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Courses of Instruction

Courses in which the leading number is zero, e.g. 050, are nondegree noncredit courses primarily in developmental studies.

Courses numbered 100 are primarily for freshmen, 200 for sophomores, 300 for juniors, 400 for seniors. 500-, 600-, 700-, and 800-level courses are generally for graduate credit. Courses at the 500 level correspond to undergraduate 400-level courses; however, a different grading scale is used for 500-level registrants. Additional and higher quality work is required in 500-level courses.

General education courses are designated by the fourth digit in the course number. At the lower division, the following designations are used: for Skills courses, C=Composition, F=Language and Culture, G=Information Literacy and Research, M=Mathematics, and R=Oral Communication; for Ways of Knowing courses, A=Human Creativity, H=Interpreting the Past, L=Literature, N=The Nature of Science, P and E=Philosophy and Ethics, S=Human Behavior, and T=Impact of Technology. Writing intensive courses are designated by a W in the fourth digit.

Some of the courses listed indicate the semester the course will be offered. Every attempt will be made to offer the courses in the semester(s) indicated. However, this may not always be possible. Please consult the academic advisor or graduate program director for course offerings.

The University reserves the right to withdraw any course for which there is insufficient registration.

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- MDS - Movement Disorders (http://catalog.odu.edu/courses/mds/)
AFRICAN-AMERICAN STUDIES Courses

AAST 100S. Introduction to African American Studies. 3 Credits.
Lecture 3 hours; 3 credits. An interdisciplinary examination of the African American experience in America. The course examines the historical and contemporary conditions of African American people. It also explores the various modes of artistic expression, values and philosophical underpinnings of African American culture.

AAST 305. Africa in Transition. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: general education human behavior course. This course is designed to examine various contemporary social movements in Africa, beginning in the 1960’s to the present day. In addition, this course will examine how these social movements have impacted various groups’ human, cultural, economic, political, and social capital.

AAST 310. Human Rights and Social Change in Africa. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: one General Education human behavior course. This course will examine historical social movements in Africa such as economic, ethnic, women’s, political, and religious social movements. This course will also link micro-level, meso-level, and macro-level implications for the social structures and cultures of various African nations and communities.

AAST 320. Introduction to Research Methods. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: one General Education Human Behavior course. This course is an introduction to social research methods. The primary purpose of this course is to survey the major research designs and research techniques that are the core of contemporary approaches used to study social phenomena as well as the lives and experiences of African Americans. Ethical implications of social research and data analysis will also be covered.

AAST 368. Internship. 3 Credits.
3 credits. Prerequisite: permission of program director. Individual practical experience in community-based organizations, public bureaucracies, administrative agencies and other organizations and firms. Student can gain exposure in the not-for-profit and profit sectors. (qualifies as a CAP experience).

AAST 395. Topics in African American Studies. 3 Credits.
3 credits. Prerequisite: AAST 100S or permission of the instructor. These courses are open to majors and non-majors. Ethnic studies majors may take these courses to satisfy requirements for the concentration. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

AAST 396. Topics in African American Studies. 3 Credits.
3 credits. Prerequisite: AAST 100S or permission of the instructor. These courses are open to majors and non-majors. Ethnic studies majors may take these courses to satisfy requirements for the concentration. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.
ACCOUNTING Courses

ACCT 201. Principles of Accounting I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: completion of MATH 102M, STAT 130M or qualified to enroll in MATH 162M. ACCT 201 or ACCT 226 is prerequisite to ACCT 202. Elementary accounting concepts and procedures used in the preparation of financial statements for sole proprietorships, partnerships, and corporations; statement analysis; operational accounting; and use of accounting data for special-purpose decision making.

ACCT 202. Principles of Accounting II. 3 Credits.
Lecture 3 hours; 3 credits each semester. Prerequisite: completion of MATH 102M, STAT 130M or qualified to enroll in MATH 162M, ACCT 201 or ACCT 226. Elementary accounting concepts and procedures used in the preparation of financial statements for sole proprietorships, partnerships, and corporations; statement analysis; operational accounting; and use of accounting data for special-purpose decision making.

ACCT 226. Honors: Principles of Accounting. 3 Credits.
Open only to students in the Honors College. Special honors section of ACCT 201. Elementary accounting concepts and procedures used in the preparation of financial statements for sole proprietorships, partnerships, and corporations: financial statement analysis; operational accounting; and use of accounting data for special-purpose decision making.

ACCT 227. Honors: Principles of Accounting. 3 Credits.
Open only to students in the Honors College. Prerequisite: ACCT 226 is prerequisite to 227. Special honors section of ACCT 202. Elementary accounting concepts and procedures used in the preparation of financial statements for sole proprietorships, partnerships, and corporations: financial statement analysis; operational accounting; and use of accounting data for special-purpose decision making.

ACCT 301. Intermediate Accounting I. 3 Credits.
Lecture 3 hours; 3 credits each semester. Prerequisites: ACCT 201 and ACCT 202 or ACCT 226 and ACCT 227; and a declared major in the University or permission of the Dean’s Office of the CBPA. Students must have a C or better in ACCT 301 to proceed to other upper level accounting courses requiring 301. At the beginning of the semester, students enrolled in ACCT 301 will complete the Principles of Accountancy Competency Test on material covered in ACCT 201-202. Preparation of financial statements and other reports in accordance with prevailing accounting standards established by the accounting profession. Students who have not had ACCT 201 and 202 within two years of planning to enroll in ACCT 301 are strongly encouraged to retake these courses in preparation for ACCT 301.

ACCT 302. Intermediate Accounting II. 3 Credits.
Lecture 3 hours; 3 credits each semester. Prerequisites: ACCT 201-202 or ACCT 226-ACCT 227, ACCT 301 with a C or better; and a declared major in the University or permission of the Dean’s Office of the CBPA. Students must have a C or better in ACCT 301 to proceed to other upper level accounting courses requiring 301. Students must have a C- or better grade in ACCT 302 to graduate with a concentration in accounting. Preparation of financial statements and other reports in accordance with prevailing accounting standards established by the accounting profession.

ACCT 311. Managerial Accounting. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ACCT 201-ACCT 202 or ACCT 226-ACCT 227, BNAL 206, Junior standing, and a declared major in the University or permission of the Dean’s Office of the CBPA. Students must have a C- or better in ACCT 311 to graduate with a concentration in accounting. This course focuses on recording and allocating costs within traditional managerial accounting systems. Common and joint cost allocations are performed under job order, process and standard costing systems. Income models are developed for exploring cost-volume-profit relationships.

ACCT 367. Cooperative Education. 1-3 Credits.
1-3 credits. May be repeated for credit. Prerequisites: ACCT 301 with a C or better, and a declared major in the University or permission of the Dean’s Office of the CBPA; transfer students must have completed one semester at Old Dominion University; approval of Career Management Center. Available for pass/fail grading only. (qualifies as a CAP experience).

