scoring for various orchestral and wind combinations with an approach to writing for full orchestra and symphonic band.

MUS 3162. Composition III. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#), [MUS 2141](#), and [MUS 2162](#). Private study in applied composition, with emphasis on expansion of musical materials to larger forms. Seminar attendance is required. May be repeated for credit.

MUS 3163. Audio Technology II. (3-0) 3 Credit Hours.

Prerequisite: [MUS 3103](#) or consent of instructor. A continuation of Audio Technology I. Topics include preproduction, session planning, detailed topics in microphone selection and placement, editing and manipulation of recorded sound; advanced applications for equalization, compression, reverb, delay, and other effects; integration of software synthesis and sequencing in the audio workstation environment; automation and mixing. The course emphasizes hands-on application of learned concepts in a studio environment.

MUS 3172. Composition in Electronic Media. (0-0) 2 Credit Hours.

Prerequisite: [MUS 3123](#). Private study in composition, with an emphasis on such electroacoustic music techniques as digital sound synthesis and sampling, including an in-depth study of various computer applications in music. Seminar attendance is required. May be repeated for credit.

MUS 3213. Music in Civilization I. (3-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#), or their equivalents. A study of the development of musical styles and literatures from antiquity to 1750, with emphasis on the parallels and influences of art, architecture, literature, and theater on musical art. In addition, the adaptation and influences of non-Western traditions and styles on Western art music will be considered.

MUS 3223. Music in Civilization II. (3-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#), or their equivalents. A study of the development of musical styles and literatures from the Enlightenment to the present, with emphasis on the parallels and influences of art, architecture, literature, and theater on musical art. In addition, the adaptation and influences of non-Western traditions and styles on Western art music will be considered.

MUS 3232. Wind and Percussion Literature. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). A study of music for the concert band at all grade levels including method books for individual instruction. The course will focus on investigating repertoire for different levels of educational groups and/or individuals, from beginning band through more advanced wind ensembles.

MUS 3242. String Literature. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). A study of music literature and analysis at an advanced level in such topics as orchestral literature, both string and full orchestra, as well as chamber music and solo repertoire. The course will focus on investigating repertoire for different levels of educational groups and/or individuals, from beginning string orchestras through more advanced high school full symphonies. Leveled repertoire lists such as the PML will be considered and used as references.

MUS 3252. Topics in Music Literature. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). A study of music literature at an advanced level. May be repeated for credit when topics vary. (Formerly titled "Advanced Studies in Music Literature and Analysis.").

MUS 3263. Music Since 1900. (3-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). Designed to provide the student with a working knowledge of the music, terms and techniques of art music written from 1900 to the present day. The focus will be on specific compositions emphasizing questions of genre, form, and compositional style but also drawing upon the musicological literature to explore a variety of broader historical and cultural issues.

MUS 3272. Choral Literature. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). A survey of major choral composers, genres, works, and styles. Topics include Renaissance to Baroque Choral Literature, and Classical to 20th-Century Choral Literature. May be repeated for credit when topics vary.

MUS 3282. Vocal Literature. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). A study of vocal literature and stylistic considerations at an advanced level in such topics as the American Art Song, the German Lied and the French Mélodie.

MUS 3292. Operatic Literature. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). A study of the historical significance and literature of the opera form from its precursors through the present time.

MUS 3312. Music Technology for Music Educators. (2-1) 2 Credit Hours.

Enrollment is limited to music majors. Designed specifically for music studies majors. Topics include sequencing, notation, digital musical instruments, music instruction software, communication technologies, and digital media for the classroom. Students build online portfolios of technology projects for assessment and later use in job placement. (Formerly MUS 3311. Credit cannot be earned for both [MUS 3312](#) and MUS 3311.).

MUS 3322. Keyboard Literature. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). A study of keyboard literature and analysis at an advanced level. Topics include Piano, Organ, and Harpsichord solo and chamber literature. Course is taught at two levels, Level I and Level II. May be repeated for credit when topics or levels vary.

MUS 3332. Advanced Guitar Literature. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#), [MUS 2232](#), and [MUS 2162](#). Advanced study of stylistic development in concert guitar literature, including solo and concerto repertoire from the 18th to the 21st centuries. Designed for guitar performance majors, but open to all music majors interested in classical guitar.

MUS 3342. Wind and Percussion Literature for Performance Majors. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). A study of wind or percussion literature and analysis at an advanced level. Topics include Solo and Chamber Literature, and Orchestral and Wind Band Literature. May be repeated for credit when topics vary.

MUS 3352. String Literature for Performance Majors. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). A study of string literature and analysis at an advanced level, covering such elements as orchestral literature, chamber music, and solo repertoire for each individual student's instrument, recital planning and preparation, excerpt study and preparation for auditions, score reading, and sight-reading skills. Topics include Solo and Chamber Literature, and Orchestral Literature. May be repeated for credit when topics vary.

MUS 3401. Brass Instruments. (1-1) 1 Credit Hour.

Prerequisite: [MUS 1132](#) or the equivalent. Enrollment is limited to music majors. A study of playing techniques, selection of materials, and maintenance of brass instruments. Instrumental Music Laboratory attendance may be required.

MUS 3413. Psychology of Music. (3-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). An approach to the foundations of music from different disciplinary perspectives. Focuses on music in contemporary society; current research from anthropology,

biology, psychology, sociology, philosophy and aesthetics, economics, and ethics will be presented. (Formerly titled "Foundations of Music.").

MUS 3421. Vocal Techniques for Instrumental Majors. (1-1) 1 Credit Hour.

Enrollment is limited to music majors. A study of basic techniques of vocal production and vocal pedagogy, with a particular emphasis on voice mutation, voice classification, vocal health, the selection of appropriate repertoire and teaching of singing to young children, junior high and high school students. Designed to provide instrumental music majors with the opportunity to develop experience and familiarity with vocal music.

MUS 3431. Woodwind Instruments. (1-1) 1 Credit Hour.

Prerequisite: [MUS 1132](#) or the equivalent. Enrollment is limited to music majors. A study of the playing techniques and instructional methods of woodwind instruments. Instrumental Music Laboratory attendance may be required.

MUS 3453. Teaching Elementary Music. (3-0) 3 Credit Hours.

Prerequisites: [MUS 1122](#) and [MUS 1132](#). Enrollment is limited to music majors. A study of the essential elements of music as they relate to children. (Formerly titled "Music Studies I.").

MUS 3463. Teaching Secondary Vocal Music. (3-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2152](#). Enrollment is limited to music majors. Designed to develop skills necessary to teach secondary level vocal and general music. (Formerly titled "Music Studies II.").

MUS 3471. String Instruments. (1-1) 1 Credit Hour.

Prerequisite: [MUS 1132](#) or the equivalent. Enrollment is limited to music majors. A study of playing techniques, pedagogy, selection of materials, and maintenance of string instruments. Instrumental Music Laboratory attendance may be required.

MUS 3481. Percussion Instruments. (1-1) 1 Credit Hour.

Prerequisite: [MUS 1132](#) or the equivalent. Enrollment is limited to music majors. A study of playing techniques, pedagogy, selection of materials, and maintenance of percussion instruments. Instrumental Music Laboratory attendance may be required.

MUS 3491. Instrumental Techniques for Voice Majors. (1-1) 1 Credit Hour.

Enrollment is limited to music majors. A study of playing techniques, pedagogy, selection of materials, and maintenance of percussion, woodwind, brass, and string instruments. Designed to meet the needs of voice majors to have the opportunity to develop experience and familiarity with orchestral and band instruments. Instrumental Music Laboratory may be required.

MUS 3511. Diction for Singers. (1-1) 1 Credit Hour.

Enrollment is limited to music majors. An intensive study of language pronunciation as applied to performance. Topics include English, French, Italian, and German. May be repeated for credit.

MUS 3523. Music and the Internet. (3-0) 3 Credit Hours.

Prerequisites: [MUS 1122](#), [MUS 1132](#), [MUS 2263](#), or their equivalents. Enrollment is limited to music majors and minors. A study of the history and impact of the internet in the contemporary music world, with an emphasis on online alternatives to traditional structures of music distribution. Topics could include issues of copyright infringement, technological challenges to music ownership, and an overview of the development of online music.

MUS 3532. Music Performance-Private Instruction III. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#), and successful completion of two semesters of [MUS 2542](#) or placement by audition. Enrollment is limited to music majors. Private instruction for students desiring to or required to study the following instruments: bassoon, clarinet, contrabass, cornet, flute, classical guitar, electric bass, euphonium, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, or voice. Seminar attendance may be required. Concurrent enrollment in an assigned University ensemble is required. May be repeated for credit a maximum of three semesters.

MUS 3543. Music Performance-Private Instruction IV. (0-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#), and successful completion of two semesters of [MUS 2542](#) or placement by audition. Enrollment is limited to students accepted to upper-division standing in the Performance emphasis of the Bachelor of Music degree program. Private instruction at an advanced level in bassoon, clarinet, contrabass, cornet, euphonium, flute, classical guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, or voice. Seminar attendance may be required. Concurrent enrollment in an assigned University ensemble is required. May be repeated for credit a maximum of three semesters.

MUS 3583. Advanced Improvisation. (0-0) 3 Credit Hours.

Prerequisites: [MUS 2132](#) and [MUS 2183](#), or their equivalents. Private instruction in applied improvisation on a student's instrument, emphasizing melodic creativity and performance within standard literature as well as newly composed materials. May be repeated for credit. Laboratory attendance may be required.

MUS 3613. Entrepreneurship in Music. (3-0) 3 Credit Hours.

Prerequisite: [MUS 2263](#). Open to music majors and minors only. An advanced study of innovation in the business of music, including historical examination of social trends, technological advances, legal issues, and commercial practices that have influenced the development of the music industry in both the fine arts and popular culture. Strategies for career building in music business are explored with an emphasis on knowledge and skills that support entrepreneurial activities in music. (Formerly titled "American Music and Culture.").

MUS 3701. Chamber Singers. (0-3) 1 Credit Hour.

Prerequisite: Consent of instructor by audition. An ensemble specializing in the performance of outstanding chamber choral music from the Middle Ages to the present. Previous musical experience and reading ability required. The ensemble performs on and off campus. May be repeated for credit. (Formerly titled "Madrigal Singers.").

MUS 3711. Mariachi Ensemble. (0-3) 1 Credit Hour.

Open to all students by audition. Ensemble rehearses and performs the music repertoire of the Mexican folk mariachi tradition. May be repeated for credit.

MUS 3712. Concert Choir. (0-5) 2 Credit Hours.

Open to all students by audition. Select mixed ensemble open to all students by audition. This groups performs a variety of repertoire from all historical periods. May be repeated for credit.

MUS 3721. UTSA Men's Glee Club. (0-3) 1 Credit Hour.

Open to all male students without audition. No previous choral experience is necessary. Many types of music are studied, and the repertoire is moderate in difficulty. May be repeated for credit. (Formerly titled "UTSA Chorus.").

MUS 3722. Women's Choir. (0-5) 2 Credit Hours.

Open to all female students by audition. Select women's ensemble open to all students by audition. This group performs a variety of repertoire from all historical periods. May be repeated for credit.

MUS 3731. UTSA University Band. (0-3) 1 Credit Hour.

Open to all students by audition. Ensemble rehearses and performs standard repertoire of concert band music. May be repeated for credit.

MUS 3741. Chamber Orchestra. (0-3) 1 Credit Hour.

Open to all string students by audition. This ensemble will study, rehearse, and perform literature from the string orchestra repertoire. May be repeated for credit.

MUS 3742. UTSA Wind Ensemble. (0-5) 2 Credit Hours.

Open to all students by audition. The wind ensemble studies, rehearses, and performs the repertoire for various combinations of wind instruments. May be repeated for credit.

MUS 3752. UTSA Symphonic Band. (0-5) 2 Credit Hours.

Open to all students by audition. Ensemble performs standard repertoire for the full symphonic band. May be repeated for credit.

MUS 3762. UTSA Orchestra. (0-5) 2 Credit Hours.

Open to all students by audition. The UTSA Orchestra studies, rehearses, and performs literature from the standard orchestral repertoire. May be repeated for credit. (Formerly MUS 3761.).

MUS 3771. Jazz Ensemble. (0-3) 1 Credit Hour.

Open to all students by audition. Ensemble specializes in the performance of the various streams of jazz and other music appropriate to stage bands, jazz ensembles, and vocal jazz groups. May be repeated for credit.

MUS 3792. Lyric Theatre. (0-5) 2 Credit Hours.

Open to all students by audition. The study and performance of opera and other types of musical theater from the Baroque period to the present. May be repeated for credit. (Formerly titled "Opera Workshop.").

MUS 3802. UTSA Marching Band. (0-5) 2 Credit Hours.

Open to all students by audition. Rehearses and performs music and marching drills for appearances at public events on and off campus. Participation at all performances is required in addition to regularly scheduled rehearsals. May be repeated for credit. (Formerly MUS 3801.).

MUS 4113. Counterpoint. (0-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#), or their equivalents. Study of contrapuntal techniques of the 16th and 18th centuries. Topics include melodic line and motive, cadence, imitation, treatment of consonance and dissonance, species counterpoint, invention, canon, and fugue. Emphasis is placed on analysis and composition, with discussion of application to contemporary music. (Formerly titled "Composition with Contrapuntal Techniques.").

MUS 4142. Composition IV. (0-0) 2 Credit Hours.

Prerequisites: [MUS 2112](#), [MUS 2162](#), and [MUS 3162](#), or consent of instructor. Writing in the larger forms for small and large ensembles and electronic media. Seminar attendance is required. May be repeated for credit.

MUS 4153. Audio Technology III. (3-0) 3 Credit Hours.

Prerequisite: [MUS 3163](#) or consent of instructor. Advanced recording and mixing techniques, master preparation, delivery formats, synchronization, complex session planning and management, the role and responsibilities of the producer, large-scale project planning and budgeting. Students are required to complete several projects to a high professional standard.

MUS 4163. Topics in Music Theory. (3-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#), or their equivalents. Specialized instruction in advanced music theory. Topics include Schenkerian Analysis, advanced pitch-class set theory, pedagogy of music theory, analysis and performance, and genre, period and/or composer studies. May be repeated for credit when topics vary.

MUS 4183. Jazz Composition and Arranging. (0-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#), [MUS 2162](#), and [MUS 2183](#), or their equivalents. Private study in applied jazz composition and arranging, emphasizing writing for large jazz ensemble and studio orchestra. May be repeated for credit.

MUS 4263. Topics in Music History. (3-0) 3 Credit Hours.

Prerequisites: [MUS 2112](#), [MUS 2162](#), [MUS 3213](#), and [MUS 3223](#). A study of works and styles appropriate to the stylistic period of the topic. Topics include Middle Ages; Renaissance; Baroque Period; Classic Period; Romantic Period; Twentieth Century; and Music Practices and Styles. May be repeated for credit when topics vary. Topics may be taken concurrently.

MUS 4433. Multimedia Production. (3-0) 3 Credit Hours.

An overview of theories, skills, and hardware and software components of current multimedia production. Topics include digital image editing, digital sound editing, vector graphics and animation, multimedia integration, media Web page development, and interactive programming in actionscript and JavaScript. Aspects of artistic design are also introduced. Emphasis is placed on hands-on development of useful, effective products for instructional and commercial applications.

MUS 4452. Marching Band Techniques. (2-1) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). A study of the repertoire, materials, instructional methods, administration, and maneuvers used by marching bands.

MUS 4531. Vocal Pedagogy I. (1-1) 1 Credit Hour.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). Survey of techniques, practices, and materials related to the development of teaching of voice, including anatomy, physiology, acoustics, and the development of the human voice. (Formerly titled "Music Pedagogy I.").

MUS 4532. Music Pedagogy. (2-1) 2 Credit Hours.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). Survey of techniques, practices, and materials related to the development and execution of music instruction. Review of materials for beginning, intermediate, and advanced students. Topics include Strings, Brass, Woodwinds, Percussion, Guitar, Piano, Organ, and Instrumental Ensemble. May be repeated for credit. Instrumental Ensemble topic requires successful completion of [MUS 3401](#) and [MUS 3431](#). Depending upon topic, Instrumental Music Laboratory attendance may be required.

MUS 4541. Vocal Pedagogy II. (1-1) 1 Credit Hour.

Prerequisites: [MUS 2112](#) and [MUS 2162](#). Practical application of techniques, practices, and materials related to the development and teaching of voice, including repertoire selection, supervised teaching,

applying vocal pedagogy principles to group settings, and introducing students to voice technology. (Formerly titled “Music Pedagogy II.”).

MUS 4543. Music Performance-Private Instruction V. (0-0) 3 Credit Hours.

[MUS 2112](#) and [MUS 2162](#), successful completion of two semesters of [MUS 3543](#) or the equivalent, and placement by audition. Enrollment is limited to students accepted to upper-division standing in the Performance emphasis of the Bachelor of Music degree program. Private instruction at an advanced level in bassoon, clarinet, contrabass, cornet, euphonium, flute, classical guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, or voice. Seminar attendance may be required. Concurrent enrollment in an assigned University ensemble is required. May be repeated for credit a maximum of three semesters. (Formerly MUS 4544.).

MUS 4552. Supervised Student Teaching. (2-1) 2 Credit Hours.

Prerequisite: Successful completion of [MUS 4532](#) or consent of instructor. Guided teaching of beginner and intermediate level students through supervised scenarios designed by the instructor. This course offers students the opportunity to apply teaching techniques and focus on problem-solving strategies within private or group settings. May be repeated for credit.

MUS 4561. Senior Recital. (0-0) 1 Credit Hour.

Prerequisites: [MUS 2112](#), [MUS 2162](#), and consent of instructor. Concurrent enrollment in [MUS 4543](#) is required of students in the Performance emphasis; concurrent enrollment in [MUS 4142](#) is required of students selecting the Composition emphasis. A public performance presented as a culmination of the student's private instruction.

MUS 4581. Chamber Music. (0-0) 1 Credit Hour.

Open to all music majors by audition. Designed to offer students the opportunity to gain knowledge of chamber music literature through performance of select repertoire. Instruction in brass ensemble, woodwind ensemble, percussion ensemble, string ensemble, mixed ensemble, jazz combo, vocal ensemble and chamber opera. May be repeated for credit.

MUS 4803. Seminar in Music Marketing. (3-0) 3 Credit Hours.

Prerequisites: [MUS 2263](#), [MUS 3613](#), upper-division standing in Music Marketing, or consent of instructor. An intensive, project-based study of music marketing oriented toward students' specific career interests in the music business and/or arts management.

MUS 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MUS 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MUS 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

MUS 4933. Music Marketing Internship. (0-0) 3 Credit Hours.

Prerequisites: [MKT 3013](#), [MUS 3613](#), [MUS 4803](#), grade point average of 2.5 or higher, and permission in writing from the instructor. The opportunity to gain knowledge through experience in the music industry under the supervision of private business professionals. Opportunities will be developed in consultation with the faculty advisor and appropriate business professionals.

MUS 4951. Special Studies in Music. (1-0) 1 Credit Hour.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

MUS 4952. Special Studies in Music. (2-0) 2 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

MUS 4953. Special Studies in Music. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

MUS 4961. Music Technology Project. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing from the instructor and Certificate Program Director. A guided project in audio or multimedia. Students will have the opportunity to create a product that brings together knowledge of their major discipline with their specific skills in music technology.

Non-profit Management (NPO)**NPO 3003. Fundraising in Nonprofit Agencies. (3-0) 3 Credit Hours.**

Examines methods, techniques, and directed experience in fundraising for nonprofit agencies. Explores relationships with umbrella organizations, government funding, grantsmanship, budget control, and accountability.

NPO 3013. Introduction to Nonprofit Agencies. (3-0) 3 Credit Hours.

An overview of the historical background, development, role, auspices, organization, and purposes of nonprofit agencies. Special emphasis is placed on structure, program, organizational management, planning and stewardship, fundraising, community building, volunteer services, and problems which confront these organizations. [NPO 3013](#) should be taken in the student's first semester in the minor. (Same as [PAD 3033](#). Credit cannot be earned for both [NPO 3013](#) and [PAD 3033](#).)

NPO 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisite: Prior approval required. Independent Study Course Form (available in the department or college advising center) signed by the instructor, the student's undergraduate advisor, Department Chair, and Dean of the College of Public Policy. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated once for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

NPO 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisite: Prior approval required. Independent Study Course Form (available in the department or college advising center) signed by the instructor, the student's undergraduate advisor, Department Chair, and Dean of the College of Public Policy. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated once for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

NPO 4933. Internship in Nonprofit Management. (0-0) 3 Credit Hours.

Prerequisite: Prior approval of Nonprofit Management Internship Coordinator. Supervised experience within selected not-for-profit agencies. Students must complete 150 clock hours of internship for the minor. May be repeated for credit, but not more than 6 semester credit hours may be earned through the internship.

NPO 4936. Internship in Nonprofit Management. (0-0) 6 Credit Hours.

Prerequisite: Prior approval of Nonprofit Management Internship Coordinator. Supervised experience within selected not-for-profit agencies. Students must complete 150 clock hours of internship for the minor. May be repeated for credit, but not more than 6 semester credit hours may be earned through the internship.

NPO 4953. Special Studies in Nonprofit Management. (3-0) 3 Credit Hours.

An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated once for credit, but not more than 6 semester credit hours of special study, regardless of discipline, will apply to a bachelor's degree.

Nutrition and Dietetics (NDT)**NDT 2043. Introduction to Nutritional Sciences. (3-0) 3 Credit Hours.**

Basic concepts related to the classification and functions of nutrients; the process of digestion, absorption, transport, utilization, and storage of nutrients in humans and the interaction between diet and health. (Credit cannot be earned for both [NDT 2043](#) and [BIO 2043](#).)