ACCT 368. Student Internship. 1-3 Credits.
1-3 credits. Prerequisites: ACCT 301 with a C or better, and a declared major in the University or permission of the Dean’s Office of the CBPA; transfer students must have completed one semester at Old Dominion University. Approval for enrollment and allowable credits are determined by the department and the Career Management Center in the semester prior to enrollment. Student participation in a professional work experience (qualifies as a CAP experience). Available for pass/fail grading only.

ACCT 369. Practicum. 3 Credits.
1-3 credits. Prerequisites: ACCT 301 with a C or better, junior standing and permission of the chief departmental advisor; transfer students must have completed one semester at Old Dominion University. Approval for enrollment and allowable credits are determined by the department CAP adviser and the Career Management Center in the semester prior to enrollment. Student participation in a professional work experience. (qualifies as a CAP experience).
ACCT 405/505. Accounting and Auditing in the Public/Nonprofit Sector. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ACCT 301 with a C or better, senior standing, and a declared major in the University or permission of the Dean’s Office of the CBPA. Students must have a C- or better in ACCT 405 to graduate with a concentration in accounting. The application of accounting principles to governmental funds and not-for-profit organizations. Emphasis is placed on budgeting and control as well as auditing concerns for such entities.

ACCT 411/511. Financial Auditing. 3 Credits.
Lecture, case study, and discussion 3 hours; 3 credits. Prerequisites: ACCT 301 with a C or better, senior standing, and a declared major in the University or permission of the Dean’s Office of the CBPA. Students must have a C- or better in ACCT 411 to graduate with a concentration in accounting. Standards and ethics of the public accounting profession, generally accepted auditing standards, and public reporting are covered, as well as exposure to other types of auditing such as operational and compliance auditing.

ACCT 421/521. Taxation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ACCT 301 with a C or better for accounting majors or FIN 431 with a C or better, and a declared major in the University or permission of the Dean’s Office of the CBPA. Students must have a C- or better in ACCT 421 to graduate with a concentration in accounting. An analysis of federal income tax law and its application to personal and business tax situations. Reconciliation of tax and accounting concepts.

ACCT 422/522. Federal Income Taxation of Individuals and Business Entities. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ACCT 421 or ACCT 521 and a declared major in the University or permission of the Dean’s Office of the CBPA. Students must have a C- or better in ACCT 422 to graduate with a concentration in accounting. An analysis of federal income tax laws and its application to individuals and business entities.

ACCT 450/550. International and Advanced Accounting. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ACCT 301 with a C or better, ACCT 302, senior standing and a declared major in the University or permission of the Dean’s Office of the CBPA. Students must have a C- or better in ACCT 450 to graduate with a concentration in accounting. The study of accounting for international operations and business combinations.

ACCT 460. Accounting Information Systems. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: ACCT 421. Prerequisites: ACCT 301 with a C or better, ACCT 302, ACCT 411, ACCT 421 and IT 360T, or permission of the instructor and a declared major in the University or permission of the Dean’s Office of the CBPA. Students must have a C- or better in ACCT 460 to graduate with a concentration in accounting. The theoretical and practical approaches to the analysis, design, and implementation of manual and/or computerized accounting systems. Emphasis is placed on the investigation and documentation of internal controls, accounting cycle attributes, and auditing techniques for computer-based systems. Individual projects include comprehensive documentation of an accounting application and two case studies using a current financial accounting software package. The group project involves development of an accounting system for a specific application and its presentation to the class. This class qualifies as a CAP experience. Students will complete a comprehensive final examination on materials covered in ACCT 301, 302, 311, 421, and 460.

ACCT 495. Selected Topics in Accounting. 1-3 Credits.
1-3 credits. Prerequisites: ACCT 301 with a C or better, and a declared major in the University or permission of the Dean’s Office of the CBPA. Students must have a C- or better in ACCT 495 to graduate. Study designed for students desiring additional work in an area of particular interest in accounting. This course may not be substituted for any required accounting course.

AL - Arts And Letters

ARTS AND LETTERS Courses

AL 100. Introduction to Arts and Letters: Scholarship in the Disciplines. 1 Credit.
Lecture 1 hour; 1 credit. Through guest presentations from each major department in the college, the Career Management Center and other University resources, students will learn about majors, minors, career options, effective goal-setting, study skills, and time management strategies. Coursework includes weekly reading and journal assignments, attendance at campus events, and visits to campus resources.

AL 195. Topics. 3 Credits.

AL 196. Topics. 3 Credits.

AL 290. Topics. 3 Credits.

AL 295. Topics. 3 Credits.

AL 296. Topics. 3 Credits.

AL 367. Internship in Peer Advising. 1-3 Credits.
1-3 credits. Prerequisite: Approval of the College Director of Academic Advising. Students receive training in communications, counseling practices and College and University resources and services, and then serve as Peer Advisors to undecided prospective Arts & Letters students. Up to 150 hours required. Weekly staff meetings, readings, and a peer advising journal are also required. (qualifies as a CAP experience).

AL 395. Topics in Humanities. 3 Credits.
3 credits. Prerequisite: junior standing or permission of the instructor. An interdisciplinary study of selected topics in the humanities. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

AL 396. Topics in Social Studies. 3 Credits.
3 credits. Prerequisite: junior standing or permission of the instructor. An interdisciplinary study of selected topics in social studies. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

AL 495/595. Topics in Humanities. 1-3 Credits.
1-3 credits. Prerequisite: junior standing or permission of the instructor. An advanced study of selected topics in humanities. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

AL 496/596. Topics in Social Studies. 3 Credits.
3 credits. Prerequisite: junior standing or permission of the instructor. An advanced study of selected topics in social studies. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

AL 497/597. Tutorial Work in Arts and Letters Topics. 3 Credits.
1-3 credits. Prerequisite: junior standing or permission of the instructor.

AMST - American Studies
AMERICAN STUDIES Courses

AMST 300. Perspectives in American Studies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ENGL 110C, HIST 104H or permission of instructor. An exploration of current methodological approaches utilized in the interdisciplinary field of American Studies. Through integrative themes that cut across time, place and cultural identity, this course will allow students to build a working definition of civilization in the United States.

AMST 495. Topics. 1-3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ENGL 111C or 131C. Rotating course content in American Studies, with interdisciplinary focus. Course can be used to fulfill a requirement in the American Studies minor.

ANTR - Anthropology

ANTHROPOLOGY Courses

ANTR 110S. Introduction to Anthropology. 3 Credits.
Lecture 3 hours; 3 credits. A survey of what we know about the emergence of humans: where we came from; how we developed physically and why; how human cultures became more complex through time; and the variety of human ways of life today.

ANTR 226S. Honors: Human Origins and Ways of Life An Introduction to Anthropology. 3 Credits.
Lecture 3 hours; 3 credits. A special Honors section of ANTR 110S. Open only to students in the Honors College.

ANTR 300. Human Cultures Around the World. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ANTR 110S. A cross-cultural examination of human economic, social and ideological behavior, with the aim of showing both human cultural diversity and the ways in which the various parts of culture (e.g., trade, marriage practices, witchcraft, etc.) go together to make coherent wholes.