NDT 3191. Applied Food Science Practicum. (0-3) 1 Credit Hour.

Corequisite: Concurrent enrollment in [NDT 3313](#) or permission of faculty advisor. The application of concepts related to the chemical, physical, sensory, and nutritional properties of food in menu planning, food preparation, and recipe modification.

NDT 3203. Introduction to Nutrition and Dietetics Careers. (3-0) 3 Credit Hours.

General overview of nutrition and dietetics as a profession, including career opportunities, scope of practice, credentialing, code of ethics, and collaboration with other disciplines. Self-directed modules on medical terminology, word roots, prefixes and suffixes will be integrated into the course content.

NDT 3292. Food Production Practicum. (0-6) 2 Credit Hours.

Corequisite: Concurrent enrollment in [NDT 3353](#) or permission of faculty advisor. Practicum related to the procurement, preparation, and delivery of food in large foodservice operations.

NDT 3313. Applied Food Science. (3-0) 3 Credit Hours.

Prerequisites: [NDT 2043](#) or equivalent and Microbiology. Concurrent enrollment in [NDT 3191](#) is recommended. Concepts related to the chemical, physical, sensory, and nutritional properties of food in menu planning, food preparation, and recipe modification.

NDT 3323. Nutrition and Health Assessment. (3-0) 3 Credit Hours.

Prerequisite: [NDT 2043](#) or equivalent. Methods, tools, and interpretation of data in assessing the nutritional status of individuals including dietary, anthropometric, biochemical, and clinical assessment, as well as other measurements of health in individuals and the community.

NDT 3333. Nutrition Counseling and Education. (3-0) 3 Credit Hours.

Prerequisite: [NDT 2043](#) or equivalent. Discussion of theories of learning and behavior modification, models and techniques, communication skills, evaluation methods, and cultural competence in nutrition counseling and education; and application of concepts to facilitate behavioral change.

NDT 3343. Nutrition in the Life Span. (3-0) 3 Credit Hours.

Prerequisites: [NDT 2043](#) or equivalent and Human Physiology. Nutritional needs during various stages of the lifecycle as influenced by physiologic, cultural, and environmental factors.

NDT 3353. Production and Foodservice System Management I. (3-0) 3 Credit Hours.

Prerequisite: [NDT 3313](#) or equivalent. Concurrent enrollment in [NDT 3292](#) is recommended. Principles related to the menu planning, food sanitation and safety, procurement, production, marketing, and materials management in foodservice operations.

NDT 3413. Advanced Human Nutrition. (3-0) 3 Credit Hours.

Prerequisite: [NDT 2043](#) or equivalent and Biochemistry. Advanced discussion of nutrient structure, function and interaction, metabolic pathways, and regulation and integration of metabolism.

NDT 4091. Community Service Practicum. (0-3) 1 Credit Hour.

Corequisite: [NDT 4333](#) is recommended or with permission of faculty advisor. Application of learned strategies in meaningful community service through collaborative tasks performed at various community programs. Service learning activities are aimed at enriching the life experiences of students through civic responsibility and community outreach.

NDT 4191. Nutrition Care Process Practicum. (0-3) 1 Credit Hour.

Corequisite: Concurrent enrollment in [NDT 4353](#) is required. A problem-based approach to dietetics practice using case simulations and studies; application of basic nutritional assessment skills, nutritional diagnosis, intervention, and monitoring in different settings; practice skills in counseling and nutrition education.

NDT 4313. Production and Food Service System Management II. (3-0) 3 Credit Hours.

Prerequisites: [NDT 3353](#) and [NDT 3292](#) or equivalent. Theories and principles related to the foodservice, systems management including leadership, decision-making, human resources, and financial management of operations.

NDT 4323. Medical Nutrition Therapy I. (3-0) 3 Credit Hours.

Prerequisites: [NDT 3323](#) and [NDT 3333](#) or equivalent. Pathophysiology and the application of the nutritional care process in the treatment of simple human diseases and conditions, part 1.

NDT 4333. Community Nutrition. (3-0) 3 Credit Hours.

Nutrition-related issues in public health, various community resources, agencies, and programs involved in health promotion and disease prevention.

NDT 4343. Nutrition in Disease Prevention and Health Promotion. (3-0) 3 Credit Hours.

Prerequisites: NDT 243 and [NDT 4333](#). An evidence-based analysis as it relates to diet/nutrition in the prevention of chronic diseases; and fundamental concepts in the promotion of health among individuals and groups.

NDT 4353. Medical Nutrition Therapy II. (3-0) 3 Credit Hours.

Prerequisites: [NDT 4323](#). Continuation of Advanced Medical Nutrition I; and review of the pathophysiology and the application of the nutritional care process in the treatment of more complex human disease and conditions.

NDT 4363. Current Issues in Nutrition. (3-0) 3 Credit Hours.

Prerequisites: must have senior or graduate standing. In-depth discussion and analysis of emerging trends, concepts, and controversies in nutritional sciences, including application of evidence-based principles in the discussion.

NDT 4951. Independent Study in Nutrition and Dietetics. (0-0) 1 Credit Hour.

An exploration of topics of interest to the student in Nutrition and Dietetics. Students work under the close supervision of a faculty member to conduct research, intense study, or a project related to the selected topic. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

NDT 4952. Independent Study in Nutrition and Dietetics. (0-0) 2 Credit Hours.

An exploration of topics of interest to the student in Nutrition and Dietetics. Students work under the close supervision of a faculty member to conduct research, intense study, or a project related to the selected topic. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

NDT 4953. Independent Study in Nutrition and Dietetics. (0-0) 3 Credit Hours.

An exploration of topics of interest to the student in Nutrition and Dietetics. Students work under the close supervision of a faculty member to conduct research, intense study, or a project related to the selected topic. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

Philosophy (PHI)**PHI 1043. Critical Thinking. (3-0) 3 Credit Hours. (TCCN = PHIL 2303)**

Introduces students to principles of informal reasoning, especially in practical contexts. Topics may include: forms of reasoning, decision making, organizing data, forming strategies, giving reasons, inductive reasoning, informal fallacies, and obstacles to sound thinking (perceptual, cultural, emotional, intellectual, and expressive) may also be addressed. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

PHI 2013. Basic Philosophical Problems. (3-0) 3 Credit Hours. (TCCN = PHIL 1301)

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Introduction to philosophy through general problems in metaphysics, epistemology, ethics, political philosophy, and philosophy of religion; emphasis on the writings of philosophers of various historical periods, especially as these doctrines apply to contemporary problems.

PHI 2023. Introduction to Ancient Philosophy. (3-0) 3 Credit Hours. (TCCN = PHIL 2316)

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Introduction to ancient philosophy through the study of Plato, Aristotle, Epicurus, and others; emphasis on the Greek contribution to the moral and political ideas of the Western world. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

PHI 2033. Introduction to Early Modern Philosophy. (3-0) 3 Credit Hours. (TCCN = PHIL 2317)

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Introduction to early modern philosophy from the Renaissance to the Enlightenment through the study of Descartes, Locke, Berkeley, Hume, Spinoza, Leibniz, Kant or others. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

PHI 2043. Introductory Logic. (3-0) 3 Credit Hours. (TCCN = PHIL 2303)

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Introduces students to some of the modern formal systems used to distinguish between good and bad forms of reasoning in either or both of the deductive or inductive realms. Topics may include: translation from natural to formal languages, probability theory, scientific inductive reasoning, Bayesian reasoning, propositional calculus, predicate calculus, other kinds of formal deductive reasoning (e.g., modal, deontic or belief logics), natural deduction and/or other formal proof methods, problems in philosophical logic (denoting, elementary meta-logic, consistency and completeness of formal systems, elementary model theory etc.). May be applied toward the Core Curriculum requirement in the Component Area Option.

PHI 2063. Philosophy of Law. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of the major issues in the philosophical foundations of law. Topics may include the nature of law, the interpretation of law, the limits of legal regulation, the nature of the obligation to obey the law, the justification of punishment, and a variety of ethical issues that arise in legal contexts. Recommended for pre-law students.

PHI 2073. Philosophy of Art. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of major philosophical theories of art, beauty, and aesthetic judgment, with emphasis on such problems as form and structure, communication in art, and meaning in aesthetic judgment. May be applied toward the Core Curriculum requirement in Creative Arts. (Formerly PHI 3053. Credit cannot be earned for both [PHI 2073](#) and PHI 3053.).

PHI 2123. Contemporary Moral Issues. (3-0) 3 Credit Hours. (TCCN = PHIL 2306)

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of major moral theories and how they afford a rational approach to specific moral issues and a rational basis for resolving moral conflict. Emphasis may be placed on medical, social, engineering and business ethics. May not be repeated for credit. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture. (Formerly titled "Moral Issues in Contemporary America.").

PHI 3013. Philosophy of Religion. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of traditional religious beliefs and such concepts as faith and knowledge, mysticism and theology, the existence and nature of God, and the relation of religion to experience and social life.

PHI 3033. Philosophy of Science. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of major issues in the philosophical foundations of the natural and social sciences, including scientific explanation, laws and theories, probability and induction, and the relation of scientific inquiry to the Western philosophical tradition.

PHI 3073. Asian Philosophy. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of the philosophical and religious traditions of the East, with emphasis on various schools such as Vedanta, Buddhism, Confucianism, and Taoism.

PHI 3213. Ethics. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of ethical theory and of the nature and scope of ethical discourse, with emphasis on the concepts of good, human happiness, self-realization, virtue, duty, responsibility, and the means-ends relationship. Reading will include selected classical and contemporary texts.

PHI 3223. Approaches to Knowledge and Reality. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of the interrelations between the theory of knowledge and theory of reality, with emphasis on the nature and scope of human knowledge, sensation and understanding, truth and error, change and causality, possibility and actuality, and meaning and existence. Reading will include selected classical and contemporary texts.

PHI 3303. Nineteenth-Century Philosophy. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of some of the major figures and topics in nineteenth-century philosophy and its intellectual background, including (but not limited to) these figures: Kant, Maimon, Bentham, Fichte, Schelling, Schopenhauer, Hegel, Kierkegaard, Marx, Mill, Nietzsche, Peirce, James, Dewey, Emerson, Thoreau; and these topics: philosophical aspects of German romanticism, idealism, utilitarianism, materialism, pragmatism, transcendentalism.

PHI 3343. Issues and Movements in Contemporary Philosophy. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Sustained study of one or more specific issues or movements from the end of the nineteenth century to the present day, such as philosophy of language, philosophy of mind, epistemology, political philosophy, theoretical or applied ethics, phenomenology, existentialism, hermeneutics, or postmodernism. May be repeated for credit when topics vary. (Formerly titled "Issues and Movements in Twentieth-Century Philosophy.")

PHI 3403. Philosophy in Literature. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. Examination of important philosophical questions, such as personal identity, the nature of moral value, and the limits of knowledge, as reflected in world literature, including such genres as fiction, drama, and poetry.

PHI 4013. Studies in Individual Philosophers. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Examination of the works of an individual philosopher or of several philosophers studied in relationship to one another. May be repeated for credit when topics vary.

PHI 4113. Contemporary Analytic Philosophy. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. An in-depth examination of the major trends in the development of the Anglo-American philosophical tradition since its inception at the end of the nineteenth century up to the present day, including the early analysts, the development of logical positivism, and the emergence of nonformal linguistic analysis.

PHI 4123. Contemporary Continental Philosophy. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. A sustained treatment of the major trends in Continental European philosophy since the end of the nineteenth century up to the present day, including movements such as phenomenology, existentialism, hermeneutics, and postmodernism; emphasis on historical development.

PHI 4333. Philosophy of Language. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. A critical examination of traditional problems dealing with the nature and function of language. Representative issues include analyticity, reference, proper names, metaphorical meaning, and speech-act theory.

PHI 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

PHI 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

PHI 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

PHI 4953. Special Studies in Philosophy. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

PHI 4973. Seminar for Philosophy Majors. (3-0) 3 Credit Hours.

Prerequisite: 12 upper-division semester credit hours in philosophy or consent of the instructor. An advanced investigation of a single author, text, issue, or problem. Primary emphasis on supervised research on various aspects of the topic. May be repeated once for credit when topics vary.

PHI 4991. Honors Thesis. (0-0) 1 Credit Hour.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee. Supervised research and preparation of an Honors Thesis for the purpose of earning Philosophy Honors. May be repeated once with advisor approval.

PHI 4992. Honors Thesis. (0-0) 2 Credit Hours.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee. Supervised research and preparation of an Honors Thesis for the purpose of earning Philosophy Honors. May be repeated once with advisor approval.

PHI 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: Consent of instructor and Department Scholarship and Honors Committee. Supervised research and preparation of an Honors Thesis for the purpose of earning Philosophy Honors. May be repeated once with advisor approval.

Physics (PHY)**PHY 1013. Universes. (3-0) 3 Credit Hours. (TCCN = PHYS 1310)**

Prerequisite: [MAT 1023](#) or [MAT 1073](#) or consent of instructor. This course is an introduction to contemporary physics and cosmology. The goal is to study some of the profound discoveries in fundamental physics made during the 20th century, and how they have shaped our modern conception of the universe and of our place in it. Topics discussed include Einstein's theories of special and general relativity, quantum physics, modern cosmology (including the very early universe), and the standard model of elementary particles and forces. May not be applied toward the B.S. degree in Physics without prior written approval of the department. May apply toward the Core Curriculum requirement in Life and Physical Sciences.

PHY 1603. Algebra-based Physics I. (3-0) 3 Credit Hours. (TCCN = PHYS 1301)

Prerequisite: [MAT 1023](#) or [MAT 1073](#) completed with a grade of "C-" or better. The first of a two-part, algebra-based introduction to physics for biology and other majors that do not require calculus-based physics. Topics include mechanics, thermodynamics, vibrations and waves. Concurrent enrollment in [PHY 1611](#) is recommended.

PHY 1611. Algebra-based Physics I Laboratory. (1-4) 1 Credit Hour. (TCCN = PHYS 1101)

Prerequisite: Completion of or concurrent enrollment in [PHY 1603](#). Laboratory accompanies [PHY 1603](#); uses modern data acquisition and analysis tools to study the classic physics experiments that underlie the concepts discussed in [PHY 1603](#).

PHY 1623. Algebra-based Physics II. (3-0) 3 Credit Hours. (TCCN = PHYS 1302)

Prerequisite: [PHY 1603](#) completed with a grade of "C-" or better. The second of a two-part, algebra-based introduction to physics for biology and other majors that do not require calculus-based physics. Topics include electricity, magnetism, optics, relativity, and quantum physics. Concurrent enrollment in [PHY 1631](#) is recommended.

PHY 1631. Algebra-based Physics II Laboratory. (1-4) 1 Credit Hour. (TCCN = PHYS 1102)

Prerequisites: [PHY 1611](#) completed with a grade of "C-" or better and completion of or concurrent enrollment in [PHY 1623](#). Laboratory accompanies [PHY 1623](#); uses modern data acquisition and analysis tools to study the classic physics experiments that underlie the concepts discussed in [PHY 1623](#).

PHY 1943. Physics for Scientists and Engineers I. (3-1) 3 Credit Hours. (TCCN = PHYS 2325)

Prerequisites: [MAT 1193](#) or [MAT 1214](#) completed with a grade of “C-” or better; completion of or concurrent enrollment in [MAT 1224](#) (if student took [MAT 1214](#)) or [STA 1403](#) (if student took [MAT 1193](#)) is required. The first of a two-part, calculus-based introduction to classical physics, designed for physical sciences, mathematics, and engineering majors. Topics include mechanics and Newton’s laws, conservation laws, gravitation, rotational motion and rigid bodies, oscillations and waves. Concurrent enrollment in [PHY 1951](#) is recommended. Classes meet weekly for three hours of lecture and one hour of recitation. May apply toward the Core Curriculum requirement in Life and Physical Sciences. (Formerly PHY 1904. Same as PHY 1903. Credit cannot be earned for more than one of the following: PHY 1903, PHY 1904, or [PHY 1943](#).)

PHY 1951. Physics for Scientists and Engineers I Laboratory. (1-4) 1 Credit Hour.

Prerequisite: Completion of, with a grade of “C-” or better, or concurrent enrollment in [PHY 1943](#). Laboratory to accompany [PHY 1943](#); uses modern data acquisition and analysis tools to study the classic physics experiments that underlie the concepts discussed in [PHY 1943](#). (Credit cannot be earned for both [PHY 1951](#) and PHY 1911.)

PHY 1963. Physics for Scientists and Engineers II. (3-1) 3 Credit Hours. (TCCN = PHYS 2326)

Prerequisites: [PHY 1943](#) and [MAT 1224](#) (or [MAT 1193](#) and [STA 1403](#)) completed with grades of “C-” or better. The second of a two-part, calculus-based introduction to classical physics, designed for physical sciences, mathematics, and engineering majors. Topics include an introduction to thermal physics, electricity and magnetism, fundamentals of circuits, electromagnetic induction, AC circuits, electromagnetic waves, and Maxwell’s equations. Concurrent enrollment in [PHY 1971](#) is recommended. Classes meet weekly for three hours of lecture and one hour of recitation. May apply toward the Core Curriculum requirement in Life and Physical Sciences. (Formerly PHY 1924. Same as PHY 1923. Credit cannot be earned for more than one of the following: PHY 1923, PHY 1924, or [PHY 1963](#).)

PHY 1971. Physics for Scientists and Engineers II Laboratory. (1-4) 1 Credit Hour.

Prerequisites: [PHY 1951](#) completed with a grade of “C-” or better and completion of or concurrent enrollment in [PHY 1963](#). Laboratory to accompany [PHY 1963](#); uses modern data acquisition and analysis tools to study the classic physics experiments that underlie the concepts discussed in [PHY 1963](#). (Credit cannot be earned for both [PHY 1971](#) and PHY 1931.)

PHY 2103. Modern Physics. (3-0) 3 Credit Hours.

Prerequisites: [PHY 1963](#), [MAT 2214](#) (completed with a grade of “C-” or better), and completion of or concurrent enrollment in [PHY 3203](#), or consent of instructor. Topics include special relativity, Planck’s Radiation Law, elements of quantum mechanics, atomic and molecular structures, spectra, the atomic nucleus, nuclear reactions, and an introduction to elementary particles. (Formerly PHY 3103. Credit cannot be earned for both [PHY 2103](#) and PHY 3103.)

PHY 2111. Modern Physics Laboratory. (1-4) 1 Credit Hour.

Prerequisites: [PHY 1963](#), [PHY 1971](#), and completion of, with a grade of “C-” or better, or concurrent enrollment in [PHY 2103](#). Laboratory to accompany [PHY 2103](#); Uses modern data acquisition and analysis tools to study the classic physics experiments that underlie the concepts discussed in [PHY 2103](#).

PHY 2823. Mathematical Physics I. (3-0) 3 Credit Hours.

Prerequisites: [MAT 2214](#) and [PHY 1963](#), or consent of instructor. Topics may include vector analysis, introduction to complex variables, Fourier series, ordinary differential equations, linear algebra, and selected application to problems in mechanics and electromagnetic theory. (Formerly PHY 3823. Credit cannot be earned for both [PHY 2823](#) and PHY 3823.)

PHY 3003. Current Research Topics in Physics. (3-0) 3 Credit Hours.

Prerequisites: [PHY 1623](#) and [PHY 1631](#), PHY 1923 and PHY 1931, or [PHY 1963](#) and [PHY 1971](#), completed with a grade or “C-” or better. This course provides students the opportunity to acquire knowledge in contemporary physics through the study and class discussions of selected topics and recent articles. Subjects may include one or more of the following: special and general relativity, elements of quantum mechanics, atomic and molecular physics, solid state, biophysics, nuclear physics, introduction to elementary particles, astrophysics and cosmology, etc. May not be applied toward the B.S. or B.A. degree in Physics without prior written approval of the department.

PHY 3143. Introduction to Computational Physics. (3-0) 3 Credit Hours.

Prerequisites: [PHY 2103](#), [PHY 2823](#), and [PHY 3203](#), or consent of instructor. This course introduces the computer techniques used to solve (and improve the understanding of) physical problems that may be intractable by the standard “pencil and paper” analytical approach. Topics may include numerical solution of differential equations, numerical integration, eigenvalue problems, use of computer algebra systems such as Mathematica or Maple, Monte Carlo methods, computer visualization of physical problems, etc. Examples are taken from classical and quantum mechanics, electrodynamics, statistical mechanics, and solid state physics. May be applied toward a B.S. degree in Physics with approval of the physics advisor. (Formerly titled “Computer Visualization of Physics.”).

PHY 3203. Classical Mechanics I. (3-0) 3 Credit Hours.

Prerequisites: [PHY 1963](#) and completion of, with a grade of “C-” or better, or concurrent enrollment in [PHY 2823](#), or consent of instructor. Topics include Newtonian mechanics, oscillations, central-force motion, gravitation, Hamiltonian and Lagrangian dynamics.

PHY 3293. Thermal Physics. (3-0) 3 Credit Hours.

Prerequisites: [PHY 1963](#) and [PHY 2823](#), or consent of instructor. Topics include fundamentals of thermodynamics: entropy, free energy, phase transitions, and thermodynamic potentials; equilibrium, Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac distribution functions; derivation of macroscopic equilibrium thermodynamics from statistical mechanics.

PHY 3313. Materials Physics. (3-0) 3 Credit Hours.

Prerequisite: [PHY 2103](#) or consent of instructor. Topics covered include crystal structure and band theory, density functional theory, a survey of properties of metals and semiconductors, phonons, electron-phonon interaction and superconductivity. (Formerly titled “Solid State Physics.”).

PHY 3343. Advanced Physics Laboratory. (0-6) 3 Credit Hours.

Prerequisites: [PHY 1971](#), [PHY 2103](#) and [PHY 2111](#). This course provides students majoring in physics the opportunity to acquire knowledge in advanced experimental techniques gained through actual participation in real-world physics research labs.