ANTR 303. Biological Anthropology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ANTR 110S. Human physical and cultural evolution from our earliest primate beginnings through the appearance of anatomically modern humans.

ANTR 304. Digging Up the Past. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ANTR 110S or completion of social science requirement or permission of the instructor. A comprehensive study of the philosophical and scientific foundations of archaeology and of a general prehistory to which they are applied. The course includes discussions of methods and theories used to reconstruct ancient Egypt and Mexico and other early cultures.

ANTR 305. North American Archaeology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ANTR 110S, or completion of the social science requirement or permission of the instructor. The study of the prehistory of native cultures north of Mexico from the peopling of the New World to contact with Europeans.

ANTR 320. The Sexes in Cross-Cultural Perspective. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ANTR 110S, completion of the social science perspective or permission of the instructor. An examination of the socialization and perpetuation of sex roles in different societies around the world. The course investigates issues of gender and sexuality throughout an individual’s life.

ANTR 395. Topics in Anthropology. 1-3 Credits.
1-3 credits each semester. Prerequisite: ANTR 110S or permission of instructor. A study of selected topics, designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

ANTR 396. Topics in Anthropology. 1-3 Credits.
1-3 credits each semester. Prerequisite: ANTR 110S or permission of instructor. A study of selected topics, designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

ANTR 495/595. Topics in Anthropology. 1-3 Credits.
1-3 credits each semester. Prerequisite: senior standing or approval of the department chair. A study of selected topics designed for either majors or nonmajors. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

ANTHROPOLOGY Courses

ANTR 110S. Introduction to Anthropology. 3 Credits.
Lecture 3 hours; 3 credits. A survey of what we know about the emergence of humans: where we came from; how we developed physically and why; how human cultures became more complex through time; and the variety of human ways of life today.

ANTR 226S. Honors: Human Origins and Ways of Life An Introduction to Anthropology. 3 Credits.
Lecture 3 hours; 3 credits. A special Honors section of ANTR 110S. Open only to students in the Honors College.

ANTR 300. Human Cultures Around the World. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ANTR 110S. A cross-cultural examination of human economic, social and ideological behavior, with the aim of showing both human cultural diversity and the ways in which the various parts of culture (e.g., trade, marriage practices, witchcraft, etc.) go together to make coherent wholes.

ANTR 303. Biological Anthropology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ANTR 110S. Human physical and cultural evolution from our earliest primate beginnings through the appearance of anatomically modern humans.

ANTR 304. Digging Up the Past. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ANTR 110S or completion of social science requirement or permission of the instructor. A comprehensive study of the philosophical and scientific foundations of archaeology and of a general prehistory to which they are applied. The course includes discussions of methods and theories used to reconstruct ancient Egypt and Mexico and other early cultures.

ANTR 305. North American Archaeology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ANTR 110S, or completion of the social science requirement or permission of the instructor. The study of the prehistory of native cultures north of Mexico from the peopling of the New World to contact with Europeans.

ANTR 320. The Sexes in Cross-Cultural Perspective. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ANTR 110S, completion of the social science perspective or permission of the instructor. An examination of the socialization and perpetuation of sex roles in different societies around the world. The course investigates issues of gender and sexuality throughout an individual’s life.

ANTR 395. Topics in Anthropology. 1-3 Credits.
1-3 credits each semester. Prerequisite: ANTR 110S or permission of instructor. A study of selected topics, designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

ANTR 396. Topics in Anthropology. 1-3 Credits.
1-3 credits each semester. Prerequisite: ANTR 110S or permission of instructor. A study of selected topics, designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

ANTR 495/595. Topics in Anthropology. 1-3 Credits.
1-3 credits each semester. Prerequisite: senior standing or approval of the department chair. A study of selected topics designed for either majors or nonmajors. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

ANTR 497/597. Tutorial Work in Special Topics in Anthropology. 3 Credits.
3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

ANTR 498/598. Tutorial Work in Special Topics in Anthropology. 3 Credits.
3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

ARAB - Arabic

ARABIC Courses

ARAB 111F. Beginning Arabic. 6 Credits.
Lecture 6 hours; 6 credits. Aural comprehension, oral drill and discussion of grammar principles, written exercises, and reading assignments.

ARAB 195. Topics. 1-6 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARAB 212 or equivalent. A study of selected topics within a major. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

ARAB 212. Intermediate Arabic. 6 Credits.
Lecture 6 hours; 6 credits. Prerequisite: ARAB 111F.

ARAB 295. Topics. 1-6 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARAB 212 or equivalent. A study of selected topics within a major. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

ARAB 311. Advanced Arabic Language and Culture I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARAB 212.

ARAB 312. Advanced Arabic Language and Culture II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARAB 311.

ARAB 395. Topics in Arabic. 1-6 Credits.
1-6 credits each semester. Prerequisite: ARAB 212 or equivalent. A study of selected topics for elective credit. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

ARAB 495. TOPICS. 1-6 Credits.
ARTH - Art History

ART HISTORY Courses

ARTH 121A. Introduction to the Visual Arts. 3 Credits.
Lecture 3 hours; 3 credits. An introduction to the various media, techniques, styles, content, and contexts in the visual arts as they are manifested in the world’s cultures.

ARTH 27A. Honors: Introduction to the Visual Arts. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. A special honors section of ARTH 121A.

ARTH 211. Ancient and Medieval Art. 3 Credits.
Lecture 3 hours; 3 credits. Co- or prerequisite: ENGL 211C. A survey of the history of art from the ancient cultures of the Mediterranean world to the Gothic period of the Middle Ages. Museum visits and writing assignments will help to develop students’ analytical, critical and writing skills.

ARTH 212. Renaissance and Modern Art. 3 Credits.
Lecture 3 hours; 3 credits. Co- or prerequisite: ENGL 211C. A survey of the art of the Renaissance and Baroque to the Modern World culminating in a look at art from our own era. Relevant assignments and museum visits will develop students’ analytical, critical and writing skills.

ARTH 309. Architecture of the Middle Ages. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 211 or permission of the instructor. This course traces the history and construction techniques of medieval buildings from 300-1500 A.D. It examines the wood-roofed building, centrally planned domed structures, innovations in plan, the rediscovery of stone vaulting techniques and culminates in a study of the pointed ribbon groin vaults and stone skeletal systems of the Gothic cathedrals.

ARTH 310. Women in the Visual Arts. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ARTH 121A, ARTH 211 or ARTH 212 and junior standing or permission of the instructor. The contributions of women in the various fields in the visual arts—painting, graphics, sculpture, architecture, and the crafts—from pre-history to the present.

ARTH 314. Northern Renaissance Art. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 211 or ARTH 212 or permission of the instructor. The painting, sculpture, and graphics of the Netherlands, France and Germany from the late fourteenth to the mid-sixteenth century with discussion of artists such as Jan van Eyck, Hieronymus Bosch, Pieter Bruegel, and Albrecht Durer.