PHY 3423. Electricity and Magnetism. (3-0) 3 Credit Hours.

Prerequisites: [PHY 1963](#), [PHY 2823](#), and completion of (with a grade of “C-” or better) or concurrent enrollment in [MAT 3613](#), or consent of instructor. Topics include vector calculus, electrostatics, magnetostatics, Faraday’s Law, and solutions to Laplace’s equation.

PHY 3443. Modern Optics. (3-0) 3 Credit Hours.

Prerequisite: [PHY 3423](#) or consent of instructor. Topics include reflection, refraction, absorption, polarization, and diffraction of light, filters, lasers, nonlinear properties, and Fourier optics.

PHY 3453. Lasers: Theory and Applications. (3-0) 3 Credit Hours.

Prerequisite: [PHY 2103](#) or consent of instructor. Topics include basic principles and designs of lasers: Einstein A and B coefficients; semiclassical laser theory; the phase-coherent nature of the stimulated emission process; and laser efficiency. Various applications of lasers, such as laser-induced fluorescence, light wave communications, holography, surgery, and laser fusion.

PHY 3513. Electrodynamics. (3-0) 3 Credit Hours.

Prerequisites: [PHY 2823](#) and [PHY 3423](#), or consent of instructor. Continuation of the material started in [PHY 3423](#). Topics include Maxwell's equations, electromagnetic waves, wave guides, and radiation from accelerated charges.

PHY 3583. Mathematical Physics II. (3-0) 3 Credit Hours.

Prerequisite: [PHY 2823](#) or consent of instructor. Topics may include series solutions of differential equations, partial differential equations of physics, special functions, integral transforms and introduction to tensor calculus. Applications may include topics in classical and quantum mechanics, electrostatics and electrodynamics. (Formerly PHY 4823. Credit cannot be earned for both [PHY 3583](#) and PHY 4823.).

PHY 3603. Cosmology. (3-0) 3 Credit Hours.

Prerequisites: [PHY 1963](#) and [PHY 2103](#), or consent of instructor. This course is an introduction to physical cosmology. Topics include large-scale structure, expansion and age of the universe; non-Euclidean spaces, big bang cosmology, baryogenesis, nucleosynthesis, and cosmic microwave background radiation; particle physics and inflationary cosmology. (Formerly PHY 4033. Credit cannot be earned for both [PHY 3603](#) and PHY 4033.).

PHY 4013. Relativity: Special and General. (3-0) 3 Credit Hours.

Prerequisites: [PHY 2823](#) and [PHY 3203](#), or consent of instructor. Topics include special relativity: Lorentz transformations, four-vectors, geometry of flat space-time, relativistic dynamics. General relativity: Principle of equivalence, introduction to tensor calculus, Einstein's field equations, Schwarzschild's solution, black holes. Introduction to cosmology.

PHY 4203. Classical Mechanics II. (3-0) 3 Credit Hours.

Prerequisite: [PHY 3203](#) or consent of instructor. Topics may include nonlinear oscillations and chaos, systems of particles and collisions, non-inertial frames, rigid bodies, coupled oscillations, continuous systems and waves.

PHY 4263. Quantum Mechanics I. (3-0) 3 Credit Hours.

Prerequisites: [PHY 2103](#), [PHY 3203](#), [MAT 2233](#), and completion of or concurrent enrollment in [PHY 3583](#), or consent of instructor. Topics include the time-independent Schrodinger equation; operator methods, and the postulates of quantum mechanics; one-dimensional potentials; quantum harmonic oscillator; angular momentum and spin; entanglement and its applications; quantum mechanics in three dimensions and the hydrogen atom.

PHY 4423. Quantum Mechanics II. (3-0) 3 Credit Hours.

Prerequisite: [PHY 3583](#) and [PHY 4263](#), or consent of instructor. Topics include identical particles; time-independent perturbation theory; WKB approximation, time-dependent perturbation theory, the variational principle; the adiabatic approximation and Berry's phase; scattering.

PHY 4563. Biophotonics. (3-0) 3 Credit Hours.

Prerequisite: [PHY 3443](#) or consent of instructor. Topics including basic concepts of optical radiation interacting with biological materials will be covered. Discussion of how the unique properties of photons are exploited to understand the biological structure and its function. Photon absorption and emission in

biological materials will be considered to explain their applications, including optical imaging as a noninvasive diagnosis tool, photodynamic therapy (PDT), etc.

PHY 4603. Crystallography and Materials Characterization. (3-0) 3 Credit Hours.

Prerequisite: [PHY 2103](#) or consent of instructor. This course will describe the basics of crystal description and will discuss the characterization methods such as x-ray electron and neutron diffraction.

PHY 4623. Nanotechnology. (3-0) 3 Credit Hours.

Prerequisite: [PHY 2103](#) or consent of instructor. This course will describe the fundamentals of nanotechnology, including properties of matter at the nanometric size.

PHY 4653. Introduction to Micro and Nanotechnology. (3-0) 3 Credit Hours.

Prerequisite: [PHY 3423](#) or consent of instructor. Survey of micro and nanofabrication techniques, scaling laws, mechanical, optical, electrical, magnetic and thermal transducers, microfluidic applications, and nanostructures. Structures produced in the laboratory include microactuators, nanoparticles and microfluidics. This course differs from [PHY 4623](#) in that it is oriented more toward fabrication techniques, rather than fundamentals. (Credit cannot be earned for both [PHY 4653](#) and [EE 4523](#).)

PHY 4703. Renewable Energy: Solar Energy Convertors. (3-0) 3 Credit Hours.

Prerequisite: [PHY 2103](#) or consent of instructor. Topics include physics of photovoltaic cells, semiconductors, solar energy convertors, thin film solar cells, nanostructures for solar energy conversion, dye-sensitized photovoltaic cells, fuels from water and sunlight, strategies for high efficiency.

PHY 4833. Molecular Biophysics. (3-0) 3 Credit Hours.

Prerequisite: [PHY 2103](#) or consent of instructor. Topics include interaction between molecules, principles of thermodynamics (enthalpy, entropy, free energy) applied to biomolecules, Brownian motion and diffusion of molecules, structure of proteins, and principles of quantum mechanics. Biophysical techniques: absorption spectroscopy, transient absorption, fluorescence spectroscopy, fluorescence lifetime, FTIR spectroscopy, linear and circular dichroism, x-ray crystallography, and atomic force microscopy.

PHY 4843. Condensed Matter Theory. (3-0) 3 Credit Hours.

Prerequisites: [PHY 3313](#) and [PHY 4263](#), or consent of instructor. This course offers an introduction to the basic concepts of the quantum condensed matter theory, such as lattice dynamics, elementary excitations, linear response theory, symmetry breaking in Fermi and Bose systems: the physics of superconductivity and superfluidity.

PHY 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisite: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree in physics.

PHY 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisite: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree in physics.

PHY 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisite: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree in physics.

PHY 4953. Special Studies in Physics. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

PHY 4983. Unifying Concepts in Physics. (3-0) 3 Credit Hours.

Prerequisites: [PHY 3293](#), [PHY 3513](#), [PHY 4263](#), and completion with a grade of "C-" or better or concurrent enrollment in [PHY 3583](#), or consent of instructor. This advanced course is designed to help the students develop a more mature and coherent understanding of the whole discipline through an in-depth exploration of the major branches of physics and their theoretical interconnections.

PHY 4993. Honors Research. (0-0) 3 Credit Hours.

Prerequisites: Enrollment limited to candidates for College Honors during their last two semesters; approval by the College Honors Committee. Supervised research and preparation of an honors thesis. May be repeated once with approval.

Political Science (POL)**POL 1013. Introduction to American Politics. (3-0) 3 Credit Hours. (TCCN = GOVT 2305)**

This course provides an introduction to American politics. The course centers on the fundamental role played by the institutions of American government including Congress, the Presidency, Federal Judiciary, and the Bureaucracy in understanding political dynamics in the United States. The course also examines public opinion and participation as inputs to the institutions of American government, and the mediating role of organizations such as interest groups, the news media, and political parties. Considerable time is devoted to thinking about how these components fit together, and how they shape the nature and importance of citizenship and civic engagement. The course also makes connections between politics at the federal level of government and the political institutions and processes of the state of Texas. This course is required to fulfill the Core Curriculum requirement in Government-Political Science.

POL 1133. Texas Politics and Society. (3-0) 3 Credit Hours. (TCCN = GOVT 2306)

This course involves the analysis of Texas government institutions, political behavior, civic engagement and their political and philosophical foundations. Topics may include discussions of the Texas and U.S. Constitutions; the role of state in the federal system; the diverse demographic, economic, and cultural bases of state politics; elections, interest groups, and elites; and legislative, executive, judicial, urban, and county politics. Considerable time is devoted to thinking about how these components fit together, and how they shape the nature and importance of citizenship and civic engagement in Texas. This course is required to fulfill the Core Curriculum requirement in Government-Political Science.

POL 1213. Studies in Texas and American Politics. (3-0) 3 Credit Hours. (TCCN = GOVT 2302)

This course involves the analysis of American governmental institutions, political behavior, civic engagement, and their political and philosophical foundations, with a special emphasis on Texas. Subjects

may include ethics in government, a comparative study of American and Texas government, civil rights and the United States role in the world. May be repeated for credit when topics vary.

POL 2503. Introduction to Political Theory. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). The fundamental concepts and problems of politics as viewed by the classical political philosophers and contemporary theorists: justice, power, authority, obligation, freedom, and equality.

POL 2513. Politics and the Administrative Process. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). The role of bureaucratic agencies in the formulation and implementation of public policy. Organization theory and administration in the public sector. While the approach of the course is comparative, special emphasis is placed on bureaucracy in the United States. (Formerly titled "Public Administration and Public Policy.").

POL 2533. Introduction to Political Science. (3-0) 3 Credit Hours. (TCCN = GOVT 2304)

Prerequisite: [POL 1013](#). An introduction to the discipline of political science, with particular emphasis devoted to its development from 1880 to the present. Topics may include types of political institutions, uses of political science, participation by political scientists in public affairs or public policy, and career options available to political science majors.

POL 2603. International Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course offers an opportunity for broad study of issues such as North-South and East-West conflicts; international aid and trade through transnational enterprises; economic development and debt; military conflicts and nuclear weapons; new frontiers of oceanic resources, tropical forests, and space; cross-cultural communications; American and foreign values; language issues; and investigations of issues related to a particular nation and culture. (Formerly INS 2403. Same as [GLA 2603](#). Credit cannot be earned for more than one of the following: [POL 2603](#), [GLA 2603](#), or INS 2403.).

POL 2623. Law and Society. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of the nature of law, its role in sociopolitical systems, and the institutional components of legal systems. Various theories and systems of law are examined. Possible topics can be drawn from general areas of legal study such as legal philosophy, critical legal studies, and comparative law, as well as from specific subject areas such as natural, constitutional, common, civil, customary, socialist, and theocratic law.

POL 2633. Comparative Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). A comparative examination of the diverse forms, goals, styles, and practices of government in democratic and authoritarian states. Several major polities will be studied in detail. (Same as [GLA 2633](#). Credit cannot be earned for both [POL 2633](#) and [GLA 2633](#).).

POL 2703. Scope and Methods in Political Science. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An introduction to methods of conducting and interpreting research in political science. Topics include principles of the philosophy of science; research designs, statistical concepts and techniques (conceptualization, operationalization, and measurement), and data-gathering procedures; data analysis; and qualitative methods. May also include standard computer packages and secondary data analysis.

POL 3013. The American Legal Process. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An introduction to how the United States legal system is organized and functions. A broad overview of the system and its actors is combined with a focus on particular areas of

the law such as domestic relations, personal injury liability litigation, criminal procedure, and alternative dispute resolution.

POL 3023. Civil Liberties in American Law and Practice. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An analytical, normative, and empirical examination of civil liberties and rights in the United States. Topics may include freedom of speech, religion, and assembly, equal protection of the laws, due process, and privacy.

POL 3033. International Governance. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). International law, organizations, regimes, hierarchies, and norms such as sovereignty govern the international system. These factors help create a world order that limits armed conflict, regulates the world economy, advances environmental protection, and sets human rights standards. This course explains theories of international governance, and compares these perspectives to the analysis of political scientists on the past record and likely future of world order. (Same as [GLA 3033](#). Credit cannot be earned for both [POL 3033](#) and [GLA 3033](#).)

POL 3043. International Human Rights. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course explores the philosophical and political meaning of fundamental human rights; cases of human rights violations (such as genocide in the Holocaust, Rwanda, Kosovo, and Cambodia; the death penalty; female genital mutilation; violations of workers' rights; and torture); and the role that states, international organizations and individuals can play in ending human rights abuses. Course readings may include contemporary theories of human rights and case studies on the enforcement of rights around the world. (Same as [GLA 3043](#). Credit cannot be earned for both [POL 3043](#) and [GLA 3043](#).)

POL 3063. Comparative Political Participation. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course examines the citizen participation in the democratic process across industrialized democracies, including the United States. The course covers participation within mainstream channels of the democratic process, such as voting and campaign participation, and also participation in unconventional activities such as social movements and protests. (Same as [GLA 3063](#). Credit cannot be earned for both [POL 3063](#) and [GLA 3063](#).)

POL 3093. Mexican American Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An opportunity to study Mexican American participation in the electoral process, political and economic institutions, labor organizations, and alternative modes of political action.

POL 3103. Political Ideology. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course is an examination of the political ideologies that shape contemporary political debate. Ideologies may include liberalism, libertarianism, socialism, communitarianism, neoconservatism, feminism, environmentalism, and critical race perspectives. Authors may include Marx, Mill, Rawls, Nozick, Sandel, MacKinnon, and others.

POL 3113. American Political Theory. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). The political theory of the Constitution, the Federalist Papers, Adams, Jefferson, Paine, Calhoun, Thoreau, Social Darwinism, Pragmatism, and 20th-century political thought.

POL 3123. Political Psychology. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Political psychology seeks to explain the behavior of political leaders and mass publics by focusing on the psychological underpinnings of such behavior—their personalities, identities, values, attitudes, and feelings. Attention will be given to the interaction of these factors within different political environments. Topics may include political socialization; personality and political leadership; the

psychology of small group decision making; the psychology of mass participation; and affect and cognition in political judgment.

POL 3133. Political Philosophy: Ancient and Medieval. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). The major works of Western political philosophy from ancient times to the Renaissance. Writers examined may include Plato, Aristotle, Thucydides, Augustine, and Machiavelli.

POL 3143. Political Philosophy: Modern. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). The major works of political philosophy from the Renaissance to the 19th century. Writers examined may include Hobbes, Locke, Rousseau, Hegel, Marx, and Mill.

POL 3153. Political Philosophy: Contemporary. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Political thought from the late 19th century to the present. Topics examined may include contemporary Marxism and critical theory, analytic political theory, positivism and social science, phenomenological approaches, existentialism, and contemporary ethics.

POL 3163. Introduction to Feminist Theory. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). A reading-intensive, upper-level lecture course for political science majors and women's studies majors and minors, introducing students to feminist approaches to theory. Covers feminist critiques of some of the dominant traditions in Western political and social theory as well as ways in which women have begun to construct theories from their own distinctive perspectives within the intersecting hierarchies of race, class, and gender.

POL 3183. Women in Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of the roles and forms of participation of women in contemporary American politics. Topics may include the fight for civil rights and equality; media portrayals of women in politics; women as candidates and as voters; women as elected officials, activists, and political professionals; and women in the military, including theories of gender and war.

POL 3193. Theories of Citizenship. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). A political philosophy approach to the concept of citizenship. The philosophical underpinnings of citizenship will be analyzed from a race, class, gender, and gay perspective. The notion of nation-states and their exclusive and arbitrary standards of what rights belong to people and to which people will be examined and at times challenged in the context of contemporary politics, American as well as global. In this examination the discussion will go beyond rights and into process. In other words, citizenship will be examined from a participatory, as well as rights, perspective.

POL 3203. African American Political Thought. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course examines diverse African American political thought spanning the history of the U.S. Political and social thought examined may include diverse writings from Booker T. Washington, W.E.B. Dubois, Marcus Garvey, Sojourner Truth, David Walker, Elijah Muhammad, Martin Luther King Jr., Malcolm X, Kimberlé Crenshaw, Angela Davis, Cornell West, Clarence Thomas, Lani Guinier, Patricia Williams, Louis Farrakhan, and Eldridge Cleaver.

POL 3213. Business and Politics in the Third World. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Business-government relations in Third World nations at a time of deep policy changes initiated in the 1980s. Major theories of business-government relations and their explanatory validity for Third World nations. Particular emphasis may be given to Latin America and Asia and their dynamic emerging markets.

POL 3223. Judicial Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Political behavior of the major participants in the judicial process: judges, attorneys, juries, defendants, and litigants; the political and administrative context of the judicial process; judicial-executive and judicial-legislative relations; the impact of court decisions.

POL 3234. Political Campaigns and Elections. (3-2) 4 Credit Hours.

Prerequisite: [POL 1013](#). A study of the ways in which public officials are recruited and elected in the United States and other democracies. Campaign strategy and tactics; nominations and primaries; the legal framework of elections; the problem of constituency; voting studies; campaign finance. Three lecture and two laboratory hours per week. (Formerly POL 3233. Credit can be earned for both [POL 3234](#) and POL 3233 with special permission.)

POL 3244. Mass Media and Public Opinion. (3-2) 4 Credit Hours.

Prerequisite: [POL 1013](#). Explores the acquisition of political attitudes, the role of the mass media in society and politics, and the relationship between political attitudes and values, the mass media, and public policy. (Formerly POL 3243. Credit cannot be earned for both [POL 3244](#) and POL 3243.)

POL 3253. Participation and American National Elections. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An introduction to fundamentals of American electoral politics. Topics will include psychological, sociological and economic models of participation, the presidential primary process, the effectiveness of presidential and congressional campaigns on the vote, psychological/sociological and economic models of the presidential and congressional vote, the incumbency advantage in congressional elections, spending in congressional elections, candidate entry, and comparison of House and Senate elections.

POL 3273. Introduction to Global Analysis. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An overview of global conditions and events traditionally subject to analysis by American and international organizations, such as defense and security concerns, economic development, natural resources, human migration, terrorism, arms transfers and weapons proliferation, natural disasters, and international cooperation. Provides an overview of how government and private sector organizations respond and how they engage in defense, diplomacy, intelligence, etc. Discusses the role and operations of analytical functions in government and private organizations. May be taught from different perspectives depending upon faculty expertise and interests. (Same as [GLA 3013](#). Credit cannot be earned for both [POL 3273](#) and [GLA 3013](#).)

POL 3283. The American Presidency. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). The U.S. president's role in the American political system. Topics may include the constitutional framework and historical development of presidential powers, presidential personality, and legislative, foreign policy, and war-making powers.

POL 3293. Political Movements. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course examines the origins, mobilizing tactics, and goals of political movements. Movements that may be investigated are the movements of labor, students, women, blacks, environmentalists, and others.

POL 3303. Race, Ethnicity and Public Policy. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). The objective of this course is to familiarize students with a range of discourses to understand the complexities of racial and ethnic inequalities in the United States as well as the history and current state of racial and ethnic politics. The course examines the politics and experiences of several groups, such as African Americans, Hispanics, American Indians, and Asian Americans. It also reviews

the wide range of public policy issues as they affect, and are affected by, racial and ethnic considerations. (Formerly SSC 3253. Credit cannot be earned for both [POL 3303](#) and SSC 3253.).

POL 3323. Constitutional Law. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of major constitutional issues, past and present, through the intensive study of leading cases. Recommended for pre-law students.

POL 3353. Leadership and Elites. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of national political executives in parliamentary and presidential democracies and in authoritarian states. Topics examined may include the selection process, decision making, leadership and bureaucracy, executive-legislative relations, and neocorporatism.

POL 3363. Political Parties and Interest Groups. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of the purpose of political parties in the political process. Interest groups and their roles in government and public policy.

POL 3373. The Legislative Process. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of the functions, structures, and politics of legislatures and their relationships to their constituencies and other branches of government.

POL 3383. East European Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course provides an overview of politics in Eastern Europe broadly understood as the region of East Central and Southeastern Europe, and the post-Soviet space. It traces the evolution of nation building since the interwar period and the system of communist rule, with a focus on key dimensions of the post communist transformation of the region. Thematic coverage may include constitutions, political culture, party politics, and Euro-Atlantic integration. (Same as [GLA 3383](#). Credit cannot be earned for [POL 3383](#) and [GLA 3383](#).).

POL 3393. Latin American Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of political institutions and their relationship to social and economic change in Latin America. Profiles of major Latin American countries, such as Mexico, Brazil, Argentina, Peru, and Cuba. (Same as [GLA 3393](#). Credit cannot be earned for both [POL 3393](#) and [GLA 3393](#).).

POL 3403. European Governments. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). The interplay of politics with the changing social and economic environment in the advanced industrial societies of Western Europe. Elites, participation, governmental structures, party systems, interest groups, and public policy will be examined in several selected polities and the European Union. (Same as [GLA 3403](#). Credit cannot be earned for both [POL 3403](#) and [GLA 3403](#).).

POL 3413. The Politics of Urban Development. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An opportunity to pursue a political-economic analysis of the metropolis, focusing on the problems and conflicts stemming from urban growth and stagnation. Topics examined may include uneven development, planning, industrial development policy, taxation, and intergovernmental rivalry. Case studies may be drawn from societies other than the United States.

POL 3433. Governments and Politics of Southeast Asia. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). A comparative examination of the political systems of selected Southeast Asian countries and their efforts to deal with political, economic, and social change. Countries studied may

include Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. (Same as [GLA 3433](#). Credit cannot be earned for both [POL 3433](#) and [GLA 3433](#).)

POL 3443. Governments and Politics of East Asia. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). A comparative examination of the political systems of selected East Asian countries and their efforts to deal with problems of political, economic, and social change. Countries studied may include the People's Republic of China, the Republic of China, and South Korea. (Same as [GLA 3443](#). Credit cannot be earned for both [POL 3443](#) and [GLA 3443](#).)

POL 3453. The Politics of Mexico. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Background to the contemporary political system of Mexico, including independence, foreign intervention, the Diaz regime, and the 1910–1917 revolution. Other topics may include the constitution, the structure of government, political parties, the presidency, economic development and policy, contemporary leadership, and elites. (Same as [GLA 3453](#). Credit cannot be earned for both [POL 3453](#) and [GLA 3453](#).)

POL 3463. Politics of the Third World. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). The political system of various Third World nations. An inquiry into the political and economic problems of these countries, such as development, instability, and political change. (Same as [GLA 3463](#). Credit cannot be earned for both [POL 3463](#) and [GLA 3463](#).)

POL 3483. International Political Economy. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course is an introduction to the institutions and policies that govern international economic relations. Students will study the development of the international economic system as well as controversies over money, trade, and governance. (Same as [GLA 3483](#). Credit cannot be earned for both [POL 3483](#) and [GLA 3483](#).)

POL 3493. Politics of the Middle East. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of the past, present, and future of Middle East politics, with an emphasis on culture, politics, religion, and conflicts in the area; the international relations of Middle Eastern countries as well as superpowers' involvement. (Same as [GLA 3493](#). Credit cannot be earned for both [POL 3493](#) and [GLA 3493](#).)

POL 3503. American Foreign Policy since World War II. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Major private interests and public institutions involved in American foreign policy making; public opinion and foreign involvement; specific policies toward international organizations and major world regions. (Same as [GLA 3503](#). Credit cannot be earned for both [POL 3503](#) and [GLA 3503](#).)

POL 3513. International Organizations in World Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Major issues involving international organizations: nationalism and globalism, financing problems, international staffing, voting patterns, peace-keeping, and international conferences. Organizations examined include the United Nations system, regional development banks, alliance systems, cartels, and common markets. (Same as [GLA 3513](#). Credit cannot be earned for both [POL 3513](#) and [GLA 3513](#).)

POL 3523. Force in International Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of modern research into the use of coercion in international relations, specifically economic sanctions, war, and terrorism. Special emphasis will be placed on the causes, trends, and consequences of interstate wars. Peace movements and the technologies of peace

making will also be covered. (Same as [GLA 3523](#). Credit cannot be earned for both [POL 3523](#) and [GLA 3523](#).)

POL 3553. Social Policy in Modern Welfare States. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). History and development of social policies in modern societies. Policy areas covered may include pensions, health care, income maintenance, housing, education, training, and child care.

POL 3563. Current Issues in World Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An examination of the issues that divide the people of the world. The structure of contemporary world problems will be studied and possible strategies for the reduction of international conflict will be assessed. Topics may include nuclear proliferation, world hunger, revolution and intervention, transnational enterprises, competing ideologies of international relations, and global ecology. (Same as [GLA 3563](#). Credit cannot be earned for both [POL 3563](#) and [GLA 3563](#).)

POL 3633. Political Economy. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). The political, legal, and ethical context of modern commercial society is explored through the evolution of conceptions of the economy, the individual, and the state. Topics may include the institutional foundations of market societies, ethical and legal impact of business practices, comparisons of national economic policies, the interaction of modern government and economic activity, and the impact of markets on concepts of public and private life. (Same as [GLA 3633](#). Credit cannot be earned for both [POL 3633](#) and [GLA 3633](#).)

POL 3743. Politics in Film. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course examines the role of film in the political process and in the broader political development of the United States and other countries. Students will study how American and international films operate as information, propaganda, and entertainment.

POL 3753. Latino/a Politics. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course examines political developments in Latino communities. Topics may include political history and organization, Latino naturalization, patterns of participation, political attitudes, and policy-making influence.

POL 3763. Globalization. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course examines normative and empirical issues in globalization debates, such as the role of states and nonstate actors, the emergence of global civil society, patterns of international development, the influence of international integration on security, health, violence, and intercultural toleration, and the status of institutions for global justice. (Same as [GLA 3763](#) and [INS 3763](#). Credit cannot be earned for more than one of the following: [POL 3763](#), [GLA 3763](#), or [INS 3763](#).)

POL 3783. Comparative Democratization. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course examines theories of democratic transition and focuses on the problematics of democratic change throughout the world. Case studies may include political change after the end of the Cold War in the former Communist states, democratic transitions in Latin America, patterns of change in sub-Saharan Africa, the Middle East, and south Asia. (Same as [GLA 3783](#). Credit cannot be earned for both [POL 3783](#) and [GLA 3783](#).)

POL 3813. Political Polling. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). This course examines the principles, techniques and problems involved in conducting survey research. Emphasis is on applied quantitative and qualitative techniques of data collection and analysis commonly used by political scientists, polling organizations, and political

consultants in measuring citizen orientations. Topics may include questionnaire design, sampling, interviewing techniques, coding and processing of data, analysis and interpretation of data, and survey research ethics.

POL 3823. Politics of Congressional Elections. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An introduction to the politics of congressional elections. Topics include determinants of national election outcomes, campaigning for Congress, strategic behavior, primary elections, the incumbency advantage, money in congressional elections, Senate versus House comparisons, and representation.

POL 4003. Comparative Foreign Policy. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#) or consent of instructor. This course is an in-depth comparative examination of the worldviews, institutional processes, political actors, and outcomes of foreign policy-making of several major nation-states. Themes that may be covered are comparative policies for international security, international governance, economic competition, humanitarian action, and regional crises such as the Middle East and African development. (Same as [GLA 4003](#). Credit cannot be earned for both [GLA 4003](#) and [POL 4003](#).)

POL 4013. The Intelligence Community and World Affairs. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Discusses the historical and political developments of intelligence as a component of defense and security policy, mainly in the post-World War II era. Examines the legal foundations of the American national security and intelligence functions, including discussion of accountability and control measures. Emphasizes the role of intelligence in national security policy making, principally conducted by the Executive and Legislative branches in democratic societies. Discusses the main functions of intelligence. (Same as [GLA 4013](#). Credit cannot be earned for both [POL 4013](#) and [GLA 4013](#).)

POL 4023. Techniques in Global Analysis. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). Examines various techniques for collecting, analyzing, and communicating information by government and private sector organizations engaged in global analysis. Stresses methodologies for analyzing informational inputs, including strengths and weaknesses of various analytical applications. Studies analytic cultures and pathologies associated with information collection and interpretation, legal and political oversight, accommodation of dissenting views in interpretation and policy debate, and economic, political, and cultural implications of analytical findings. Compares and contrasts analytical methods employed by public and private organizations. May be taught from different perspectives depending upon faculty expertise and interests. (Same as [GLA 4123](#). Credit cannot be earned for both [POL 4023](#) and [GLA 4123](#).)

POL 4123. Legal and Philosophical Reasoning. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An intensive analysis of selected philosophical texts focusing on law and justice. Students are challenged to develop critical reading and thinking skills by studying the texts of philosophers such as Plato, Aristotle, Dworkin, Hart, and/or others who outline difficult arguments and unfamiliar ideas. Emphasis is placed on drawing reasoned conclusions, advocating positions, and expressing oneself in oral and written forms. (Same as [LGS 4123](#). Credit cannot be earned for both [POL 4123](#) and [LGS 4123](#).)

POL 4143. The European Union. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#), [POL 2633](#), [POL 3403](#), or consent of instructor. This course focuses on the historical, political, and intellectual sources of the European Union, the evolution of its institutions, and the effectiveness of its system of governance. Emphasis will be placed on the influence of regional integration on politics and democracy within Europe. The course will consider the construction of united

Europe in the context of relations between the EU and member states, European institutions and citizens, and the EU and the world system of politics. (Same as [GLA 4143](#). Credit cannot be earned for both [POL 4143](#) and [GLA 4143](#).)

POL 4153. Seminar in Jurisprudence. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An analytic inquiry into the normative, empirical, and ideological underpinnings of law. The functions, nature, and utilities of law in various social and conceptual schemes. Alternatives to formal law and jural dispute settling.

POL 4203. Current Topics in Global Analysis. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An organized course offering the opportunity for specialized study of topics in such areas as domestic security planning, politics of national defense budgets and products, terrorism, arms transfers and controls, natural disaster preparedness, peace making, nuclear weapons proliferation and negotiations, international trade agreements and policies, national security economics, and civil liberties controversies. (Same as [GLA 4203](#). Credit cannot be earned for both [POL 4203](#) and [GLA 4203](#).)

POL 4323. Administrative Law. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). A survey of those aspects of public law of particular relevance to public administration, analyzing such problem areas as the delegation of authority; formal accountability; open records and confidentiality; and responsiveness to democratic value in decision making.

POL 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Independent Study Course Form signed by the instructor, the student's advisor, the Department Chair, and the Dean of the College of Liberal and Fine Arts. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

POL 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: Independent Study Course Form signed by the instructor, the student's advisor, the Department Chair, and the Dean of the College of Liberal and Fine Arts. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

POL 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Independent Study Course Form signed by the instructor, the student's advisor, the Department Chair, and the Dean of the College of Liberal and Fine Arts. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

POL 4923. Advanced Research Tutorial. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor and the Department Chair. The tutorial provides students with the opportunity to serve as an apprentice to a professor in order to learn the process of academic research. The student would engage in all aspects of the professor's research project, potentially including data collection, report writing, joint paper presentations or publications, providing ideal preparation for graduate school.

POL 4933. Internship in Political Science. (0-0) 3 Credit Hours.

Prerequisites: Consent of internship coordinator and Department Chair. Supervised experience relevant to political science within selected community organizations. A maximum of 6 semester credit hours may be earned through the internship.

POL 4936. Internship in Political Science. (0-0) 6 Credit Hours.

Prerequisites: Consent of internship coordinator and Department Chair. Supervised experience relevant to political science within selected community organizations. A maximum of 6 semester credit hours may be earned through the internship.

POL 4953. Special Studies in Political Science. (3-0) 3 Credit Hours.

Prerequisite: [POL 1013](#). An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

POL 4973. Seminar in Political Science. (3-0) 3 Credit Hours.

Prerequisites: [POL 1013](#), [POL 2703](#), and 15 semester credit hours in POL, or consent of instructor. The opportunity for an intensive study of a selected topic. Primary emphasis on supervised research on various aspects of the topic. May be repeated for credit when topics vary. Enrollment limited to juniors and seniors majoring in political science.

POL 4983. Research Practicum. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, and the Department Chair. The practicum provides students with the opportunity to focus on a specific research issue having practical applications in geography, governance, politics, or policy. Students participate in a hands-on research experience on the issue in a collective research environment.

POL 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: A minimum grade point average of 3.0 at UTSA, a 3.5 grade point average in the major, and recommendation by a member of the Political Science and Geography faculty.

Psychology (PSY)**PSY 1013. Introduction to Psychology. (3-0) 3 Credit Hours. (TCCN = PSYC 2301)**

Introduction to the study of the mind and behavior in humans and other species with attention to awareness, sensation, perception, emotion, motivation, learning, memory, problem solving, personality, mental and behavioral development, abnormal behavior, and social behavior in group settings. Psychological, social, cultural, institutional, and biological determinants of behavior are considered, together with applications of basic principles based on individuals within a variety of cultural, civic, and public policy contexts. Scientific approaches to the explanation of psychological phenomena are examined critically, with emphasis on empirical research involving the application of the scientific method and quantitative research skills and results to everyday life situations and areas of social responsibility. Communication of empirical results to an appropriate audience is required, as is participation in illustrative research. May be applied toward the Core Curriculum requirement in Social and Behavioral Sciences. (Credit cannot be earned for both [PSY 1013](#) and PSY 2013.).

PSY 2073. Statistics for Psychology. (3-0) 3 Credit Hours.

Prerequisites: [MAT 1023](#), [MAT 1033](#), [MAT 1073](#), or [STA 1053](#); and one psychology course. The use of statistics in psychological research includes: elementary probability theory; descriptive statistics, including histograms, graphing, and measures of central tendency and dispersion; correlational techniques; binomial and normal distributions; and inferential statistics, including hypothesis testing, effect size estimates, and analysis of variance. (Formerly STA 2073. Credit cannot be earned for both [PSY 2073](#) and STA 2073.).

PSY 2503. Developmental Psychology. (3-0) 3 Credit Hours. (TCCN = PSYC 2314)

Prerequisite: [PSY 1013](#). Problems, methods, major theories, and results in the study of the psychological development of the individual from the prenatal period to old age.

PSY 2513. Abnormal Psychology. (3-0) 3 Credit Hours.

Prerequisite: [PSY 1013](#). Topics may include the dynamics of abnormal behavior with attention to description, causes, and treatment of major psychological disorders, including neuroses, psychoses, personality disorders, and psychosomatic disorders.

PSY 2523. Personality. (3-0) 3 Credit Hours. (TCCN = PSYC 2316)

Prerequisite: [PSY 1013](#). Problems, methods, major theories, and results in the study of development and maintenance of typical modes of behavior and dynamics of adjustment.

PSY 2533. Social Psychology. (3-0) 3 Credit Hours. (TCCN = PSYC 2319)

Prerequisite: [PSY 1013](#). Problems, methods, major theories, and results in the study of social interaction and interpersonal influence; self-identity, attitudes, role behavior, social perception, social influence, and behavior within groups.

PSY 2543. Theories of Learning. (3-0) 3 Credit Hours.

Prerequisites: [PSY 1013](#) or equivalent; and [MAT 1023](#) or equivalent. An examination of major theories about the nature of the learning process. Discussion will focus on the construction and evaluation of models of learning. The practical and theoretical implications of research results for the acquisition, maintenance, modification, and elimination of behavior will be considered. Related memory phenomena and theories may be discussed.

PSY 2573. Psychology of Thought. (3-0) 3 Credit Hours.

Prerequisites: [PSY 1013](#) or equivalent; and [MAT 1023](#) or equivalent. An introduction to the principles of human thought as they relate to memory, comprehension, and problem solving. These principles will be used to analyze the nature of the cognitive strategies and skills that individuals develop to cope with the adaptive challenges they face.

PSY 3023. Social Psychology of Small Groups. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2533](#) and [PSY 3403](#); or consent of instructor. Theory and modern research in the social psychology of small groups. Particular attention will be given to group formation, the nature of small group processes, and the influence of groups on behavior.

PSY 3053. Cross-Cultural Psychology. (3-0) 3 Credit Hours.

Prerequisites: [ANT 1013](#), [ANT 2053](#), or [PSY 1013](#); and [PSY 3403](#) or the equivalent; or consent of instructor. An examination of the role of culture in the development and validation of psychological theories. Critical discussion of the application of theories of human behavior developed in the United States and Western Europe to other cultural groups, including ethnic minority subgroups. Topics may include identity formation, cognitive and personality development, social and organizational behavior, intergroup relations, psychological assessment, and mental health.

PSY 3103. Cognition. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2543](#) or [PSY 2573](#); and [PSY 3403](#). Examination of current information-processing models of human cognition. Emphasis will be placed on the processes by which stimuli are identified, by which past information is retrieved and used, and by which one's knowledge is modified.

PSY 3113. Motivation and Emotion. (3-0) 3 Credit Hours.

Prerequisite: [PSY 3403](#) or the equivalent. Topics may include examination of biological, physiological, learning, psychodynamic, cognitive, and purposive factors in the motivation of human behavior. Includes an examination of the nature and roles of emotion in explaining motivational processes.

PSY 3123. Attitudes. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2533](#) or [PSY 2543](#); and [PSY 3403](#). Examination of current theory and research on the nature of attitudes, their acquisition, and processes of attitude change. Topics may include psychological foundations of attitudes, structure and function of attitudes, attitude measurement, attitude-behavior consistency, theories of attitude change, and the role of attitudes in social behavior.

PSY 3153. Sensation and Perception. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2543](#) or [PSY 2573](#), and [PSY 3403](#). Survey of the processes by which the information available in the physical world is encoded and transformed to produce our perception of the world. Emphasis on the interaction between data-driven and conceptually-driven processes. Topics may include elementary sensory physiology, pattern recognition, illusions, physiological bases of perceptual dysfunction, and perceptual development. (Formerly PSY 2553. Credit cannot be earned for both [PSY 3153](#) and PSY 2553.)

PSY 3203. Industrial and Organizational Psychology. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2073](#) or the equivalent, and [PSY 3403](#) or the equivalent, or consent of instructor. The role of psychology in industry. Applications of psychological knowledge to industrial problems such as personnel selection, employee motivation and satisfaction, and the influence of organizations on behavior.

PSY 3303. Psychological Perspectives on Gender. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2503](#), [PSY 2513](#), [PSY 2523](#), or [PSY 2533](#); and [PSY 3403](#) or the equivalent; or consent of instructor. Consideration of physiological and social-learning origins of sex differences and psychological theories of sex-stereotyped and sexual behavior. Topics may include androgyny versus sex-typed behavior, gender dysfunction, origins of sex stereotypes, sexual preferences, and sex differences in reasoning ability, aggression, sexual behavior, personality, and psychopathology.

PSY 3403. Experimental Psychology. (3-0) 3 Credit Hours.

Prerequisites: One course from [PSY 2503](#), [PSY 2513](#), [PSY 2523](#), or [PSY 2533](#); [PSY 2543](#) or [PSY 2573](#); a minimum grade of "C-" in [PSY 2073](#) or consent of instructor; and concurrent enrollment in [PSY 3413](#). This course is designed to offer students the opportunity to familiarize themselves with representative experimental designs employed in psychological research, to provide instruction in the choice of appropriate designs, to provide the opportunity to develop skills in the analysis of published research, and to offer an introduction to techniques for collecting and analyzing data.

PSY 3413. Experimental Psychology Laboratory. (2-2) 3 Credit Hours.

Prerequisite: Concurrent enrollment in [PSY 3403](#). Application of observational and experimental procedures to selected problems in the collection of psychological data and the evaluation of psychological theories.

PSY 3513. Developmental Psychopathology. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2513](#) and [PSY 3403](#); or consent of instructor. Clinical findings and experimental research regarding childhood behavior problems, including hyperactivity, autism, schizophrenia, and anxiety disorders. Additional topics may include family influences on development of abnormal behavior and various psychotherapeutic techniques. (Formerly titled “Psychopathology and Childhood.”).

PSY 3523. Psychology of Adulthood and Aging. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2503](#) and [PSY 3403](#); or consent of instructor. Descriptive and theoretical accounts of psychological developments from early adulthood to old age. Relevant data are reviewed in the areas of memory, intellect, mental and physical health, social development, personality, grief, and dying.

PSY 3543. Introduction to Clinical Psychology. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2513](#) and [PSY 3403](#); or consent of instructor. An introduction to the scientist-practitioner viewpoint of clinical psychology. The basic tools of psychological assessment, psychodiagnosis, and psychotherapy will be addressed.

PSY 4003. History of Psychology. (3-0) 3 Credit Hours.

Prerequisite: [PSY 3403](#) or consent of instructor. The development of major theoretical positions and research strategies in psychology from the ancient Greeks to the present, with emphasis on the development of scientific psychology since the late 19th century.

PSY 4013. Social Psychology of the Self. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2523](#) or [PSY 2533](#); and [PSY 3403](#); or consent of instructor. A social psychological examination of current research on the self in social interaction. Topics may include the structure of the self-concept and strategies for the preservation of self-esteem; the evaluation of the self through social comparison; the search for meaning and processes involved in understanding the self; and individual differences in self-knowledge and self-presentational styles. (Formerly PSY 3143. Credit cannot be earned for both [PSY 4013](#) and PSY 3143.).

PSY 4103. Social Psychology of Prejudice. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2533](#) and [PSY 3403](#). Consideration of social, psychological, and personality factors in prejudice and stereotyping, and their interaction with cultural factors in producing racism and other prejudices.

PSY 4113. Cognitive Development. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2503](#) or [PSY 2573](#); and [PSY 3403](#); or consent of instructor. The development of perception, memory, and thinking in children, with attention to the roles of experience and maturation in development of thought, and the validity of the concept of cognitive stages, particularly Piagetian models.

PSY 4133. Social and Personality Development. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2503](#), [PSY 2523](#), or [PSY 2533](#); and [PSY 3403](#) or the equivalent; or consent of instructor. Social and personality development across the life span. Topics may include sex-role development, child rearing, achievement, and the influence of peers. Socialization into different social roles may also be considered.

PSY 4143. Memory. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2543](#) or [PSY 2573](#); and [PSY 3403](#) or the equivalent; or consent of instructor. Models for the coding, storage, and retrieval of information in memory. Organization and structure of short-term, long-term, and semantic memory, and the role of verbalization and images in memory.

PSY 4183. Physiological Psychology. (3-0) 3 Credit Hours.

Prerequisite: [PSY 3403](#) or consent of instructor. Topics may include the biological and particularly neurophysiological bases of human behavior and cognition, the structure and organization of the nervous system, and the effect of the latter on perception, memory, learning, motivation, and emotion.

PSY 4193. Relationships. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2533](#) or [PSY 2543](#); and [PSY 2073](#). A consideration of the psychological processes that underlie the development and maintenance of social relationships. Emphasis on motivational and cognitive factors that mediate social interaction and communication. Special attention may be given to friendships, romantic relationships, successful marriages, and distressed relationships.

PSY 4213. Social Cognition. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2533](#) or [PSY 2573](#); and [PSY 3403](#) or the equivalent; or consent of instructor. The study of how people perceive and construe social events, social situations, and the behavior of other people. Some emphasis is also placed on how social and cultural forces affect personal perception processes.

PSY 4253. Psychology of Health. (3-0) 3 Credit Hours.