ARTH 315. Early Italian Renaissance Art. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 211 or ARTH 212 or permission of the instructor. Painting, sculpture, and architecture in 14th and 15th century Italy, chiefly Florence and Siena, from Giotto to Botticelli.

ARTH 316. Later Italian Renaissance Art. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 211 or ARTH 212 or permission of the instructor. Painting, sculpture, and architecture in 16th century Italy, with emphasis on painting in Rome, Florence, and Venice.

ARTH 319. Baroque Art. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 212 or permission of the instructor. The painting, sculpture and architecture of the seventeenth and eighteenth centuries in Italy, Flanders, Holland, France, Germany with discussion of artists such as Caravaggio, Bernini, Rubens, Rembrandt, Vermeer, Poussin, and Watteau.

ARTH 320W. History of Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: grade of C or better in ENGL 211C or 221C or 231C; junior standing or permission of instructor. A study of the historical development of the design arts in both utilitarian and communicative areas including graphic design and advertising, crafts, film and video, the decorative arts, fashion, furniture, and the built environment. (This is a writing intensive course.).

ARTH 323. Nineteenth-Century European Art. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 212 or permission of the instructor. Survey of the mainstreams of European art during the first century of the Modern era. Includes discussion of architecture, sculpture, painting, and the graphic arts.

ARTH 324. Twentieth-Century Art. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 212 or permission of the instructor. Beginning in the 1880’s and continuing through the present, a survey of modern art and architecture, which stresses the growing interpenetration of the arts.

ARTH 325. American Art Before 1865. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 212 or permission of the instructor. A survey of American art in the decades before 1865, focusing on the development of a native style in painting, sculpture, the decorative arts, and architecture.

ARTH 326. American Art Since 1865. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 212 or permission of the instructor. A survey of American art in the decades since 1865, with attention to the development of internationally influenced styles in painting, sculpture, photography, printmaking, architecture, and the decorative arts.

ARTH 327. History of Photography. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ARTH 121A or ARTH 212 and junior standing or permission of the instructor. An examination of the development of photography as a scientific curiosity, a tool for artists, and as a fine art in itself, from its invention to the present day.

ARTH 350W. Art Criticism. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 211 or ARTH 212 or permission of the instructor: grade of C or better in ENGL 211C or 221C or 231C. A study of the analysis, theoretical approaches, methodologies, and effects of the practice of art criticism, with practical experience in each model. (This is a writing intensive course.).

ARTH 351W. Research Methods in Art History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ARTH 211 or ARTH 212; grade of C or better in ENGL 211C or 221C or 231C. An investigation of past and present approaches to scholarship in art history. Students participate in a series of writing assignments designed to strengthen their research and writing skills, culminating with the presentation of original research in oral and written form. (This is a writing intensive course.).

ARTH 360. Asian Art. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ARTH 121A, ARTH 211 or ARTH 212 or permission of instructor. An introduction to the architecture, sculpture, calligraphy, pottery, ink painting, miniature painting, and gardens of India, China, and Japan. Emphasis will be placed on the connections among the cultures: Buddhism and pilgrimage, the importance of the scholar painters, the role of trade routes and the emergence of native writing. (cross-listed with ASIA 360).

ARTH 368. Internship. 1-3 Credits.
1-3 credits. May be repeated for credit. Prerequisite: approval by the department chair and Career Management is necessary prior to registration. Available for pass/fail grading only. A structured work experience involving aspects of design or craft, filmmaking, video, museum or gallery work, either with or without remuneration. Criteria for evaluation will be determined by work supervisor and cooperating faculty advisor. (qualifies as a CAP experience).
ARTH 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: approval by the department chair. (qualifies as a CAP experience).

ARTH 377. Extracurricular Studies. 1-6 Credits.
1-6 credits each semester. Prerequisite: approval by the department and the dean, in accordance with the policy on granting credit for extracurricular activities. Extracurricular activities may be approved for credit based on objectives, criteria, and evaluative procedures as formally determined by the department and the student prior to the semester in which the activity is to take place. Such credit is subject to review by the provost. (qualifies as a guaranteed practicum experience).

ARTH 378. Extracurricular Studies. 1-6 Credits.
1-6 credits each semester. Prerequisite: approval by the department and the dean, in accordance with the policy on granting credit for extracurricular activities. Extracurricular activities may be approved for credit based on objectives, criteria, and evaluative procedures as formally determined by the department and the student prior to the semester in which the activity is to take place. Such credit is subject to review by the provost. (qualifies as a guaranteed practicum experience).
ARTS - Art, Studio

ART, STUDIO Courses

ARTS 122A. Visual Communication. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. An introduction to essential themes and means of visual communication in the fine arts with an emphasis on studio experience in techniques from the different disciplines in studio art.

ARTS 126A. Honors: Art as Experience. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Open only to students in the Honors College. A special honors section of ARTS 122A.

ARTS 202. Two-Dimensional Design. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. A basic course examining the relation of shape and value in a two-dimensional environment.

ARTS 203. Three-Dimensional Design. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. A basic course examining the relation of form and structure in a three-dimensional environment.

ARTS 211. Introduction to Digital Photography. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 279 or permission of the instructor. Introduction to conceptual, technical and historical aspects of photography as a creative medium using digital technology. Technical areas covered include camera use, digital image processing, and digital printing. Class time is divided between demonstrations of applicable skills, in class work time, lectures and critiques.

ARTS 231. Fundamentals of Drawing. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. A study of basic principles, materials and techniques for drawing with an emphasis on line, value studies, volumetric analysis and perspective. Students will learn to draw proportionally and descriptively with increased knowledge of the relationship between object and image.

ARTS 241. Fundamentals of Painting. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites or corequisites: ARTS 202 or ARTS 231 and ARTS 304. An introduction to image making through the application of painting media, techniques and styles.

ARTS 251. Printmaking: Introduction to Screenprint. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites or corequisites: ARTS 202 and ARTS 304. An introduction to screenprinting techniques and stencil systems using water-based inks.

ARTS 252. Printmaking: Introduction to Lithography. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites or corequisites: ARTS 202 and ARTS 231. An introduction to stone and metal plate lithographic techniques.

ARTS 253. Alternative Print Techniques. 3 Credits.
Studio, 6 hours. 3 credits. Prerequisite: ARTS 202 or ARTS 231. An introduction to non-traditional printmaking processes, both historical and contemporary. Processes may include solar plate lithography, stencil printing, pochoir, paper pulp printing, chine colle, monotype, monoprint, collography, cyanotype, and varieties of transfer printing such as digital and gum techniques.

ARTS 254. Printmaking: The Relief Print. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Pre- or corequisites: ARTS 202 and ARTS 231; one or both may be taken before; one may be taken as a corequisite. An introduction to basic relief printing techniques including woodcut, linocut, letterpress, and collograph.

ARTS 261. Introduction to Sculpture. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites or corequisites: ARTS 202 and ARTS 203. Conceptual thinking in three dimensions; the development of visual capacity and spatial sense through direct experience in materials.