Prerequisite: [PSY 3403](#) or consent of instructor. An examination of the interaction of psychological, social, and biological factors in physical illness. The symptoms/conditions covered may include stress, pain, diabetes, cardiovascular disease, HIV/AIDS, and obesity. The course is research-based but also likely to include prevention and/or treatment strategies for health promotion.

PSY 4323. Psychology of Language. (3-0) 3 Credit Hours.

Prerequisites: [PSY 2543](#) or [PSY 2573](#), and [PSY 3403](#). Investigates how humans represent, produce, understand, and acquire language. Topics may include language processing, neurolinguistics, language acquisition, conversational interaction, language disorders, and reading development. (Formerly PSY 2583. Credit cannot be earned for both [PSY 4323](#) and PSY 2583.).

PSY 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree. No more than 3 semester credit hours of independent study will apply to Psychology major or minor requirements.

PSY 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree. No more than 3 semester credit hours of independent study will apply to Psychology major or minor requirements.

PSY 4923. Current Topics in Psychology. (3-0) 3 Credit Hours.

Prerequisites: [PSY 1013](#) and [PSY 3403](#). Coverage of topics of current interest in the field of psychology. May be repeated once for credit when topics vary, but not more than 3 semester credit hours will apply to the major in Psychology.

PSY 4933. Internship in Psychology. (0-0) 3 Credit Hours.

Prerequisite: Consent of internship coordinator before registration. Supervised experience relevant to psychology within selected community organizations. A maximum of 6 semester credit hours may be earned through Internship in Psychology. Not more than 3 semester credit hours will apply to Psychology major or minor requirements. Must be taken on a credit/no-credit basis.

PSY 4936. Internship in Psychology. (0-0) 6 Credit Hours.

Prerequisite: Consent of internship coordinator before registration. Supervised experience relevant to psychology within selected community organizations. A maximum of 6 semester credit hours may be earned through Internship in Psychology. Not more than 3 semester credit hours will apply to Psychology major or minor requirements. Must be taken on a credit/no-credit basis.

PSY 4953. Special Studies in Psychology. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

PSY 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: Enrollment limited to candidates for Honors in Psychology. Requirements for candidacy include the sponsorship of a faculty member and Psychology faculty approval of the student's project proposal. Supervised research and preparation of an honors thesis. May be repeated once for credit with advisor's approval. Not more than 3 semester credit hours will apply to Psychology major requirements.

Public Administration (PAD)**PAD 1113. Public Administration in American Society. (3-0) 3 Credit Hours.**

This functions as the general introductory course in public administration. The management of government bureaucracies including organization, human resources, career systems, and financing is discussed. There is a discussion of the role of bureaucracies in modern society in the formulation and implementation of public policy. May be applied toward the Core Curriculum requirement in the Component Area Option.

PAD 2153. Analysis and Assessment for Public Administration. (3-0) 3 Credit Hours.

Prerequisite: Any 3-semester-credit-hour Mathematics core course. This course will introduce students to the nature and practice of evaluation in the public and nonprofit sectors, and to the basic skills necessary to understand and conduct such evaluations. This course covers collecting, organizing, analyzing, and presenting information. (Formerly titled "Methodological Tools in Public Administration.").

PAD 3013. Introduction to Public Policy. (3-3) 3 Credit Hours.

The course introduces students to the different aspects of public policy in the U.S. political context. Topics may include agenda setting, policy formulation, implementation, analysis, and evaluation.

PAD 3023. Introduction to Urban Management and Policy. (3-0) 3 Credit Hours.

This course will introduce students to the basic concepts of the management of urban municipalities. Topics to be covered may include leadership in urban settings; organizational structure and change; delivery of urban services, particularly in a diverse urban environment; and policy issues in urban settings.

PAD 3033. Introduction to Nonprofit Agencies. (3-0) 3 Credit Hours.

This survey course introduces the nonprofit sector and core competencies required by nonprofit leaders. The role of nonprofit organizations in civil society frames the course, in particular, how the nonprofit sector is unique from the public and private sectors. The state of the sector, and fundamental principles and practices required by nonprofit managers are explored, including creating a nonprofit, basics of fundraising, marketing, volunteer management, program development, and evaluation. Group and individual projects, service learning, research conducted for specific nonprofit agencies, oral presentations, networking, and construction of a portfolio of nonprofit work experiences and deliverables may be utilized. (Same as [NPO 3013](#). Credit cannot be earned for both [PAD 3033](#) and [NPO 3013](#).)

PAD 3043. Public and Nonprofit Financial Management. (3-0) 3 Credit Hours.

This course introduces students to the principles of financial management for public and nonprofit organizations. The public financial management component of the course will cover issues at the federal, state, and local levels of government. Topics will include budgeting, financial reporting, revenue streams, tax equity, stakeholder relations, and accountability.

PAD 3053. Urban Economic Development. (3-0) 3 Credit Hours.

This course examines the factors contributing to the economic growth or decline of U.S. cities or regions and the role of local government in shaping economic development policies and economic change. It reviews the impact of public sector incentives and the outcomes of public-private partnerships through case studies of a variety of urban areas.

PAD 3113. Managing Public and Nonprofit Organizations. (3-0) 3 Credit Hours.

This course focuses on understanding the nature and role of public and nonprofit organizations. The course explores strategies for preserving and maximizing the public value of public and nonprofit organizations through the analysis of ethics, human behavior and motivation, organizational diagnosis, and management decision making. The structure, processes, environments, and purpose of the public and nonprofit sectors, and how to maximize organizational performance, are emphasized.

PAD 3123. Strategic Planning in the Public and Nonprofit Sectors. (3-0) 3 Credit Hours.

This course introduces the basic concepts of strategic planning and management in public and nonprofit organizations. The course covers a variety of topics such as formulation of mission and vision statements, identification of organizational goals, analysis of external environment and organizational context, strategic issue analysis, strategy development, implementation, and control. Students learn some analytical tools such as SWOT. Case studies are utilized to help students develop critical skills in analyzing and solving strategic problems.

PAD 3133. Politics and Policies of San Antonio and South Texas. (3-0) 3 Credit Hours.

The San Antonio area has been shaped and built by an array of decisions, public and private. This course will examine the history and development of the area and the political, social, and economic forces that have defined the local policymaking process by city, county, and special purpose governments. Topics may include fiscal policy, public investment policies, urban revitalization, and transportation.

PAD 3143. Urban and Regional Planning. (3-0) 3 Credit Hours.

This course will explore the fundamental concepts of urban and regional planning, including various planning tools and social and political issues related to planning. A wide variety of topics will be covered, including physical planning, transportation, housing, land use, urban redevelopment, and historic preservation. The course will tackle planning both as a community process and a professional activity. The evolution of planning concepts within the framework of the American political structure will be addressed.

PAD 3153. Legal Context of Public Policy and Administration. (3-0) 3 Credit Hours.

This course covers the legal framework for creating and implementing public policy, at all governmental levels. It includes an overview of the authority of legislative bodies to formulate laws and policies, as well as the rules that govern the implementation of these laws and policies by administrative bodies. The course will also cover the authority of courts to review and/or overturn laws and policies.

PAD 4853. Contemporary Issues in Public Administration (Senior Seminar). (3-0) 3 Credit Hours.

Prerequisite: Completion of at least 9 semester credit hours of Public Administration coursework. This is the capstone course for the Bachelor of Public Administration degree and will involve a major writing assignment and/or presentation. Specific topics to be covered will vary by semester.

PAD 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisite: Prior approval required. Independent Study Course Form (available in the department or college advising center) signed by the instructor, the student's undergraduate advisor, Department Chair, and Dean of the College of Public Policy. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated once for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

PAD 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisite: Prior approval required. Independent Study Course Form (available in the department or college advising center) signed by the instructor, the student's undergraduate advisor, Department Chair, and Dean of the College of Public Policy. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated once for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

PAD 4933. Internship in Public Administration. (3-0) 3 Credit Hours.

Prerequisites: [PAD 1113](#), [PAD 2153](#), and either [PAD 3023](#) or [PAD 3033](#); Prior approval of Public Administration Internship Coordinator is required. Supervised experience in an administrative setting that provides the opportunity to integrate theory and practice in public or nonprofit-related agencies. May be repeated for credit in a subsequent semester when agency setting varies, but not more than 6 semester credit hours will apply to a bachelor's degree.

PAD 4936. Internship in Public Administration. (0-0) 6 Credit Hours.

Prerequisites: [PAD 1113](#), [PAD 2153](#), and either [PAD 3023](#) or [PAD 3033](#); Prior approval of Public Administration Internship Coordinator is required. Supervised experience in an administrative setting that provides the opportunity to integrate theory and practice in public or nonprofit-related agencies. May be repeated for credit in a subsequent semester when agency setting varies, but not more than 6 semester credit hours will apply to a bachelor's degree.

PAD 4953. Special Topics in Nonprofit Organizations. (3-0) 3 Credit Hours.

An organized course offering the opportunity for specialized study not normally or not often available as part of regular course offerings. Special Topics may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

PAD 4963. Special Topics in Public Administration. (3-0) 3 Credit Hours.

An organized course offering the opportunity for specialized study not normally or not often available as part of regular course offerings. Special Topics may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. (Formerly titled "Special Topics in Urban Management Policy.").

PAD 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: Enrollment limited to candidates for Honors in Public Administration during the last two semesters; completion of honors examination and approval by the honors program coordinator. Supervised research and preparation of an honors thesis. May be repeated once with advisor's approval.

Public Health (PUB)**PUB 1113. Introduction to Public Health. (3-0) 3 Credit Hours.**

Introduces students to the discipline of public health. It will cover a variety of disciplines to the basic tenets of public health. The course will provide a history of public health, an introduction to the five core disciplines (Epidemiology, Biostatistics, Environmental Health, Social and Behavioral Health, and Health Policy & Management). The course will also cover the role of public health in a global society. (Same as [SOC 1043](#). Credit cannot be earned for both [PUB 1113](#) and [SOC 1043](#).)

PUB 2113. Data Management in Public Health. (3-0) 3 Credit Hours.

Study of the skills required to design, organize and implement a data management system in public health applications. It will cover an introduction to data preparation for statistical analysis, development of organizational tools, methods of data acquisition, data collection form design, principles of database development, quality control of data, and data security. Application of Microsoft® Access and SAS® software packages in data management will be presented. (Same as [SOC 3543](#). Credit cannot be earned for both [PUB 2113](#) and [SOC 3543](#).)

PUB 3413. Behavioral Epidemiology. (3-0) 3 Credit Hours.

Provides the student with basic knowledge about epidemiological applications in a behavioral area. It covers behavioral and social environmental issues related to disease etiology, premature morbidity and mortality patterns. Provides an overview of the epidemiology of specific health-related behaviors, the relationships between these behaviors and health outcomes, and available evidence for the effectiveness and appropriateness of various approaches to modification of these behaviors. (Same as [SOC 4083](#). Credit cannot be earned for both [PUB 3413](#) and [SOC 4083](#).)

PUB 3613. Etiology 1: Epidemiologic Methods to Investigate Outbreaks and New Epidemics. (3-0) 3 Credit Hours.

Utilizes case discussion seminars to appraise the investigative methods and research designs for studying disease outbreaks and new epidemics. Historical and current cases will include examples of disease outbreaks (e.g., food borne illness, hospital infections), emergence of new diseases, or epidemics related to specific exposures (e.g., natural disasters). Each case will evaluate the background of the problem, the investigative methods employed, the results, and the interventions taken to resolve the problem.

PUB 4613. Etiology 2: Epidemiologic Methods to Investigate Chronic Disease, Exposure, and Risk. (3-0) 3 Credit Hours.

Utilizes case discussion seminars to appraise the investigative methods and research designs for studying chronic disease, disease exposure, and ascertainment of risk. Cases will include current examples of chronic diseases or conditions affecting population health (e.g., cardiovascular disease, diabetes, and obesity), methods for ascertaining outcomes (e.g., death certificates), and measures of risk association (e.g., standardized mortality ratios and relative risk). Each case will evaluate the background of the problem, the investigative methods employed, the results, and the public policy and practice implications from the research.

PUB 4933. Public Health Internship. (0-0) 3 Credit Hours.

Prerequisites: Senior standing and completed coursework requirements in Public Health Foundation. Provides the opportunity for work experience in a private or public health-related agency. Opportunities are developed in consultation with faculty advisor and on-site coordinator. Internship must be approved in advance by the Internship Coordinator and the student's internship faculty advisor. Supervised full-or part-time off-campus work experience and training in health care management. A minimum of 150 hours of work experience is required. Individual conferences and written reports required. May be repeated for credit but not more than 6 hours of internship will apply to a bachelor's degree.

Reading (RDG)**RDG 3513. Children's Literature–EC–6. (3-0) 3 Credit Hours.**

Designed to familiarize students with children's books from diverse cultures that are appropriate for EC–grade 6. Topics will include: the contributions of children's books, criteria for selecting materials, the evaluation of individual books, a survey of the genres of children's literature, literary response, and the discussion of current issues in the field of children's literature. Restricted course; advisor code required for registration.

RDG 3523. Reading for Teachers–Grades 4–8. (3-0) 3 Credit Hours.

An overview of the development of reading across the grades with an emphasis on grades 4 through 8. This course focuses on the reading process, techniques for developing oral and written language facility, word identification and comprehension of readers from various sociocultural backgrounds and with differing abilities, and classroom assessment of reading. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8. Field experience required.

RDG 3533. Reading and Writing Across the Disciplines–Grades 4–8. (3-0) 3 Credit Hours.

Prerequisite: [RDG 3523](#). Concurrent enrollment in C&I 4533, [C&I 4543](#), [C&I 4553](#), and [EDP 4203](#) in semester prior to student teaching for Grades 4–8 LA/RDG/SS certification. Concurrent enrollment in C&I 4533 for Grades 4–8 ESL certification. Must be admitted to the Teacher Certification Program. Study of the teaching and learning of content area reading in grades 4 through 8 including the textual, contextual, and cultural factors that influence reading. The course considers the range of reading abilities of intermediate and middle grade students, texts used in these grade levels, and strategies for teaching and evaluating vocabulary, comprehension, and thinking skills in the content areas. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8. Field experience required. (Formerly titled "Content Area Reading-Grades 4–8.")

RDG 3633. Literature and Other Texts Across the Content Areas–Grades 4–8. (3-0) 3 Credit Hours.

This course is designed to familiarize students with literature and other texts appropriate for students in grades 4 through 8. These texts include trade books, informational books, electronic texts, and other real-world texts that are appropriate for teaching and learning. Topics will include: examination of critical issues in children's books and young adult literature, evaluation and selection of texts, and literary response. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8. Field experience required.

RDG 3673. Reading for Secondary Teachers–Grades 8–12. (3-0) 3 Credit Hours.

An overview of the developmental nature of reading across the grades with an emphasis on grades 8 through 12. This course focuses on the reading process, including word identification, fluency,

vocabulary, higher-order levels of comprehension, and metacognition. This course considers social and cultural factors that influence the adolescent reading processes, including the role of social interaction in reading, language variations, and background knowledge that are a part of the reading process. Other topics include differences in student ability and motivation as well as new approaches to assessment. This course also explores literacy programs that fit the needs of diverse adolescents, especially programs that address the challenges of struggling secondary readers. This course must be completed with a grade of “B-” or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8. Field experience required.

RDG 3773. Reading and Writing Across the Disciplines–Secondary. (3-0) 3 Credit Hours.

Prerequisites: Completion of all requirements for admission to the Teacher Certification Program, including but not limited to satisfying the TSI requirement, and completing [EDP 3203](#) and [EDU 2103](#). Study of the reading process and of materials and techniques for supporting reading and writing in the secondary school. Considers the range of reading ability of secondary students, texts used, and strategies for teaching vocabulary, and comprehension in different content areas. Directed field experiences in secondary school classrooms are required. Opportunities for cross-disciplinary applications. Restricted course; advisor code required for registration. This course must be completed with a grade of “B-” or better for it to serve as a prerequisite for [C&I 4626](#) Student Teaching: Grades 4–8. Field experience required. (Formerly titled “Introduction to Content Area Reading–Secondary.”)

RDG 3803. Writing Development and Processes. (3-0) 3 Credit Hours.

Prerequisite to Teacher Certification. Examines the nature of written language and facets of the writing process. The course focuses on the developmental nature of writing, stages in the writing process, writing in different genres, writing in the content areas, writing to learn, writing in relation to other communication processes, the evaluation of writing, and the place of technology in writing. For EC–6 generalists, this course must be completed with a grade of “B-” or better for it to serve as a prerequisite for [C&I 4616](#) Student Teaching: Early Childhood–Grade 6 and [C&I 4626](#) Student Teaching: Grades 4–8. Restricted course; advisor code required for registration.

RDG 3823. Reading Comprehension–EC–6. (2-2) 3 Credit Hours.

Prerequisites: Admission to the Teacher Certification Program, [ECE 3143](#), [ECE 3313](#), and [ECE 3603](#). Concurrent enrollment in [C&I 4353](#), [C&I 4403](#), and [ECE 4203](#) is required. May not be taken concurrently with [C&I 4303](#), [ECE 4143](#), and [RDG 4833](#). Study of the reading comprehension process, including how textual, reader, psychological, contextual, and cultural factors affect understanding of text. Emphasis is placed on cognitive reading strategies for comprehending narrative and expository text. Emphasis is also placed on strategies for teaching and evaluating vocabulary, comprehension, and thinking skill in the content areas. This course must be completed with a grade of “B-” or better for students to enroll in Block C courses. For EC–6 generalists, this course must be completed with a grade of “B-” or better for it to serve as a prerequisite for [C&I 4616](#) Student Teaching: Early Childhood–Grade 6. Restricted course; advisor code required for registration. Field experience required. (Credit cannot be earned for both [RDG 3823](#) and [BBL 3823](#)).

RDG 4833. Organizing Reading Programs for Differentiated Instruction–EC–6. (2-2) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [ECE 3143](#), [ECE 3313](#), [ECE 3603](#), [RDG 3513](#), and [RDG 3823](#). Concurrent enrollment in [C&I 4303](#) and [ECE 4143](#) is required. Course is designed to familiarize students with a variety of reading programs and to implement differentiated reading instruction in individual, small group, and whole-class contexts. Students will learn to use and interpret assessment to gain a holistic view of students’ strengths and areas of need to inform instruction. For EC–6 generalists, this course must be completed with a grade of “B-” or better for it to serve as a

prerequisite for [C&I 4616](#) Student Teaching: Early Childhood–Grade 6. Restricted course; advisor code required for registration. Field experience required.

RDG 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

Real Estate (RFD)

RFD 3523. Real Estate Law. (3-0) 3 Credit Hours.

Prerequisite: [BLW 3013](#) or the equivalent. Legal environment of real property ownership and transfer and legal brokerage; estates in land; sales contracts; mortgage transactions; title conveyances; landlord and tenant; restrictions and zoning; eminent domain; federal, state, and local laws governing housing discrimination; and equal opportunity and community reinvestment. (Same as [BLW 3523](#). Credit cannot be earned for both [RFD 3523](#) and [BLW 3523](#).)

RFD 3533. Principles of Construction for Real Estate Professionals. (3-0) 3 Credit Hours.

The principles of construction methods and management with application to sustainable real estate development and adaptive reuse, facility and property management, real estate brokerage and real estate lending. Topics include building code requirements, AIA forms, assembling and interpreting construction documents, construction materials and methods, LEED construction requirements, tenant improvements, construction cost estimating and project cost tracking, and construction project management.

RFD 3571. Real Estate Seminar. (1-0) 1 Credit Hour.

Prerequisites: Enrollment as real estate major or minor and consent of instructor, and approval of the Department chair and the Dean of the College. Weekly presentations of current topics in real estate. This seminar may be repeated one time for a total of two semester credit hours.

RFD 4303. Facility and Property Management Policies and Procedures. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3013](#). The implementation of professional policies, standards, practices, and procedures for the leasing, operation and maintenance of facilities. Topics include the facility management profession, leasing, and the acquisition, installation, operation, maintenance and disposition of building systems, furniture and fixtures, and grounds and exterior elements. (Formerly MGT 4303. Credit cannot be earned for both MGT 4303 and [RFD 4303](#).)

RFD 4313. Facility and Property Management Practices. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MGT 3013](#). The application of management practices to the operation of facilities. Topics include the study of human and environmental factors, building safety, building audits, building technology, emergency preparedness, the use and changing uses of facilities, and continuous quality improvement. (Formerly MGT 4313. Credit cannot be earned for both MGT 4313 and [RFD 4313](#).)

RFD 4733. Principles of Sustainable Real Estate Development. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [FIN 3014](#), [FIN 3433](#), and [FIN 4713](#) or [FIN 4723](#), or consent of instructor, and approval of the Department chair and the Dean of the College. The examination of the principles involved in creating value through the real estate development process. Economic, regulatory, planning,

sustainability, financing, management and disposition issues are considered in the marketing and financial analyses of development prospects. (Same as [FIN 4733](#). Credit cannot be earned for both [RFD 4733](#) and [FIN 4733](#). Real Estate Finance and Development majors cannot take [FIN 4733](#) to meet degree requirements.).

RFD 4763. Real Estate Marketing. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and [MKT 3013](#). Focuses on the processes involved in professionally marketing and selling real estate. Emphasis is on integrating the four elements of a marketing mix—promotion, place, product, and price—and showing how they are used within the real estate industry to create marketing strategies. (Same as [MKT 4763](#). Credit cannot be earned for both [RFD 4763](#) and [MKT 4763](#). Real Estate Finance and Development majors cannot take [MKT 4763](#) to meet degree requirements.).

RFD 4853. Real Estate Appraisal. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), [FIN 3014](#), and [FIN 3433](#), their equivalents, or consent of instructor, and approval of the Department chair and the Dean of the College. Functions and methods of property valuation, including comparable sales analysis, cost depreciation analysis, and income capitalization; residential and income property appraisal techniques and reporting. (Same as [FIN 4853](#). Credit cannot be earned for both [RFD 4853](#) and [FIN 4853](#). Real Estate Finance and Development majors cannot take [FIN 4853](#) to meet degree requirements.).

RFD 4903. Internship in Construction Management. (0-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#); completion of 9 semester credit hours consisting of any combination; [FIN 3014](#), and/or courses with a CSM or RFD prefix. May only be taken by students in the B.B.A. degree in Real Estate Finance and Development with a Minor in Construction Management, with permission in writing from the instructor, the Department Chair, and the Dean of the College. See the College of Business Undergraduate Advising Center for required forms. This internship, as a required course in the Construction Management minor, is limited to the business and financial aspects of construction and will allow students to gain valuable experience in the field. The internship facilitates an integrative experience through interaction with entrepreneurs and building development business owners. Students engage in research projects, examine relevant issues and problems that builders and developers confront, and have the opportunity to engage in managerial work experience. Internship may not be repeated. (Formerly FIN 4903. Credit cannot be earned for both [RFD 4903](#) and FIN 4903.).

RFD 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: A 3.0 grade point average, [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

RFD 4912. Independent Study. (0-0) 2 Credit Hours.

Prerequisites: A 3.0 grade point average, [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

RFD 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: A 3.0 grade point average, [MGT 3003](#) and permission in writing from the instructor, the Department Chair, and the Dean of the College. See the College of Business Undergraduate Advising Center for required forms. Independent reading, research, discussion, and/or writing under the direction of

a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

RFD 4923. Internship in Real Estate. (0-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), declared major in Real Estate Finance and Development with 9 semester credit hours of real estate or finance courses, a 2.5 UTSA grade point average, and permission in writing from the instructor, the Department Chair, and the Dean of the College. See the College of Business Undergraduate Advising Center for required forms. The internship provides students the opportunity for professional work experience in a real estate related enterprise in either a private business or a public agency. The scope of the internship is developed in consultation with the sponsoring organization, the faculty advisor and Department Chair. This internship may be repeated once (for a total of 6 semester credit hours) provided the internships are with different organizations. (Formerly FIN 4923.).

RFD 4951. Special Studies in Real Estate. (1-0) 1 Credit Hour.

Prerequisites: [MGT 3003](#) and consent of instructor, approval of the Department Chair and the Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

RFD 4952. Special Studies in Real Estate. (2-0) 2 Credit Hours.

Prerequisites: [MGT 3003](#) and consent of instructor, approval of the Department Chair and the Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

RFD 4953. Special Studies in Real Estate. (3-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#) and consent of instructor, approval of the Department Chair and the Dean of the College. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

Russian (RUS)

RUS 1014. Elementary Russian I. (3-2) 4 Credit Hours. (TCCN = RUSS 1411)

Fundamentals of Russian offering the opportunity to develop speaking, listening, reading, and writing skills. Introduction to Russian culture. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

RUS 1024. Elementary Russian II. (3-2) 4 Credit Hours. (TCCN = RUSS 1412)

Prerequisite: [RUS 1014](#), the equivalent, an appropriate placement test score, or consent of instructor. Fundamentals of Russian offering the opportunity to further develop speaking, listening, reading, and writing skills. Further exposure to Russian culture.

RUS 2013. Intermediate Russian I. (3-1) 3 Credit Hours. (TCCN = RUSS 2311)

Prerequisite: [RUS 1024](#), the equivalent, an appropriate placement test score, or consent of instructor. Continued opportunity to develop listening, speaking, reading, and writing skills. Continued exposure to Russian culture.

RUS 2023. Intermediate Russian II. (3-1) 3 Credit Hours. (TCCN = RUSS 2312)

Prerequisite: [RUS 2013](#), the equivalent, an appropriate placement test score, or consent of instructor. Continued opportunity to develop listening, speaking, reading, and writing skills. Continued exposure to Russian culture.

RUS 2333. Russian Literature in English Translation. (3-0) 3 Credit Hours. (TCCN = ENGL 2331)

Major works of Russian literature across time, genres, and movements. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture. (Formerly RUS 3333. Credit cannot be earned for both [RUS 2333](#) and RUS 3333.).

RUS 3033. Oral Communication Skills. (3-0) 3 Credit Hours.

Prerequisite: [RUS 2013](#) or the equivalent. Further development of speaking skills in a variety of contexts. May be repeated once for credit when topics vary.

RUS 3143. Structure of Russian Language. (3-0) 3 Credit Hours.

Prerequisite: [RUS 2013](#) or the equivalent. Extensive grammar review. Further development of speaking and writing skills through activities directed at the intermediate-high and advanced levels. Considerations of differences between written and spoken language. May be repeated once for credit when topics vary.

RUS 3213. Advanced Russian. (3-0) 3 Credit Hours.

Prerequisite: [RUS 2023](#) or the equivalent. Opportunity to develop advanced-level oral and written communication skills in the Russian language, along with enhanced comprehension skills in listening and reading. May be repeated for credit when topics vary.

RUS 3633. Topics in Russian Culture. (3-0) 3 Credit Hours.

Prerequisite: [RUS 2013](#) or the equivalent. Further development of proficiency by content-based instruction. Topics may include geography, traditions, history, music, literature, art, or film. May be repeated for credit when topics vary.

Sociology (SOC)**SOC 1013. Introduction to Sociology. (3-0) 3 Credit Hours. (TCCN = SOCI 1301)**

Introduces the study of human groups, the relations of individuals to groups, and the process of becoming a group member and functioning in a group setting. May be applied toward the Core Curriculum requirement in Social and Behavioral Sciences. (Formerly titled "Introduction to the Study of Society.").

SOC 1043. Introduction to Public Health. (3-0) 3 Credit Hours.

Introduces the discipline of public health. Covers a variety of disciplines to the basic tenets of public health. Provides a history of public health, an introduction to the five core disciplines (Epidemiology, Biostatistics, Environmental Health, Social and Behavioral Health, and Health Policy & Management). Also covers the role of public health in global society. (Same as [PUB 1113](#). Credit cannot be earned for both [SOC 1043](#) and [PUB 1113](#).).

SOC 2013. Social Problems. (3-0) 3 Credit Hours. (TCCN = SOCI 1306)

Examines major contemporary social problems and their causes and consequences. Topics may include poverty, racism, sexism, deviance and crime, drug and alcohol dependence, the urban crisis, overpopulation, and war. May be applied toward the Core Curriculum requirement in Social and Behavioral Sciences.

SOC 2023. Social Context of Drug Use. (3-0) 3 Credit Hours. (TCCN = SOCI 2340)

Explores the use and abuse of mind-altering substances within society. Topics of study may include historical treatments of drug use, drug treatment and recovery interventions, the global magnitude of contemporary drug problems, and the problematic nature and consequences of drug legislation and enforcement. May be applied toward the Core Curriculum requirement in Social and Behavioral Sciences. (Formerly titled "Drugs in Society.").

SOC 2063. Special Topics in Sociology. (3-0) 3 Credit Hours.

An organized course offering the opportunity for a specialized topic at the lower division level that is available through the regular course offerings. Special Topics may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

SOC 3013. Social Stratification. (3-0) 3 Credit Hours.

Examines theory and research pertaining to inequalities of power, prestige, and economic privilege. Major emphasis upon inequality and social mobility in the United States.

SOC 3043. Race and Ethnic Relations. (3-0) 3 Credit Hours.

Examines the dominant-subordinate relations in world societies, with major emphasis on the United States. Models of assimilation, colonial and class society, and consequences for minority and majority populations may be examined.

SOC 3053. Deviance and Difference. (3-0) 3 Credit Hours.

Analyzes the forms of deviance and consideration of social/political trends toward difference. An examination of theories may include: biological, analytic, labeling, functionalist, culture conflict, radical, and poststructuralist.

SOC 3063. Collective Behavior. (3-0) 3 Credit Hours.

Prerequisite: [SOC 1013](#), or consent of instructor. Focuses on case studies and associated theory dealing with various forms of collective behavior ranging from spontaneous events to organized mass movements.

SOC 3083. Social Change and Development. (3-0) 3 Credit Hours.

Presents principal models and theories of social transformation applied to examples of societal change. Topics may include consideration of master trends such as rationalization, industrialization, and bureaucratization, and the expansion and contraction of global interconnectedness.

SOC 3093. Religion and Society. (3-0) 3 Credit Hours.

Focuses on religious institutions and movements in the United States with comparative data from other countries. Topics may include the relationship of religious institutions to social stratification, economic institutions, and political and social change.

SOC 3113. Criminology. (3-0) 3 Credit Hours.

Examines the nature, prevalence, and impact of different types of legal violations, including street crime, organized crime, political crime, and white-collar crime. Includes treatment of social and legal responses to crime.

SOC 3163. Families in Society. (3-0) 3 Credit Hours.

Examines the modern family, structures and functions, variant patterns and the influence of the broader society in producing family change. Contemporary and continuing issues are covered in the context of theory and research. Topics may include variability in childhood socialization, family violence, changing gender roles, marriage, divorce and remarriage, alternative family structures, and the aging family. (Formerly SOC 2053. Credit cannot be earned for both [SOC 3163](#) and SOC 2053.) (Formerly titled “Marriage and Family.”).

SOC 3193. The Sociology of Work and Occupations. (3-0) 3 Credit Hours.

Prerequisite: [SOC 1013](#), or consent of instructor. Explores occupational structures in selected societies; the relationship between occupations and economic rewards, lifestyles, and worldview; and determinants of work satisfaction.

SOC 3203. Gerontology. (3-0) 3 Credit Hours.

Examines the historical and cross-cultural differences in the status of the elderly in society. Includes interaction of the elderly with social institutions, and policy implications of the demographic shift toward an aging population in the United States.

SOC 3213. Medical Sociology. (3-0) 3 Credit Hours.

Examines social factors in the cause and distribution of disease; relationships between patients and medical professionals; the contribution of lay belief to health, illness, treatment, and recovery; the organization of health-care delivery; and the disparities in the distribution of medical resources.

SOC 3223. Population Dynamics and Demographic Techniques. (3-0) 3 Credit Hours.

Introduces the common methods, techniques, and models employed by demographers. Topics may include demographic data sources, introduction to life table techniques; construction, standardization, and decomposition of rates; measures of concentration and diversity; and population growth projections. Students will become familiar with microcomputer programs for demographic analysis. (Formerly titled “Demographic Techniques.”).

SOC 3253. The Individual and Society. (3-0) 3 Credit Hours.

Examines the major theories dealing with the effects of culture and social structure on the development and functioning of the personality and the self.

SOC 3263. Latinas in U.S. Society. (3-0) 3 Credit Hours.

Focuses on women of Latino descent in the United States with a comparative emphasis on the experiences of Texas Latinas relative to those residing elsewhere in the Southwest. Topics may include: historical presence in the Southwest; patriarchy and familism; labor and employment issues; immigration and border issues; political involvement and feminist vision; artistic, cultural and intellectual expression. (Same as [WS 3953](#). Credit cannot be earned for both [SOC 3263](#) and [WS 3953](#) when topic is the same.).

SOC 3283. Poverty. (3-0) 3 Credit Hours.

Examines the causes and consequences of poverty in the United States and selected other societies. An examination of social programs designed to combat poverty.

SOC 3293. Sociology of Gender. (3-0) 3 Credit Hours.

Explores the nature of gender roles in our own and other societies. Consideration of how people learn gender roles and the outcomes of this learning for individuals, families, and societies. Alternatives to conventional gender roles. (Formerly titled “Gender Roles.”).

SOC 3323. Introduction to Social Research. (3-0) 3 Credit Hours.

Prerequisite: [SOC 1013](#). Introduction to the philosophy of science and the logic of research design. Examines a variety of social research designs including experiments, survey research, content analysis, and historical analysis. Course emphasizes techniques related to information gathering, basic data analysis, and reporting findings. (Formerly titled “Research Methods in Sociology.”).

SOC 3343. Classical Sociological Theory. (3-0) 3 Credit Hours.

Prerequisite: [SOC 1013](#). Examines the transition from social philosophy to sociology, with special emphasis on the work of Karl Marx, Emile Durkheim and Max Weber. The foundational theories and concepts in sociology are addressed, with attention also given to the application of theory to longstanding and current social issues. (Formerly SOC 3153. Credit cannot be earned for both [SOC 3343](#) and SOC 3153.).

SOC 3353. Contemporary Sociological Theory. (3-0) 3 Credit Hours.

Prerequisite: [SOC 1013](#). Examines contemporary paradigms in sociological theory (e.g., functionalism, neo-Marxism, phenomenology, and feminism), and current debates over the state of theory. Attention is also given to the linkages between theory and research. (Formerly SOC 3183. Credit cannot be earned for both [SOC 3353](#) and SOC 3183.).

SOC 3373. Qualitative Research Methods. (3-0) 3 Credit Hours.

Prerequisite: [SOC 3323](#). Introduces the philosophy of science and research design, including participant observation, in-depth interviews, oral history, and focus groups through field research. The course provides opportunities for developing qualitative research skills while gaining familiarity with issues and problems common to these methods.

SOC 3393. Quantitative Research Methods. (3-0) 3 Credit Hours.

Prerequisites: Completion of the Core Curriculum requirement in mathematics, [SOC 1013](#), and [SOC 3323](#). Application of conceptualization and operationalization in the quantitative analysis of a variety of sociological subjects. Use of elementary measures of central tendency and dispersion, crosstabulations, and linear model procedures to evaluate relationships among variables; problems of descriptions and inference. Includes the use of standard computer packages and secondary analysis of data. (Formerly SOC 3313. Credit cannot be earned for both SOC 3313 and [SOC 3393](#).).

SOC 3413. Sociology of the Mexican American Community. (3-0) 3 Credit Hours.

Focuses on contemporary issues regarding Mexican American communities. Topics of discussion include family structure, gender roles, border issues and political power. Comparison with other minorities and the majority group will allow discussion of variant community patterns. (Formerly titled “Mexican American Family.”).

SOC 3423. Mass Media in Society. (3-0) 3 Credit Hours.

Examines media production and its role in the economy; the construction of media meaning, signification, and ideology; and the role of the audience in making sense of messages. Larger issues of societal power will be treated, along with an examination of alternative media.

SOC 3433. Mexican Immigration and U.S. Society. (3-0) 3 Credit Hours.

Focuses on the growth and development of the Mexican population in the United States and controversies around Mexican immigration, both legal and undocumented. Uses a sociological perspective to present a historical analysis of Mexican migration to the United States, theoretical explanations of migrations, and the social implications of these issues.

SOC 3463. Sociology of Sport and Leisure. (3-0) 3 Credit Hours.

Examines the social meanings of play and leisure in advanced industrial societies. Emphasis will be on the origins, structure, and function of these phenomena in the United States, with major emphasis on sport as an institution.

SOC 3503. Sociology of Education. (3-0) 3 Credit Hours.

Explores education as an institution that affects and is affected by the larger social structure. Topics may include the role of schools in society; connections between schooling, stratification and the economy; gender and ethnic differences in achievement; and social and cultural contexts of learning.

SOC 3513. Children and Society. (3-0) 3 Credit Hours.

Examines the evolution of concepts of childhood over time. Topics may include theories of child development, cultural and social influences in child raising, the effects of affluence and poverty on children, children in postmodern societies, and child socialization in different cultures.

SOC 3543. Data Management in Public Health. (3-0) 3 Credit Hours.

Provides an introduction to data management for research projects in public health using microcomputers. Topics include design of data collection forms, data entry, computer managed documentation and statistical computing using SPSS/SAS. (Same as [PUB 2113](#). Credit cannot be earned for both [SOC 3543](#) and [PUB 2113](#).)

SOC 4023. Violence and Society. (3-0) 3 Credit Hours.

Examines and assesses the major social science perspectives and theories that attempt to explain why violence occurs in society. (Formerly SSC 3203. Credit cannot be earned both for [SOC 4023](#) and SSC 3203.)

SOC 4043. Global Health. (3-0) 3 Credit Hours.

Covers the field of global health, particularly the serious health problems facing developing world populations. The course begins with an introduction to the global burden of disease and then examines the complex social, economic, political, environmental, and biological factors that structure the origins, consequences and possible treatments of disease. Provides an introductory survey of the basic issues and initiatives in contemporary international public health, and develops student awareness of the socioeconomic and cultural complexity of health problems in developing nations.

SOC 4053. Health Care System. (3-0) 3 Credit Hours.

Covers the complexities of health care organization and finance and presents a general overview of how the U.S. health care systems work and how the major components within the system fit together. Covers basic structures and operations of the U.S. health system—from its historical origins and resources, to its individual services, cost, and quality. Compares and contrasts the U.S. health care system with other health care systems around the world.

SOC 4073. Social and Behavioral Theories in Public Health. (3-0) 3 Credit Hours.

Examines the fundamental social and behavioral theories that drive research and practice in public health. The course covers a number of social and behavioral theories commonly used in public health education interventions at the individual, group, and community levels.

SOC 4083. Behavioral Epidemiology. (3-0) 3 Credit Hours.

Provides an introduction to the social/behavioral sciences in public health, basic behavioral measurement methods, and basic knowledge of epidemiologic application in the area of social and behavioral science. The course will stress the relationship of human behavior to disease, and ways in which the social/behavioral sciences differ from epidemiology with respect to approaches to measurement,

terminology, and analytic methods. In addition, the course will examine the literature, and explore in-depth and quantify the determinants of behavior that are risk factors for several chronic and infectious disorders. (Same as [PUB 3413](#). Credit cannot be earned for both [SOC 4083](#) and [PUB 3413](#).)

SOC 4433. Culture and Society. (3-0) 3 Credit Hours.

Explores the social significance of cultural production, including the relationships between art, consciousness, the economy, and history. Themes examined may include the social production of art, art and ideology, the problem of artistic reception, and art movements and cultural resistance. Topics include art and culture in minority social movements, the relation between high and low culture, and cultural conflict over art.

SOC 4683. Health Disparities. (3-0) 3 Credit Hours.

The main purpose of this course is to provide students with an understanding of how racial/ethnic, social, economic, demographic and gender factors contribute to disparities in health and health care in the United States.

SOC 4853. Special Studies in Sociology. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree. (Formerly SOC 4953. Credit may be earned for both [SOC 4853](#) and SOC 4953 but may not exceed 6 semester credit hours combined.)

SOC 4863. Topics in Sociology. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for a specialized topic not normally or not often available as part of the regular course offerings. Special Topics may be repeated for credit when topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

SOC 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

SOC 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree.

SOC 4933. Internship in Sociology. (0-0) 3 Credit Hours.

Prerequisites: Completion of [SOC 3343](#) or [SOC 3353](#) and [SOC 3373](#) or [SOC 3393](#) and consent of internship coordinator. Provided as part of the COLFA Signature Experience and offers supervised work experience relevant to sociology within selected organizations and agencies. Internships selected should be relevant to previous coursework. A maximum of 6 semester credit hours may be earned through this internship.

SOC 4936. Internship in Sociology. (0-0) 6 Credit Hours.

Prerequisites: Completion of [SOC 3343](#) or [SOC 3353](#) and [SOC 3373](#) or [SOC 3393](#) and consent of internship coordinator. Provided as part of the COLFA Signature Experience and offers supervised work experience relevant to sociology within selected organizations and agencies. Internships selected should be relevant to previous coursework. A maximum of 6 semester credit hours may be earned through this internship.

SOC 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: Enrollment limited to candidates for Honors in Sociology during the last two semesters. Supervised research and preparation of an honors thesis. May be repeated once with advisor's approval.

Spanish (SPN)**SPN 1014. Elementary Spanish I. (3-2) 4 Credit Hours. (TCCN = SPAN 1411)**

Fundamentals of Spanish, offering the opportunity to develop listening, speaking, reading, and writing skills. Emphasis on listening and speaking. Introduction to Hispanic culture. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture.

SPN 1024. Elementary Spanish II. (3-2) 4 Credit Hours. (TCCN = SPAN 1412)

Prerequisite: [SPN 1014](#), the equivalent, or an appropriate placement test score. Fundamentals of Spanish offering the opportunity to develop listening, speaking, reading, and writing skills. Emphasis on listening and speaking. Further study of Hispanic culture.

SPN 2013. Intermediate Spanish I. (3-1) 3 Credit Hours. (TCCN = SPAN 2311)

Prerequisite: SPN 1008, [SPN 1024](#), the equivalent, or an appropriate placement test score. Continued opportunity to develop listening, speaking, reading, and writing skills. Grammar and further study of Hispanic culture.

SPN 2023. Intermediate Spanish II. (3-1) 3 Credit Hours. (TCCN = SPAN 2312)

Prerequisite: [SPN 2013](#), the equivalent, or an appropriate placement test score. Continued opportunity to develop listening, speaking, reading, and writing skills. Grammar review and further study of Hispanic culture.

SPN 2333. Hispanic Literature in English Translation. (3-0) 3 Credit Hours. (TCCN = ENGL 2331)

Prerequisite: [WRC 1013](#) or the equivalent. Major works in Hispanic literatures: themes, genres, and movements. May not be applied to a major in Spanish. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture. (Formerly SPN 3333. Credit cannot be earned for both [SPN 2333](#) and SPN 3333.)

SPN 2513. Spanish for Special Purposes. (3-1) 3 Credit Hours. (TCCN = SPAN 2316)

Prerequisite: [SPN 2013](#), the equivalent, or an appropriate placement test score. Foreign language communication and cross-cultural skills relevant to one or more of the following areas: business, health care, law, education, science, southwest Spanish, Hispanic literature, or technology. May be repeated for credit when topics vary.

SPN 3003. Oral and Written Expression. (3-1) 3 Credit Hours.