ARTS 263. Introduction to Ceramics. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 202. A studio core course designed as an introduction to ceramics. Students will explore functional and sculptural techniques through handbuilding and wheel-throwing, as well as basic claybody, glaze and firing theory. Students will also develop a basic understanding of the historical and cultural aspects of ceramics.

ARTS 271. Graphic Design 1. 3 Credits.
Lecture 1 hour; laboratory 5 hours; 3 credits. An introduction to the Macintosh computer and operating system and its applications to visual arts project production. Includes an overview of computer hardware and software used in print multimedia and imaging for visual communications and examines the impact of digital technologies upon art and design.

ARTS 279. Fundamentals of Digital Art. 3 Credits.
Lecture 1 hour; laboratory 5 hours; 3 credits. An introduction to various looms, tools, materials and techniques used in weaving and fabric dyeing; individual design projects.

ARTS 281. Crafts 1: Fibers. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites or corequisites: ARTS 202 and ARTS 231. An introduction to weaving and dyeing; individual design projects.

ARTS 291. Crafts 1: Metalsmithing and Jewelry. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 202. A studio core course designed as an introduction to ceramics. Students will explore functional and sculptural techniques through handbuilding and wheel-throwing, as well as basic claybody, glaze and firing theory. Students will also develop a basic understanding of the historical and cultural aspects of ceramics.

ARTS 279. Fundamentals of Digital Art. 3 Credits.
Lecture 1 hour; laboratory 5 hours; 3 credits. An introduction to the Macintosh computer and operating system and its applications to visual arts project production. Includes an overview of computer hardware and software used in print multimedia and imaging for visual communications and examines the impact of digital technologies upon art and design.

ARTS 291. Crafts 1: Metalsmithing and Jewelry. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites or corequisites: ARTS 202 and ARTS 231. An introduction to weaving and dyeing; individual design projects.

ARTS 302. Design Application. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites: ARTS 202 and ARTS 231. A studio course designed as an introduction to ceramics. Students will explore functional and sculptural techniques through handbuilding and wheel-throwing, as well as basic claybody, glaze and firing theory. Students will also develop a basic understanding of the historical and cultural aspects of ceramics.

ARTS 304. Color. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: junior standing or permission of instructor. A study of the underlying principles of color interaction, color selection, contrast and harmonies, relationships between light, color and vision, as well as the basics of pigments, mixing, and color terminology. An option for the interdisciplinary minor, the Designed World.

ARTS 305. Elementary Art Education Methods and Classroom Management. 3 Credits.
Studio 6 hours; 3 credits. Prerequisite: junior standing. Designed for students majoring in art education and early childhood education, this course covers the conceptual foundations of art education in the early years. An exploration of art materials and teaching methods for kindergarten and elementary school teaching. It provides introduction to unit planning, lesson planning and classroom management. Demonstrations, workshops, and community service learning place special emphasis on the scope and philosophy of art in the elementary curriculum.
ARTS 311. Photography 2. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 211 or permission of the instructor. This course encourages the refinement of technical skills as well as emphasizing the critical framework in which to place photographic imagery. Assignments will challenge students to think creatively and develop their unique perspective. Reading, research, and discussion introduce students to the major photographic movements that have shaped current theory.

ARTS 331. Drawing: Composition. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 231. Continuation of ARTS 231 with emphasis on composition.

ARTS 341. Painting: Composition. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 241. Introduction to various compositional approaches as specifically applied to painting.

ARTS 350. Advanced Printmaking. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 279 and any introductory printmaking course (ARTS 251, ARTS 252, ARTS 253, or ARTS 254). May be taken for repeat credit. Further investigation of chosen print technique (screenprint, lithography, relief, or intaglio) with special attention to the implementation of color.

ARTS 361. Advanced Sculpture. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 261 or permission of the instructor. Investigation involves the combination of various materials and construction techniques.

ARTS 363. Intermediate Ceramics. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 263. An intermediate course in ceramics with an emphasis on more sophisticated throwing and hand-building techniques toward the development of a personal image. The class includes glaze chemistry, firing procedures, ceramic history and contemporary ceramics.

ARTS 367. Cooperative Education. 1-3 Credits.
1-3 credits. May be repeated for credit. Prerequisite: approval of the department chair and Career Management. Available for pass/fail grading only. Student participation for credit will be based on the creative relevance of the planned work experience as evaluated and determined by the chair and approved by Career Management. Evaluation and approval must occur prior to the semester in which the work experience will take place. (qualifies as a CAP experience).

ARTS 368. Internship. 1-3 Credits.
1-3 credits. May be repeated for credit. Prerequisite: approval by the department chair and Career Management. Available for pass/fail grading only. A structured work experience involving aspects of design or craft, filmmaking, video, museum or gallery work, either with or without remuneration. Criteria for evaluation will be determined by work supervisor and cooperating faculty advisor. (qualifies as a CAP experience).

ARTS 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: approval by the department chair. (qualifies as a CAP experience).

ARTS 370. Graphic Design II. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 271. Introduction to typography. This course examines the history, terminology and theory of setting text for print and the screen. Students will explore issues of form and meaning, hierarchy, legibility and readability, structure and composition, and the design process. Advanced instruction in software applications for document construction and layout.

ARTS 371. Graphic Design III. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 370 and approval for continuance in the graphic design concentration through portfolio review. Open only to students admitted to the graphic design emphasis. This advanced course is devoted to basic design projects and systems for print and web. Students will work individually and in groups on assignments to explore response to creative direction and studio collaboration. (Offered fall).

ARTS 372. Graphic Design IV. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 371. Graphic design in corporate and project-oriented communications. Open only to students admitted to the graphic design emphasis. This course engages complex and multifaceted graphic design projects for print and web. Projects will address design in series and across multiple formats and media for commercial, promotional, educational, and information contexts. (Offered spring).

ARTS 374. Web Design. 3 Credits.
Lecture, 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 370 or permission of the instructor. This course will introduce the basic understanding of the methods and techniques for designing and developing a website. To design for a user interface platform, the following must be considered: site management/organization, navigation, web page layout, hierarchy of content and content inventory, appropriate uses of type/color/graphics, format, and so on. By taking the necessary steps with process and research, the goal for this course is designed conceptually appropriate websites with valid, easily accessible and dynamic user interface experiences.

ARTS 376. Typographic Design. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 372 or permission of the instructor. This course continues the study of typography, image and concept relationships for effective design communication. The student will engage in creative problem solving challenges designed to develop conceptual skills as well as address the issues of research methodology and its application to the creative design process. Advanced typographic problem solving, exploration and experimentation will be examined through the production of complex, multifaceted design projects.

ARTS 377. Extracurricular Studies. 1-6 Credits.
1-6 credits each semester. Prerequisite: approval by the department and the dean, in accordance with the policy on granting credit for extracurricular activities. Extracurricular activities may be approved for credit based on objectives, criteria, and evaluative procedures as formally determined by the department and the student prior to the semester in which the activity is to take place. Such credit is subject to review by the provost.