Prerequisite: [SPN 2023](#), the equivalent, or an appropriate placement test score. If placement is at a higher level, a Spanish elective may be substituted for the minor. Conversation, reading, and grammar review toward building literacy skills. Opportunities for composition and oral communication for a variety of

situations and topics. May not be used as an elective for the Spanish major. (Formerly SPN 2103. Credit cannot be earned for both [SPN 3003](#) and SPN 2103.).

SPN 3013. Spanish Phonetics and Pronunciation. (3-1) 3 Credit Hours.

Prerequisite: [SPN 2023](#) or [SPN 3003](#), the equivalent, or consent of instructor. Offers the opportunity for study of the sound system of Latin-American Spanish. Activities may include pronunciation exercises, exercises in sound discrimination and transcription, and articulatory description of various dialects of Spanish.

SPN 3033. Oral Communication Skills. (3-0) 3 Credit Hours.

Prerequisite: [SPN 2023](#) or [SPN 3003](#), the equivalent, or consent of instructor. Opportunity for development of speaking skills in a formal register through activities directed at vocabulary building, grammatical accuracy, and aural/written comprehension. May not be used as an elective for the Spanish major.

SPN 3043. Advanced Reading. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3063](#), the equivalent, or consent of instructor. Approaches to reading, comprehension and analysis of literary and other advanced texts. Use of analytical terminology, advanced vocabulary building, and further development of formal writing skills.

SPN 3063. Grammar and Composition. (3-0) 3 Credit Hours.

Prerequisite: [SPN 2023](#) or [SPN 3003](#), or the equivalent. Extensive review of fundamental grammar with vocabulary building. Development of writing skills and style through activities directed at the Advanced level on the ACTFL-ETS proficiency scale. Consideration of usage and differences between written and spoken language.

SPN 3113. Linguistic Structures of Spanish. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3063](#), the equivalent, or consent of instructor. Offers the opportunity for the application of the basic principles of analysis and description of language structure to Spanish. Attention given to structural regularities at the levels of word formation, syntax, and semantics of formal Spanish, recognizing variability in spoken registers.

SPN 3153. Spanish for the Business/Management Fields. (3-0) 3 Credit Hours.

Prerequisite: [SPN 2023](#) or [SPN 3003](#), or the equivalent. Foreign language skills relevant to careers in business fields. Emphasis on reading skills and simple conversations on business topics. Exposure to terminology from contracts, financial statements, business law, marketing, and banking. Intended for students with some background in Spanish. May be repeated once for credit when topics vary.

SPN 3413. The Literature of Spain from the Middle Ages to 1700. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3043](#) or consent of instructor. Spanish literature from the Middle Ages to 1700. Readings of selections and complete works. Practice in critical analysis through papers and examinations.

SPN 3423. The Literature of Spain from 1700 to the Present. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3043](#) or consent of instructor. Spanish literature from 1700 to the present. Readings of selections and complete works. Practice in critical analysis through papers and examinations.

SPN 3463. Latin American Literature to Modernism. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3043](#) or consent of instructor. Latin American literature from pre-Columbian times to Modernism. Practice in critical analysis through papers and examinations.

SPN 3473. Latin American Literature since Modernism. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3043](#) or consent of instructor. Latin American literature from Modernism to the present. Practice in critical analysis through papers and examinations.

SPN 3493. Mexican American Literature. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3003](#), [SPN 3063](#), or consent of instructor. Readings and discussion of works by Mexican American writers. The expression through poetry, the novel, the short story, and the theater of the Mexican American cultural experience as well as universal themes and literary concerns. Selections from popular literature, including the oral tradition. May be repeated for credit when topics vary.

SPN 3613. Spanish Culture and Civilization. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3043](#). Emergence of the Spanish peoples from pre-Roman times to the present: history, cultural expression, myths, values, and worldview.

SPN 3623. Latin American Culture and Civilization. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3043](#). The cultural life of the respective geographic regions and social strata of Latin America from before the Conquest to the present, as reflected in and interpreted by its literature and arts.

SPN 4003. Advanced Language Skills. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3043](#), or [SPN 3063](#) as appropriate, or consent of instructor. Development of advanced skills in formal Spanish, including such areas as grammar, composition, oratory, creative writing, Spanish/English translation, and other practical applications of language study. May be repeated for credit when topics vary.

SPN 4113. Topics in Spanish Linguistics. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3113](#) or consent of instructor. Advanced study and applications of topics in Spanish linguistics. May include one or more of the following: phonology, morphology, syntax, semantics, dialectology, language variability, and history of Spanish. May be repeated for credit when topics vary. This course fulfills the College of Liberal and Fine Arts Signature Experience.

SPN 4123. The Spanish of the Southwest. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3013](#), [SPN 3113](#), or consent of instructor. The analysis of the Spanish language as used by Mexican Americans in the southwestern United States, from a linguistic and sociolinguistic perspective. Particular attention given to the Spanish spoken in Texas.

SPN 4203. Topics in Hispanic Literatures. (3-0) 3 Credit Hours.

Prerequisite: An upper-division course in literature taught in Spanish or consent of instructor. An intensive study of an area of Spanish or Spanish American literatures. May be repeated for credit when topics vary. This course fulfills the College of Liberal and Fine Arts Signature Experience.

SPN 4303. Topics in Hispanic Cultures. (3-0) 3 Credit Hours.

Prerequisite: [SPN 3043](#) or consent of instructor. An intensive study of an area of Hispanic cultures. May be repeated for credit when topics vary. This course fulfills the College of Liberal and Fine Arts Signature Experience.

SPN 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a

bachelor's degree. No more than 6 semester credit hours of [SPN 4913](#) and/or [SPN 4993](#) may be applied to the major in Spanish.

SPN 4933. Internship in Spanish. (0-0) 3 Credit Hours.

Prerequisite: Permission of Department Chair. Supervised experience in a setting that provides the opportunity to integrate theory and practice in language usage. May be repeated once for credit.

SPN 4953. Special Studies in Spanish. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

SPN 4993. Honors Research. (0-0) 3 Credit Hours.

Prerequisite: Consent of the undergraduate advisor. Supervised research and preparation of an honors thesis. May be repeated once for credit, with approval. No more than 6 semester credit hours of [SPN 4993](#) and/or [SPN 4913](#) may be applied to the major in Spanish.

Special Education (SPE)

SPE 3603. Introduction to Special Education. (3-0) 3 Credit Hours.

A study of individuals, groups, and populations with disabilities or exceptionalities. Content covered includes special education and disability law, critical issues in special education, special education processes and procedures, etiology, characteristics, prevalence, and placement options. Knowledge and competencies necessary for providing research-based, empirically derived best practices in curriculum and instruction to preschool and school-aged children and youth with exceptionalities in inclusive settings will also be presented. (Formerly ATE 3603, EDP 3603, and IDS 3303. Credit cannot be earned for more than one of the following: ATE 3603, EDP 3603, IDS 3303, or [SPE 3603](#).) (Formerly titled "Introduction to Exceptionality.").

SPE 3623. Assessment of Students with Mild/Moderate Disabilities. (3-0) 3 Credit Hours.

Prerequisite: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3693](#), and [ECE 3603](#). Concurrent enrollment in [SPE 3653](#), [SPE 4623](#), and [SPE 4643](#) is required. An introduction to assessment of students with mild/moderate disabilities. Informal and formal assessment instruments, procedures, and systems for assessment of aptitude, achievement, adaptive behavior, and language abilities will be studied. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4716](#) Student Teaching: All Level EC-12. (Formerly EDP 3623. Credit cannot be earned for both [SPE 3623](#) and EDP 3623.) (Formerly titled "Assessment of Exceptional Children.").

SPE 3633. Classroom and Behavior Management for Students with Disabilities. (3-0) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3623](#), [SPE 3653](#), [SPE 3693](#), [SPE 4623](#), [SPE 4643](#), [ECE 3603](#), and [RDG 3523](#). Concurrent enrollment in [SPE 3673](#), [SPE 3683](#), and [SPE 4673](#) is required. A study of common behavior problems in children with disabilities, behavior management, and other research-supported strategies for addressing behavior issues in children with disabilities. Research related to alternative explanations for behavior and behavior change will be included. Planning, application, and evaluation of a behavior change project is required. (Formerly ATE 3633 and EDP 3633. Credit cannot be earned for more than one of the following: ATE 3633, EDP 3633, or [SPE 3633](#).) (Formerly titled "Classroom and Behavior Management for Exceptional Children.").

SPE 3653. Practicum in Special Education (Introduction). (3-0) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3693](#), and [ECE 3603](#). Concurrent enrollment in [SPE 3623](#), [SPE 4623](#), and [SPE 4643](#) is required. Instructional practices for students with disabilities will be studied including instructional design and creation of individual education plans. Application of course content in the field with students with disabilities will be required. Students enrolled in this course will be required to spend 6–8 hours a week in field-based placements, for a total of 60 to 80 hours, dependent upon the field placement program needs and requirements and on instructor requirements. This course must be completed with a grade of “B-” or better for it to serve as a prerequisite for [C&I 4716](#) Student Teaching: All Level EC–12. Restricted course; advisor code required for registration. (Formerly EDP 3653. Credit cannot be earned for both [SPE 3653](#) and EDP 3653.)

SPE 3673. Assessment: Students with ASD and Developmental Disabilities. (3-0) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3693](#), [ECE 3603](#), and [RDG 3523](#). Concurrent enrollment in [SPE 3633](#), [SPE 3683](#), and [SPE 4673](#) is required. An introduction to formal and informal standardized assessment procedures for students with autism spectrum disorders and developmental disabilities. Course emphasis will be on the evaluation of instruction through assessment and using assessment for instructional design and programmatic planning for students with autism spectrum disorders and developmental disabilities. This course must be completed with a grade of “B-” or better for it to serve as a prerequisite for [C&I 4716](#) Student Teaching: All Level EC–12.

SPE 3683. Special Education Across the Lifespan. (3-0) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3693](#), [ECE 3603](#), and [RDG 3523](#). Concurrent enrollment in [SPE 3633](#), [SPE 3673](#), and [SPE 4673](#) is required. The study of programs and services in special education, including early childhood intervention and transition, that impact students with disabilities throughout the lifespan. The course will focus on supports, procedures, and resources for facilitating transitions and communication of transition activities involving the student and families.

SPE 3693. Special Education Law. (3-0) 3 Credit Hours.

A study of the local, federal and state laws, regulations, rules, and ethics that govern special education. Course topics will include due process, confidentiality, monitoring and evaluation requirements, and the provision of related services. Emphasis on terminology, definitions, classification systems, and current issues and trends.

SPE 4623. Mathematics Instruction for Students with Disabilities. (3-0) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3693](#), [ECE 3603](#), [MAT 1153](#), and [MAT 1163](#). Concurrent enrollment in [SPE 3623](#), [SPE 3653](#), and [SPE 4643](#) is required. The study of the learning and development of mathematical concepts, procedures, and skills for students with disabilities. Concepts, methods, and appropriate use of technology related to numbers, patterns, operations, problem solving, geometry, and algebraic reasoning will be included. Research-based methods and strategies will be applied in the field. This course must be completed with a grade of “B-” or better for it to serve as a prerequisite for [C&I 4716](#) Student Teaching: All Level EC–12.

SPE 4643. Instruction for Students with Mild/Moderate Disabilities. (3-0) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3693](#), and [ECE 3603](#). Concurrent enrollment in [SPE 3623](#), [SPE 3653](#), and [SPE 4623](#) is required. This course is a study of the development and implementation of research-validated instructional strategies. Students will learn how to select learning strategies to meet the individual needs of students with disabilities. Specific learning strategies will be evaluated and implemented in classroom settings. Strategies will address the acquisition, storage, and expression of knowledge. Class sessions will involve direct development in learning

strategies and specific problem solving associated with strategies instruction. This course must be completed with a grade of “B-” or better for it to serve as a prerequisite for [C&I 4716](#) Student Teaching: All Level EC–12. (Formerly titled “Specialized Instructional Methods for Students with Exceptionalities.”).

SPE 4653. Practicum in Special Education (Advanced). (3-0) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3623](#), [SPE 3633](#), [SPE 3653](#), [SPE 3673](#), [SPE 3683](#), [SPE 3693](#), [SPE 4623](#), [SPE 4643](#), [SPE 4673](#), [ECE 3603](#), and [RDG 3523](#). Concurrent enrollment in [SPE 4683](#) and [SPE 4693](#) is required. The study of the planning, application, and evaluation of Individual Educational Plans (IEPs) and the specialized educational and related services provided under the law to students with disabilities. Students enrolled in this course will be required to spend 6 to 8 hours a week in field-based placements for a total of 60 to 80 hours, dependent upon field placement program needs and requirements and on instructor requirements. This course must be completed with a grade of “B-” or better for it to serve as a prerequisite for [C&I 4716](#) Student Teaching: All Level EC–12. Restricted course; advisor code required for registration. (Formerly EDP 4653. Credit cannot be earned for both [SPE 4653](#) and EDP 4653.).

SPE 4673. Instruction for Students with Autism Spectrum Disorders and Developmental Disabilities. (3-0) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3693](#), [ECE 3603](#), and [RDG 3523](#). Concurrent enrollment in [SPE 3633](#), [SPE 3673](#), and [SPE 3683](#) is required. This course is a study of the development and implementation of research-validated instructional strategies for students with autism spectrum disorders and developmental disabilities. Course topics will include the use of formal and informal assessments to determine appropriate academic, social, and behavioral goals and objectives for students and identifying research-validated strategies to assist students with meeting these goals. This course must be completed with a grade of "B-" or better for it to serve as a prerequisite for [C&I 4716](#) Student Teaching: All Level EC–12.

SPE 4683. Communication and Collaboration in Special Education. (3-0) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3623](#), [SPE 3633](#), [SPE 3653](#), [SPE 3673](#), [SPE 3683](#), [SPE 3693](#), [SPE 4623](#), [SPE 4643](#), [SPE 4673](#), [ECE 3603](#), and [RDG 3523](#). Concurrent enrollment in [SPE 4653](#) and [SPE 4693](#) is required. This course will focus on the collaborative roles and responsibilities of teachers, school district personnel, and parents/families in providing individualized educational programs to students with disabilities. Effective strategies for communication and collaboration will be studied. Additional course topics include consultation, collaborating with general education teachers, and designing and managing the activities of paraprofessionals.

SPE 4693. Assistive Technology. (3-0) 3 Credit Hours.

Prerequisites: Admission to Teacher Certification Program, [SPE 3603](#), [SPE 3623](#), [SPE 3633](#), [SPE 3653](#), [SPE 3673](#), [SPE 3683](#), [SPE 3693](#), [SPE 4623](#), [SPE 4643](#), [SPE 4673](#), [ECE 3603](#), and [RDG 3523](#). Concurrent enrollment in [SPE 4653](#) and [SPE 4683](#) is required. This course is a study of the use of technology in facilitating the teaching and learning of students with disabilities. Course will emphasize the selection and use of assistive technology devices and services for students, including those used for communication and mobility and those that facilitate performance in academic environments.

SPE 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student’s advisor, the Department Chair, and Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree.

Sport, Event, and Tourism MGT (SET)

SET 2123. Survey of Tourism. (3-0) 3 Credit Hours.

Historical development and organizational structure of the tourism industry. Emphasis is placed on the inter-relationship between tourist, resident, business, and government. (Formerly MKT 2123 and MKT 3123. Credit cannot be earned for more than one of the following: [SET 2123](#), MKT 2123, or MKT 3123.)

SET 3043. Attractions Management. (3-0) 3 Credit Hours.

Prerequisite: [SET 2123](#). Explores all aspects of managing visitor attractions such as amusement parks, theme parks, museums, national parks, and heritage sites.

SET 3233. Sport Management. (3-0) 3 Credit Hours.

Prerequisite: [SET 2123](#). Focuses on allocating resources and managing sport and recreation operations. Students will receive an in-depth look at the human resources function as it pertains to sport organizations, including recruitment, selection, compensation, hiring/firing, employee training and motivation, compliance with state and federal regulations, risk management, and community relations.

SET 3283. Sport and Event Media Relations. (3-0) 3 Credit Hours.

Prerequisite: [SET 2123](#). Examines the media relations function in sport organizations with a special emphasis on the relationships between journalists and sport organizations, and the role of information specialists. Media relations responsibilities include organizing and managing game/event coverage, promoting events, and developing publicity campaigns.

SET 3313. Sport Tourism and Events. (3-0) 3 Credit Hours.

Prerequisite: [SET 2123](#). Comprehensive study of the sport travel and tourism industry. The industry includes both participatory sport tourism (e.g., skiing, golf, and adventure trips) and event-based sport tourism (e.g., the Olympics, professional and amateur sports, and World Cup soccer). Covers all aspects of sport tourism including economics, finance, and marketing.

SET 3333. Event Management. (3-0) 3 Credit Hours.

Prerequisite: [SET 2123](#). This course presents the event planning process from the inception of an event idea through the development stage, planning, and implementation. The model presented in this class pertains to all types of events including meetings, festivals, fairs, expos, recreation and sport events, fundraisers, etc. with a particular focus on project planning, budgeting, and marketing the event.

SET 3413. Resort and Club Management. (3-0) 3 Credit Hours.

Prerequisite: [SET 2123](#). The management, marketing, and operations of resort and private club properties including hotel resorts, timeshares, casinos, private country clubs, golf and tennis clubs, fitness clubs, and entertainment facilities. Students will get an overview of all aspects of the business and are provided the opportunity to gain an understanding of the differences between profit and nonprofit organizations.

SET 3433. Meetings and Conventions. (3) 3 Credit Hours.

Prerequisite: [SET 2123](#). An overview of the meetings and conventions industry. The course introduces students to the basics of association and corporate meetings, including program planning, budgeting, marketing, public relations, food and beverage and hospitality planning, audio visual and transportation coordination, exhibit sales and management, contract and lease negotiations, and human resources.

SET 3543. Economics of Tourism and Leisure. (3-0) 3 Credit Hours.

Prerequisites: [ECO 2023](#) and [SET 2123](#). Application of economic theories and principles to the areas of tourism, sport, and recreation. Some of the main topics include supply and demand, market structure, competition, and the impacts on the economy, society, and the environment.

SET 4233. Sport Facility and Event Management. (3-0) 3 Credit Hours.

Prerequisite: [SET 3233](#). Overview of managing a facility used for sports, conventions, and entertainment events. Topics may include conducting feasibility studies, market research, facility design and layout, event bidding, quality assurance, risk management, and event staffing. (Same as [FM 4233](#). Credit cannot be earned for both [SET 4233](#) and [FM 4233](#).)

SET 4543. Destination Marketing. (3-0) 3 Credit Hours.

Prerequisite: [SET 2123](#). Emphasizes a strategic approach to marketing for tourism destinations: communities, regions, attractions, and resorts. Focus is on the optimal planning, development, and positioning in the context of the overall marketing plan. Includes consideration of environmental and resource requirements, as well as tourism's social and cultural ramifications. (Formerly MKT 4543. Credit cannot be earned for both [SET 4543](#) and MKT 4543. Marketing majors cannot take [SET 4543](#) as an upper-division Marketing elective.)

SET 4811. Special Topics in Sport, Event and Tourism Management. (1-0) 1 Credit Hour.

Analysis and discussion of events, issues, and trends affecting management and marketing in the sport, event or tourism industries. May be repeated for credit when topics vary.

SET 4812. Special Topics in Sport, Event and Tourism Management. (2-0) 2 Credit Hours.

Analysis and discussion of events, issues, and trends affecting management and marketing in the sport, event or tourism industries. May be repeated for credit when topics vary.

SET 4813. Special Topics in Sport, Event and Tourism Management. (3-0) 3 Credit Hours.

Analysis and discussion of events, issues, and trends affecting management and marketing in the sport, event or tourism industries. May be repeated for credit when topics vary.

SET 4921. Independent Study in Sport, Event and Tourism Management. (0-0) 1 Credit Hour.

Prerequisites: Student must have a 3.0 College of Business grade point average and permission in writing from the Tourism instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. The course may require independent research, reading, planning, discussion, and/or writing under the direction of a sponsoring faculty instructor. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a Bachelor of Business Administration degree.

SET 4922. Independent Study in Sport, Event and Tourism Management. (0-0) 2 Credit Hours.

Student must have a 3.0 College of Business grade point average and permission in writing from the Tourism instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. The course may require independent research, reading, planning, discussion, and/or writing under the direction of a sponsoring faculty instructor. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a Bachelor of Business Administration degree.

SET 4923. Independent Study in Sport, Event and Tourism Management. (0-0) 3 Credit Hours.

Student must have a 3.0 College of Business grade point average and permission in writing from the Tourism instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for required forms. The course may require independent

research, reading, planning, discussion, and/or writing under the direction of a sponsoring faculty instructor. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a Bachelor of Business Administration degree.

SET 4941. Internship in Sport, Event and Tourism Management. (0-0) 1 Credit Hour.

Prerequisites: [MGT 3003](#), student must currently have a 2.5 UTSA grade point average, and permission in writing from the sponsoring Tourism instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for additional requirements and required forms. The course is designed for students seeking supervised full- or part-time work experience in the sport, event or tourism industries. May be repeated for credit, but not more than 6 semester credit hours of Internship in Tourism will apply to a Bachelor in Business Administration degree.

SET 4942. Internship in Sport, Event and Tourism Management. (0-0) 2 Credit Hours.

Prerequisites: [MGT 3003](#), student must currently have a 2.5 UTSA grade point average, and permission in writing from the sponsoring Tourism instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for additional requirements and required forms. The course is designed for students seeking supervised full- or part-time work experience in the sport, event or tourism industries. May be repeated for credit, but not more than 6 semester credit hours of Internship in Tourism will apply to a Bachelor in Business Administration degree.

SET 4943. Internship in Sport, Event and Tourism Management. (0-0) 3 Credit Hours.

Prerequisites: [MGT 3003](#), student must currently have a 2.5 UTSA grade point average, and permission in writing from the sponsoring Tourism instructor, the Department Chair, and the Dean of the College of Business. See the College of Business Undergraduate Advising Center for additional requirements and required forms. The course is designed for students seeking supervised full- or part-time work experience in the sport, event or tourism industries. May be repeated for credit, but not more than 6 semester credit hours of Internship in Tourism will apply to a Bachelor in Business Administration degree.

Statistics (STA)

STA 1043. Introduction to Quantitative Reasoning. (3-0) 3 Credit Hours. (TCCN = MATH 1442)

Prerequisite: Satisfactory performance on placement examination. Intended primarily for liberal arts majors, this course provides an overview of statistical methods useful for judgment and decision making under conditions of uncertainty. The emphasis of the course will be on using quantitative reasoning to gain insight and draw conclusions from observations. The common pitfalls of statistical studies and common myths about the fallacies of inference will be discussed. Topics may include data analysis, inference, correlation, and regression. (Formerly titled "Introduction to Statistical Reasoning.").

STA 1053. Basic Statistics. (3-0) 3 Credit Hours. (TCCN = MATH 1342)

Prerequisite: Satisfactory performance on placement examination. Descriptive statistics; histograms; measures of location and dispersion; elementary probability theory; random variables; discrete and continuous distributions; interval estimation and hypothesis testing; simple linear regression and correlation; one-way analysis of variance, and applications of the chi-square distribution. May be applied toward the core curriculum requirement in Mathematics.

STA 1403. Probability and Statistics for the Biosciences. (3-0) 3 Credit Hours. (TCCN = MATH 2342)

Prerequisite: A grade of "C-" or better in [MAT 1193](#) or an equivalent. Probability and statistics from a dynamical perspective, using discrete-time dynamical systems and differential equations to model

fundamental stochastic processes such as Markov chains and the Poisson processes important in biomedical applications. Specific topics to be covered include probability theory, conditional probability, Markov chains, Poisson processes, random variables, descriptive statistics, covariance and correlations, the binomial distribution, parameter estimation, hypothesis testing and regression. (Formerly STA 1404. Credit cannot be earned for both [STA 1403](#) and STA 1404.).

STA 2303. Applied Probability and Statistics for Engineers. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1224](#). Fundamental concepts of probability and statistics with practical applications to engineering problems. Emphasis on statistical distribution models used in reliability and risk analysis of engineering design; probabilistic reasoning; Bayes' theorem; bivariate and multivariate distributions and their applications.

STA 3003. Applied Statistics. (3-0) 3 Credit Hours.

Prerequisite: Completion of or concurrent enrollment in [MAT 1033](#), [MAT 1093](#), [MAT 1203](#), [MAT 1214](#), [STA 3023](#), or an equivalent. Introduction to the Scientific Method; principles of sampling and experimentation; scales of measurement, exploratory data analysis; introduction to basic probability; models for discrete and continuous data; simple simulations and inferences based on resampling; fundamentals of hypothesis testing and confidence intervals; introduction to analysis of variance and linear regression model. The course will emphasize data analysis and interpretation and effective communication of results through reports or presentations.

STA 3013. Multivariate Analysis for the Life and Social Sciences. (3-0) 3 Credit Hours.

Prerequisite: [STA 3003](#), [STA 3513](#), or an equivalent. This course emphasizes application of statistics in organizations. Topics include, but are not limited to the multivariate normal distribution, tests on means, discriminant analysis, cluster analysis, principal components, and factor analysis. Use of software packages will be emphasized. Open to students of all disciplines.

STA 3023. Statistical Mathematics. (3-0) 3 Credit Hours.

Prerequisite: [MAT 1093](#) or an equivalent course or satisfactory performance on a placement examination. Concepts include sequences, series, convergence, limit, continuity, derivative, optimization, the fundamental theorem of calculus, methods of integration, Taylor expansions, function of several variables, partial derivatives, and multivariate transformations. Other topics include vector and matrix algebra, determinants, inverse matrix, eigenvalues and eigenvectors.

STA 3313. Experiments and Sampling. (3-0) 3 Credit Hours.

Prerequisite: One of the following: [MS 1023](#), [STA 1043](#), [STA 1053](#), [STA 2303](#), [STA 3003](#), or an equivalent. Research techniques for collecting quantitative data: sample surveys, designed experiments, simulations, and observational studies; development of survey and experimental protocols; measuring and controlling sources of measurement error.

STA 3433. Applied Nonparametric Statistics. (3-0) 3 Credit Hours.

Prerequisite: One of the following: [MS 3313](#), [STA 2303](#), [STA 3003](#), or [STA 3513](#). Tests of location, goodness-of-fit tests, rank tests, tests based on nominal and ordinal data for both related and independent samples, and measures of association.

STA 3513. Probability and Statistics. (3-0) 3 Credit Hours.

Prerequisites: [STA 3003](#) and one of the following: [STA 3023](#) or [MAT 1224](#). Axiomatic probability; random variables; discrete and continuous distributions; bivariate and multivariate distributions and their applications; mixture distributions; moments and generating functions, bivariate transformations.

STA 3523. Mathematical Statistics. (3-0) 3 Credit Hours.

Prerequisite: [STA 3513](#) or an equivalent. Sampling distributions and the Central Limit Theorem; order statistics; estimation including method of moments and maximum likelihood; properties of estimators; hypothesis testing including likelihood ratio tests; introduction to ANOVA and regression.

STA 3533. Probability and Random Processes. (3-0) 3 Credit Hours.

Prerequisites: [EE 3423](#) and [EGR 2323](#). Probability, random variables, distribution and density functions, limit theorems, random processes, correlation functions, power spectra, and response of linear systems to random inputs.

STA 3813. Discrete Data Analysis. (3-0) 3 Credit Hours.

Prerequisite: [STA 3003](#) or [STA 3513](#). Introduction to methods for analyzing discrete (categorical) data. Course emphasizes the uses and interpretations of the methods rather than the underlying theory. Topics include Two-way and Three-Way Contingency Tables, Partial Association, Cochran-Mantel-Haenszel Method, Generalized Linear models, Model Inference and Model Checking, Logistic Regression, Loglinear Models, and Models for Matched Pairs.

STA 4133. Introduction to Programming and Data Management in SAS. (3-0) 3 Credit Hours.

Prerequisite: Completion of a programming course or consent of instructor, Department Chair and Dean. This course introduces essential programming concepts using SAS software, with a focus on data management and the preparation of data for statistical analysis. Topics include reading raw data, creating temporary and permanent datasets, manipulating datasets, summarizing data, and displaying data using tables, charts and plots. (Formerly titled “Statistical Computing Packages.”).

STA 4143. Data Mining. (3-0) 3 Credit Hours.

Prerequisites: [STA 4133](#) or equivalent. Acquisition, organization, exploration, and interpretation of large data collections. Data cleaning, representation and dimensionality, multivariate visualization, clustering, classification, and association rule development. A variety of commercial and research software packages will be used.

STA 4233. Statistical Applications Using SAS Software. (3-0) 3 Credit Hours.

Prerequisites: [STA 4133](#) or approval of instructor; and one of the following: [MS 3313](#), [STA 3003](#), [STA 3513](#), or [STA 3523](#). Analysis of datasets using the statistical software package SAS. Methods for analyzing continuous and categorical data will be introduced, using procedures from Base SAS, SAS/GRAPH and SAS/STAT software. Techniques for efficient programming will be stressed. Examples will be drawn from regression analysis, analysis of variance, categorical analysis, multivariate methods, simulation, and resampling.

STA 4643. Introduction to Stochastic Processes. (3-0) 3 Credit Hours.

Prerequisite: [STA 3513](#). Probability models, Poisson processes, finite Markov chains, including transition probabilities, classification of states, limit theorems, queuing theory, and birth and death processes.

STA 4713. Applied Regression Analysis. (3-0) 3 Credit Hours.

Prerequisite: [MS 3313](#) or [STA 3003](#). An introduction to regression analysis, with emphasis on practical aspects, fitting a straight line, examination of residuals, matrix treatment of regression analysis, fitting and evaluation of general linear models, and nonlinear regression.

STA 4723. Introduction to the Design of Experiments. (3-0) 3 Credit Hours.

Prerequisite: One of the following: [MS 3313](#) or [STA 3003](#). General concepts in the design and analysis of experiments. Emphasis will be placed on both the experimental designs and analysis and tests of the validity of assumptions. Topics covered include completely randomized designs, randomized block

designs, complete factorials, fractional factorials, and covariance analysis. The use of computer software packages will be stressed.

STA 4753. Time-Series Analysis. (3-0) 3 Credit Hours.

Prerequisite: [STA 3513](#) or [STA 3533](#), or an equivalent. Development of descriptive and predictive models for time-series phenomena. A variety of modeling approaches will be discussed: decomposition, moving averages, time-series regression, ARIMA, and forecasting errors and confidence intervals.

STA 4803. Statistical Quality Control. (3-0) 3 Credit Hours.

Prerequisite: [STA 2303](#), [STA 3003](#), [STA 3513](#), or an equivalent. Statistical methods are introduced in terms of problems that arise in manufacturing and their applications to the control of manufacturing processes. Topics include control charts and acceptance sampling plans. (Same as [MAT 4803](#). Credit cannot be earned for both [STA 4803](#) and [MAT 4803](#).)

STA 4903. Applied Survival Analysis. (3-0) 3 Credit Hours.

Prerequisite: [STA 3523](#) or an equivalent. Measures of survival, hazard function, mean residual life function, common failure distributions, procedures for selecting an appropriate model, the proportional hazards model. Emphasis on application and data analysis using SAS.

STA 4911. Independent Study. (0-0) 1 Credit Hour.

Prerequisites: A 3.0 College of Business grade point average, permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

STA 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: A 3.0 College of Business grade point average, permission in writing (form available) from the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Independent reading, research, discussion, and/or writing under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

STA 4933. Internship in Statistics. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing from the instructor, the Department Chair, and the Dean of the College of Business; and a 2.5 UTSA grade point average. See the College of Business Undergraduate Advising Center for required forms and additional requirements. Supervised full- or part-time work experience in statistics. Offers opportunities for applying statistics in private businesses or public agencies. May be repeated for credit, but not more than 6 semester credit hours will apply to a bachelor's degree.

STA 4953. Special Studies in Statistics. (3-0) 3 Credit Hours.

Prerequisites: Consent of instructor, Department Chair and Dean. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 6 semester credit hours, regardless of discipline, will apply to a bachelor's degree.

STA 4961. Actuarial Science Examination Preparation. (1-0) 1 Credit Hour.

An organized course offering specialized study for Actuarial Science Examinations. Topics covered include General Probability, Random Variables and Probability Distributions, Multivariate Distributions, and Risk Management and Insurance. May be repeated twice for credit.

STA 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisites: [STA 3523](#) and consent of instructor, Department Chair and Dean. Enrollment limited to students applying for Honors in Management Science and Statistics (see page 55). Supervised research and preparation of an honors thesis. May be repeated once for credit with advisor's approval.

Theater (THR)**THR 1013. Acting I. (3-0) 3 Credit Hours. (TCCN = DRAM 1351)**

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Fundamental techniques of acting, emphasizing the actor's approach to characterization and relationship to all parts of the play's production.

THR 1023. Acting II. (3-0) 3 Credit Hours. (TCCN = DRAM 1352)

Prerequisite: Completion of the Core Curriculum requirement in Language, Philosophy, and Culture. Sustained character portrayal. Intensive work in stage movement and vocal techniques, including dialects.

THR 2113. Intermediate Acting I. (3-0) 3 Credit Hours.

Prerequisite: Completion of [THR 1013](#) and [THR 1023](#), or placement by audition with instructor consent. Concepts, skills, and techniques of acting styles, collaborative work in all aspects of play production, and development of understanding of the actor's role through performance.

THR 2123. Intermediate Acting II. (3-0) 3 Credit Hours.

Prerequisite: Completion of [THR 2113](#), or placement by audition with instructor consent. Continued development of concepts, skills, and techniques of acting styles required to understand the role of the performer in play production.

University Peer Mentorship (UPM)**UPM 1000. University Peer Mentorship. (0-0) 0 Credit Hours.**

This course provides a peer-mentor who will help students navigate campus life at UTSA. Students will have an opportunity to develop a broader understanding of UTSA by participating in programming designed to assist in the academic and social transition from high school to college. This course is limited to first- and second-semester freshmen and freshmen transfer students. The course is completed during the semester immediately following or prior to completion of [AIS 1203](#).

Urban & Regional Planning (URP)**URP 3123. Introduction to Community and Regional Planning and Urban Design. (3-0) 3 Credit Hours.**

Introduction to basic practices in community planning and urban design issues, including theoretical/historical bases; developing neighborhood plans/projects; indicators and evaluation of neighborhood sustainability; community patterns; institutional framework, site planning analysis; zoning ordinances; subdivision ordinances; community services, circulation; mixed-use, and community development programming. (Formerly ARC 4123. Credit cannot be earned for both ARC 4123 and [URP 3123](#).)

URP 3153. Comparative Urban and Regional Development. (3-0) 3 Credit Hours.

A survey of the origin of the contemporary city and region, current conditions, and future trends.

URP 3163. Visual Communications for Community and Regional Planning. (3-0) 3 Credit Hours.

Expressing planning data and geographic information in visual terms for land use planning projects.

Application of related computer software including GIS. (Formerly ARC 4163. Credit cannot be earned for both ARC 4163 and [URP 3163](#).)

URP 4113. Urban Project Development. (3-0) 3 Credit Hours.

Introduction to a range of physical planning topics including land use planning, growth management, infrastructure planning, and urban design. Planning mechanisms such as codes and urban design guidelines that help regulate development of the built environment will be emphasized. Planning at different scales including municipal, comprehensive plans, specific area plans, site plans, and state and regional plans. (Formerly ARC 4113. Credit cannot be earned for both ARC 4113 and [URP 4113](#).)

URP 4123. Sustainable Community Development. (3-0) 3 Credit Hours.

Introduction to land use planning topics including new urbanism, growth management, sustainable infrastructure planning, and LEED Neighborhood Development.

URP 4213. Urban Planning and Public Health. (3-0) 3 Credit Hours.

Survey of the interdependence of urban planning and public health to include the impact of physical environments on the health and quality of life of people in housing and neighborhoods.

URP 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisite: Permission in writing (form available) of the instructor, the student's advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor's degree.

URP 4953. Special Studies in Urban and Regional Planning. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when topics vary.

Women's Studies (WS)**WS 2013. Introduction to Women's Studies. (3-0) 3 Credit Hours.**

This course introduces students to core concepts and frameworks in women's, gender, and sexuality studies, using interdisciplinary and cross-cultural approaches. Women and gender are studied as socially constructed categories created through institutions such as culture, the law, the media, and globalization.

The course will provide students with the tools of critical feminist inquiry to assess how women's lived experiences are shaped by such categories as race, ethnicity, class, nationality, sexuality, and disability. Students will examine theories and analytical concepts that emerge from specific historical periods and social movements. May be applied toward the Core Curriculum requirement in Language, Philosophy and Culture. (Formerly WGS 2013. Credit cannot be earned for both [WS 2013](#) and WGS 2013.)

WS 2023. Introduction to LGBTQ Studies. (3-0) 3 Credit Hours.

This interdisciplinary course introduces concepts and theories within LGBTQ Studies. Topics include issues related to lesbian, gay, bisexual, transgender, and queer communities. The central focus is to examine, challenge, and destabilize normative conceptualizations and representations of gender and sexuality. This class emphasizes different aspects of LGBTQ studies including history, queer theory, popular culture, media, and literature. Course work centers on complicating notions of queer identity through intersections of race, class, gender, and globalization. May be repeated for credit when topics vary.

WS 3613. Feminist Research Methodologies. (3-0) 3 Credit Hours.

Rigorous examination of the theory, application, and ethical and epistemological concerns of feminist research. What does it mean to “research as a feminist”? Are there particular ways of producing knowledge as women? Investigating women’s issues within and across a range of traditional disciplines—history, arts, humanities, sciences, education, health, economics, law, etc.—the course will engage issues of researcher-subject relationships, representation, and value-driven research, to respond to dominant theories of knowledge production.

WS 3953. Special Topics in Women Writers. (3-0) 3 Credit Hours.

This course examines women’s texts with special attention to understanding gender as a category of analysis. Variable topics may include women in the sciences, women and technology, literary and cultural representations, women and business, historical and political change, questions of class and nation, queer or transgender theories, or medical and health experiences. This class may emphasize the importance of intersecting categories of analysis including gender, race, ethnicity, and sexuality. May be repeated for credit when topics vary. (Formerly WGS 4853 and WS 4853.).

WS 4623. Feminist Theories. (3-0) 3 Credit Hours.

This course will introduce multidisciplinary explorations of theorists’ attempts to describe, explain, and critique social institutions. Students will examine theoretical positions on gender and women in the study of the humanities and/or social sciences. Topics may include the ways in which women have been represented in cultural production with special consideration of race, ethnicity, class, sexuality, and nationalism. (Formerly WGS 4623. Credit cannot be earned for both [WS 4623](#) and WGS 4623.).

WS 4863. Feminism and Globalization. (3-0) 3 Credit Hours.

Theoretical, historical, and empirical analysis of how current processes of globalization are transforming the actual conditions of women’s lives, labor, gender ideologies, and politics in complex and contradictory ways. Topics include feminist exploration of colonialism, capitalism, economic restructuring policies, and resistance in consumer and environmental movements.

WS 4913. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Permission in writing (form available) from the instructor, the student’s advisor, the Department Chair, and Dean of the College with which the instructor is affiliated. Independent reading, research, discussion, and/or writing under the direction of a faculty member. A maximum of 3 semester credit hours of Independent Study in Women’s Studies may be applied to the Minor in Women’s Studies. May be repeated for credit, but no more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor’s degree. (Formerly WGS 4913.).

WS 4933. Internship in Women’s Studies. (0-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Supervised experience relevant to Women’s Studies. May be repeated once for credit, but no more than 3 semester credit hours will apply to the Women’s Studies major. (Formerly WGS 4933.).

WS 4953. Special Topics in Women's Studies. (3-0) 3 Credit Hours.

This course offers an examination of an individual topic or set of issues in Women's Studies. May be repeated for credit when topics vary. (Formerly WS 3713.).

WS 4973. Seminar in Women's Studies. (3-0) 3 Credit Hours.

Prerequisite: 12 upper-division semester credit hours in Women's Studies. This undergraduate seminar, limited to Women's Studies majors in their senior year, offers the opportunity to study a special topic, issue, author, or period in Women's Studies. May be repeated once for credit when topics vary.

WS 4993. Honors Thesis. (0-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Supervised research and preparation of an Honors Thesis for the purpose of earning Women's Studies Honors. May be repeated once with advisor approval.

Writing Program (WRC)**WRC 0203. Integrated Reading and Writing. (3-0) 3 Credit Hours.**

Integrated Reading and Writing offers students the opportunity to increase reading and writing skills before enrollment in [WRC 1013](#) Freshman Composition I. It affords intensive practice in the writing process, including prewriting, drafting, organization, sentence structure, and use of grammar, spelling, and punctuation. The course also offers practical instruction in strategies for improving critical reading of academic writing, such as determining word meaning; understanding main ideas and supporting details; identifying the writer's purpose, point of view, and intended meaning; analyzing relationships among ideas; using critical reasoning when reading; and developing study skills. It also introduces synthesis, library research, and documentation. Offered on a credit/no-credit basis, the course does not satisfy any degree requirements. This course may be repeated.

WRC 1013. Freshman Composition I. (3-0) 3 Credit Hours. (TCCN = ENGL 1301)

Freshman Composition I focuses on developing and expressing ideas clearly and effectively to communicate with various audiences for various purposes and occasions, through written, oral, aural, and visual venues by means of individual and team projects. Students review principles of the writing process, including planning; logical, organizational, and developmental strategies; revision and editing. They are also introduced to rhetorical techniques (persuasion). The course develops students' critical thinking skills through practice with summary and paraphrase, analysis, evaluation, and synthesis of multiple sources drawn from a variety of cultural and intellectual contexts. Students engage in extensive library research. Students also practice ethical decision-making through responsible selection, use, and documentation of sources.

WRC 1023. Freshman Composition II. (3-0) 3 Credit Hours. (TCCN = ENGL 1302)

Prerequisite: [WRC 1013](#). Building on the skills introduced in Freshman Composition I, Freshman Composition II focuses on persuasive communication. The course provides intensive writing practice in the use of logical organization and development to help students express ideas clearly and effectively, orally, aurally, visually, and in writing. Students also address varied audiences for different purposes and use different genres (e.g., essay, editorial, proposal). Freshman Composition II continues to promote ethical decision-making through responsible methods of data gathering and analysis to produce valid arguments based on factual information and effective use of sources for support. Students may enroll in a discipline-specific section of the course, such as anthropology, architecture, business, communication (documentaries or media), environmental science, quantitative literacy, or science.

WRC 3013. Writing Strategies for the Pre-law Student. (3-0) 3 Credit Hours.

Prerequisite: Completion of Core Curriculum requirement in rhetoric. This writing course is designed for students planning to become attorneys. It emphasizes clear, concise writing, as well as editing conventions necessary to produce readable and correct prose, free of jargon and inflated language. It provides students with an opportunity to improve their ability to express their understanding of law and its application to fact scenarios. The course introduces organizational strategies used to identify relevant elements of facts and law appropriate to the construction of well-written arguments and documents.

WRC 4123. Topics in Writing. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. Writing intensive course on various aspects of writing, such as Writing Center tutoring, scientific technical writing, legal technical writing, and writing in the disciplines. May be repeated for credit when topics vary. (Formerly WRC 3123.).