ARTS 378. Extracurricular Studies. 1-6 Credits.
1-6 credits each semester. Prerequisite: approval by the department and the dean, in accordance with the policy on granting credit for extracurricular activities. Extracurricular activities may be approved for credit based on objectives, criteria, and evaluative procedures as formally determined by the department and the student prior to the semester in which the activity is to take place. Such credit is subject to review by the provost.

ARTS 381. Crafts II: Fibers. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 281. An introduction to pattern drafting, advanced loom technique, off-loom weaving, and fabric painting.

ARTS 391. Crafts II: Metalsmithing and Jewelry. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 291. Additional techniques in casting and soldering with an introduction to basic metal-forming techniques of raising and forging.
ARTS 392. Crafts: Blacksmithing. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. An introduction to the basic tools, materials and techniques used in forging, forming, hardening and tempering steel. Exploration of form and process in working metal.

ARTS 395. Topics in Art Education. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: appropriate survey or introductory course or permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

ARTS 396. Topics in Studio Art. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: appropriate survey or introductory course or permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

ARTS 400. Senior Show. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Senior requirement for all B.F.A. majors. A study of gallery practices, involving the student with the practical concerns of preparation and presentation: lighting, sequencing, mounting, hanging, and all other necessary activities prior to professional exhibition. The semester culminates with group exhibitions of work by the members of the senior class. Seniors with a graphic design emphasis take ARTS 401. (qualifies as a CAP experience).

ARTS 401. Design Portfolio. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 471 and a pre- or co-requisite of 6 hours from ARTS 374, ARTS 376, ARTS 395, ARTS 475 or ARTS 495. Open only to students admitted to the graphic design emphasis. This course is intended for students to determine a personal direction in their design practice through the completion of a signature thesis project or the preparation of a portfolio and related work necessary for professional work in a range of design areas. Thesis and portfolio students will present their work to working professionals and experts in the field. The course will also cover career strategies, resume preparation and interviewing skills. (Offered spring) (qualifies as a CAP experience).

ARTS 406. Secondary Art Education Methods and Classroom Management. 3 Credits.
Studio 6 hours; 3 credits. Prerequisites: ARTS 305, TLED 301 or TLED 290 and passing score on PRAXIS I or appropriate SAT score. Corequisites: ARTS 407 and ARTS 408. This course is designed to prepare preservice art educators for student teaching by addressing theoretical and practical aspects of lesson and unit planning, curriculum content and design, and various innovative instructional approaches to secondary visual arts education.

ARTS 407. Art Education Practicum. 2 Credits.
2 credits. Prerequisites: ARTS 305, TLED 301 or TLED 290, and passing score on PRAXIS I or appropriate SAT score. Corequisites: ARTS 406 and ARTS 408. Enables students to interact with a master teacher in the classroom and practice a variety of teaching methods under supervision. Weekly seminars provide opportunities to engage in discourse related to pedagogical issues, theory, practice, and curriculum design found in current literature in art education. (qualifies as a CAP experience).

ARTS 408. Student Teaching Seminar. 1 Credit.
1 credit. Prerequisites: ARTS 305, TLED 301 or TLED 290, and passing score on PRAXIS I or appropriate SAT score. Corequisites: ARTS 406 and ARTS 407. Student Teaching Seminar is a complement course to Art Education Practicum and must be taken at the same time. Students will create and compile required documents to develop pre-service teacher e-portfolios. Students are required to take and pass Praxis II Art Content to complete this course.

ARTS 411. Photography 3. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites: ARTS 211 and ARTS 311. The course focuses on the photographic series examining reportage and contemporary narrative. Students will work on developing a fully conceived photographic series on a theme developed through guided individual research. Reading and discussion will provide students a critical framework in which to place their photographic imagery.

ARTS 412/512. Photo Seminar 1. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites: ARTS 211, ARTS 311 and ARTS 411 or permission of the instructor. The first of a two-semester sequence of concentrated individual work. Students will identify a topic and create a complete body of work culminating in the senior show, ARTS 400. Lectures, readings, discussion, critique, and field trips to develop the articulation of ideas and the clarification of purpose.

ARTS 413/513. Photo Seminar 2. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites: ARTS 211, ARTS 311, ARTS 411 and ARTS 412 or permission of the instructor. This is the second in a two-semester sequence of concentrated individual work culminating in the senior show. Through readings, discussion, critiques, field trips, and intense individual work, students will compile a body of work realizing their personal vision and articulate their ideas through the crafting of an artist statement.

ARTS 431/531. Drawing Studio. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 331. Further concentration on conceptual content and drawing skills, development of individual body of work exploring preferred concepts, subject matter, techniques, and media. May be repeated for credit.

ARTS 432/532. Figure Drawing Anatomy. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 331 or permission of the instructor. A study of visually important aspects of the structural, skeletal and muscular systems of the body. Anatomical study will be related to drawing from the live model.

ARTS 433/533. Figure Drawing/ Composition. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 432/532. This course places the emphasis on advanced composition using the figure as the central theme. The figure’s expressive potential, along with a study of historical responses to figure drawing, will be examined in depth.

ARTS 441. Advanced Painting: Special Problems. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 341. Experimental use of media combined with an exploration of content through creative manipulation of popular themes.

ARTS 442/542. Painting Studio. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 441. Independent work in painting with focus on developing content. Frequent critiques. May be taken for repeat credit.

ARTS 450/550. Printmaking Studio. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 350 or permission of the instructor. Experimental work in selected print media. May be taken for repeat credit.

ARTS 455/555. Letterpress Printmaking. 3 Credits.
Studio Course, 6 hours. 3 credits. Prerequisite: ENGL 110C. A visual and literary investigation of language and wordplay using foundry and wood type and a Vandercook SP-20 proofing press. Projects include expressive printed impressions of personal poetry and song lyric, political rant, and broadsides for entertainment or proselytizing. A theme group project, such as a folio or a bound book, is usually assigned.

ARTS 461/561. Sculpture Studio. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 361 or ARTS 363, and permission of the instructor. Experimental work reflecting individual initiative and attitude.
ARTS 463/563. Advanced Ceramics. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites: ARTS 263 and ARTS 363. An advanced course in the science and art of ceramics. Students will engage in guided independent research, developing their own direction by investigating clay bodies, glazes, firing methods and contemporary ceramic art.

ARTS 464/564. Figurative Sculpture. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 263. Three-dimensional studies of the human figure working from the live model. Sketches will be used as the basis for sculptural forms in clay or other media.

ARTS 469/569. Assemblage. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. Assemblage combines elements of various art and non-art media and materials. Lectures will be comprised of presentations about relevant artists, gallery and studio visits, and critiques. Studio time allows students to explore personal directions in the medium.

ARTS 471. Graphic Design Studio. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 372. Open only to students admitted to the graphic design emphasis. This course is intended to introduce students to the broader opportunities and directions present in contemporary design. Through readings, discussion, and self-directed and self-determined projects, students will explore personal directions and sensibilities in their design practice. (Offered fall) This course may be repeated for credit.

ARTS 473/573. The Book. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisites: ARTS 202, ARTS 279, ARTS 304, and junior standing or permission of the instructor. The book as a work of art. Lecture will explore historical and technical aspects of book design and production. Studio work will be devoted to the production of a series of books involving page design, paper selection, printing and binding.

ARTS 475/575. Editorial Design. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 370 or permission of the instructor. An examination of the problems associated with the conception, design, and layout of newspapers, newsletters, and magazines. Emphasis is placed on editorial position, content, audience, frequency, budget, and production methods.

ARTS 481/581. Crafts III: Fibers. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 381. Advanced work in pattern drafting, loom techniques, off-loom weaving and fabric painting.

ARTS 491/591. Crafts III: Metalsmithing and Jewelry. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: ARTS 391. Further exploration in casting and soldering with concentration in the metal-forming techniques of raising and forging. Additional introduction to the techniques of working in steel.

ARTS 492. Wood Studio/Furniture Design. 3 Credits.
Lecture, 1 hour; Studio, 5 hours. 3 credits. Prerequisite: ARTS 203. An exploration of concepts and techniques in wood sculpture and furniture design and fabrication.

ARTS 495/595. Topics in Art Education. 3 Credits.
Lecture 1 hour; studio 5 hours; 3 credits. Prerequisite: permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on studio projects of mutual interest.

ARTS 496/596. Topics in Studio Art. 3 Credits.

ARTS 497/597. Tutorial Work in Special Studio Topics. 3 Credits.
3 credits. Prerequisite: senior standing and permission of the chief departmental advisor. Independent investigation of a subject to be selected under the advisement of the instructor. Conferences, papers, field trips, portfolios, or exhibitions as appropriate.

ARTS 498. Tutorial Work in Special Studio Topics. 3 Credits.
3 credits. Prerequisite: senior standing and permission of the chief departmental advisor. Independent investigation of a subject to be selected under the advisement of the instructor. Conferences, papers, field trips, portfolios, or exhibitions as appropriate.

ASIA - Asian Studies

ASIAN STUDIES Courses

ASIA 332. South Asia Since Independence. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, 101H, 102H, 103H, 104H or 105H. This is a comparative study of the main political, economic and social developments in the major countries of South Asia. Themes will include democratization, problems of economic development, the role of caste and religion, the causes of intrastate conflict and interstate conflict and the influence of global forces on the region. (cross listed with POLS 336 and HIST 332).

ASIA 336. The Emergence of New China. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. The history of China covering late Imperial China, the impact of Western imperialism, the Republican Period, and the establishment of the People’s Republic. (Cross listed with HIST 336).

ASIA 337. Japan’s Era of Transformation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, 101H, 102H, 103H, 104H or 105H. The history of Japan since 1800. The decline of the Tokugawa Shogunate, modern national building in the Meiji period, domestic conflicts and war in the twentieth century, and the roots of Japan’s economic prominence today. (cross-listed with HIST 338).

ASIA 338W. Politics of East Asia. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: grade of C or better in ENGL 211C or 221C or 231C, six hours of social science, and junior standing or permission of the instructor. This course is designed for intermediate students who are interested in the theoretical and systematic study of world politics. The course first introduces students to several major theoretical approaches to the study of world politics and then applies these approaches to a number of major, contemporary issues—ranging from war and peace, conflict and cooperation, development and underdevelopment to global and national interests. (This is a writing intensive course.).

ASIA 353. Asian Religions. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. A study of religious and philosophical traditions of India, China and Japan. Primary emphasis will be given to Hinduism, Buddhism, Confucianism and Taoism. (cross listed with PHIL 353).

ASIA 360. Asian Art. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ENGL 110C and 211C or 221C or 231C and ARTH 121A. ARTH 211 or ARTH 212 or permission of instructor. An introduction to the architecture, sculpture, calligraphy, pottery, ink, painting, miniature painting, and gardens of India, China, and Japan. Emphasis will be placed on the connections among the cultures: Buddhism and pilgrimage, the importance of the scholar painters, the role of trade routes and the emergence of native writing. (cross-listed with ARTH 360).

OLD DOMINION UNIVERSITY 15
ASIA 395. Topics in Asian Studies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 101H or permission of the instructor. A study of selected topics designed for nonmajors or for elective credit within a major. These courses will appear in the course schedule and will be more fully described in information distributed to all academic advisors.

ASIA 435. Chinese Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 100S, 102S or permission of the instructor. A study of origins of the Chinese revolution; development and functions of the Chinese Communist Party; government institutions; the defense establishment; evolution of foreign policy; and post-Mao political and economic reforms. (cross listed with POLS 435).

ASIA 460. Major Issues in Asia. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: three hours of social science and junior standing, or permission of the instructor. The course examines the most salient social, economic, environmental, and political issues in Asia from multidisciplinary and interdisciplinary perspectives. The course focuses on three major geographic areas of Asia—East Asia, South Asia, and Southeast Asia.

ASIA 461W. Asian Studies Capstone Seminar. 3 Credits.
3 credits. Prerequisites: HIST 101H, a grade of C or better in ENGL 211C or 221C or 231C, and junior standing. As a required course for the Asian Studies major, the course helps students synthesize the knowledge they have learned from the undergraduate courses, write a capstone research paper and present the paper in class. (This is a writing intensive course.).

ASIA 495/595. Topics in Asian Studies. 3 Credits.
1-3 credits. Prerequisites: appropriate survey source or permission of the instructor. This course is designed for small groups of qualified students to conduct advanced study of selected topics on Asian Studies, topics which may not be taught in regularly scheduled classes. The description of the course for each offering will appear in the course schedule booklet that is distributed to each advisor.

BIOL - Biological Sciences

BIOLOGICAL SCIENCES Courses

BIOL 103. Basic Bacteriology. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. A course designed to acquaint the student with the elementary principles of bacteriology and other disease causing microorganisms as etiological agents in disease, on practical methods of disinfection, and on the factors of infection and immunity.

BIOL 105N. Biology for Nonscience Majors I. 4 Credits.
An introductory biology course for nonbiology majors. This course concentrates on major biological concepts concerning molecular biology, cellular biology, cellular reproduction, classical and molecular genetics, energetics, and ecology. This course would be beneficial to those students who are pursuing elementary education degrees because the course teaches biological topics included in the Virginia Standards of Learning. Cannot be substituted for BIOL 115N or BIOL 116N.

BIOL 106N. Biology for Nonscience Majors II. 4 Credits.
An introductory biology course for nonbiology majors. This course concentrates on plants and animals at the organismal level examining major biological concepts involving diversity, ecology, behavior, and evolution. This course would be beneficial to those students who are pursuing elementary education degrees because it teaches biological topics included in the Virginia Standards of Learning. Cannot be substituted for BIOL 115N or BIOL 116N.

BIOL 108N. Environmental Sciences. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. An introductory course for non-majors focusing on scientific inquiry and the fundamental biological underpinnings of environmental science, including ecology, evolution, the nature of and threats to biodiversity, and conservation solutions. Cannot be substituted for BIOL 115N or BIOL 116N.

BIOL 109N. Introduction to Human Biology. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. An introductory course for non-majors, focusing on scientific inquiry and the structure and function of the human body, with units on diet, nutrition, exercise, infectious disease, and cancer. Cannot be substituted as BIOL 115N or 116N.

BIOL 115N. General Biology I. 4 Credits.
Lecture 3 hours; Laboratory 3 hours; 4 credits. An introduction to the process of science, biological molecules, cell biology, metabolism, molecular biology, and Mendelian genetics. A student receiving credit for BIOL 115N or BIOL 116N cannot receive credit for BIOL 108N or BIOL 109N, respectively.

BIOL 116N. General Biology II. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits each semester. Prerequisite: placement into ENGL 110C and qualifying score on the Math placement test, or completion of MATH 102M or higher. An introduction to the process of science, evolutionary biology, ecology, and the biology of prokaryotes and eukaryotes. A student receiving credit for BIOL 115N or BIOL 116N cannot receive credit for BIOL 108N or BIOL 109N, respectively.

BIOL 126N. Honors: General Biology. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Open only to students in the Honors College. A special honors version of BIOL 115N.

BIOL 127N. Honors: General Biology. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Open only to students in the Honors College. A special honors version of BIOL 116N.

BIOL 195. Biology Lab Topics. 3 Credits.
Lecture. Topics in Biology.

BIOL 195. Topics. 1-3 Credits.
1-3 credits. Lecture. Topics in Biology.

BIOL 250. Human Anatomy and Physiology I. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits each. BIOL 250 emphasizes the gross anatomical relationships and the molecular, cellular, physiological, and metabolic process of the integument, musculoskeletal, neural, and immune systems. Only one semester from BIOL 250/251 (4 credits) may count toward upper-division elective requirements.

BIOL 251. Human Anatomy and Physiology II. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits each. 250 is prerequisite to 251. BIOL 251 emphasizes the physiology and pathophysiology of the cardiac, pulmonary, renal, endocrine, and reproductive systems. Only one semester of BIOL 250-251 (4 credits) may count toward upper-division elective requirements.

BIOL 291. Ecology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N, BIOL 116N or permission of the instructor. An introduction to the basic concepts of ecology for both biology majors and nonmajors. The concepts are introduced with respect to terrestrial, aquatic, and marine environments.

BIOL 292. Evolution. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N, BIOL 116N or permission of the instructor. An introduction to the basic concepts of evolution for both biology majors and nonmajors. The concepts are introduced with respect to terrestrial, aquatic, and marine environments.
BIOL 293. Cell Biology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N and BIOL 116N.
Corequisites: MATH 162M and CHEM 211. A comprehensive course in the structural and functional features of cells, including prokaryotic and eukaryotic cells. The course will also examine biomacromolecules, techniques in cell and molecular biology, and current frontiers in cell biology research.

BIOL 303. Genetics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N, 116N and STAT 130M. Corequisites: MATH 162M and CHEM 211. An introduction to the principles of biological inheritance and variation and the molecular bases of gene structure and function.

BIOL 307. Invertebrate Zoology. 4 Credits.
Lecture 2 hours; laboratory 4 hours; 4 credits. Prerequisite: BIOL 292. An examination of the invertebrate phyla with emphasis on classification, morphology, phylogeny, and general biology.

BIOL 308. Botany. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Prerequisites: BIOL 291, 292. A general introduction to the structure, function, ecology, and diversity of plants.

BIOL 314. Developmental Biology. 5 Credits.
Lecture 3 hours; laboratory 4 hours; 5 credits. Prerequisites: BIOL 250-251. Corequisite: CHEM 211. A semester of organic chemistry is recommended. An analysis of development in animals. Lectures will explore experimental approaches to the study of gametogenesis, fertilization, cleavage and morphogenesis. Laboratory emphasizes the morphological features of the developing vertebrate embryo.

BIOL 315. General Microbiology. 5 Credits.
Lecture 3 hours; laboratory 4 hours; 5 credits. Prerequisites: BIOL 293 and 303. Designed to be a general survey of the nature and diversity of microorganisms (especially the bacteria but also including viruses and fungi), the roles and functions of the microorganisms, and basic microbiological research. Laboratories emphasize fundamental techniques in culturing, studying and identifying microorganisms.

BIOL 322. Ethnobotany. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: BIOL 292. A survey of plants used by people for food, fiber, medicine, dyes, perfumes, and building. A survey of local edible, toxic and useful native plants and mushrooms is included. Two Saturday field trips are required.

BIOL 330. Vertebrate Zoology. 4 Credits.
Lecture 3 hours; Lab 3 hours; 4 credits. Prerequisite: BIOL 115N, 116N, 291, and 292. An introduction to the vertebrate animals, including overviews of their evolution, systematics, morphology, physiology, ecology, and behavior. Lab will include a variety of hands-on activities and may require a multi-day field trip.

BIOL 331. Marine Biology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N and BIOL 116N and BIOL 291. A survey of the variety, ecology and adaptations of marine organisms. The course is designed to broadly introduce students to life in the oceans and the many special features of marine species that have evolved in the earth’s oldest and most extensive ecosystem.

BIOL 334. Field Ethnobotany. 4 Credits.
Lecture, 1.5 hours; lab, 5 hours. 4 credits. Prerequisite: BIOL 308. Research techniques in ethnobotany based on the study and utilization of local plants and mushrooms for food, fiber, cordage, medicine, dyes, teas, and other uses.

BIOL 335. Ecology Laboratory. 2 Credits.
Laboratory 4 hours; 2 credits. Prerequisite: BIOL 291. A field and laboratory course that emphasizes techniques employed in ecological investigations.

BIOL 346. Plant Geography. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: BIOL 115N and 116N. The distribution and characteristics of major plant community types in North America are discussed. Abundant pictures are used to illustrate the flora and plant communities.

BIOL 367. Cooperative Education. 1-3 Credits.
1-3 credits (Can be repeated once for credit). Prerequisite: approval by the department chair and Cooperative Education/Career Management. Available for pass/fail grading only. Student participation for credit in a paid work environment based on the academic relevance of the work experience as determined by the department and the Cooperative Education program, prior to the semester in which the work experience is to take place. Unstructured course. Qualifies as a CAP experience.

BIOL 368. Internship. 1-3 Credits.
1-3 credits. Prerequisites: BIOL 115N/BIOL 116N, junior standing. Permission of CDA. Supervised participation in non-research professional setting. Requires a minimum of 3 hours per week or equivalent for 1 credit, completion of work report and other documents relevant to the work experience, and supervisor evaluation. Unstructured course. (Qualifies as a CAP experience).

BIOL 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisites: BIOL 115N-116N, acceptance as a declared major, junior class status, and approval by the practicum coordinator. A supervised experience in a research, teaching, or a work/field setting and culminating in the preparation of a written document relevant to the practicum experience. Unstructured course. (Qualifies as a CAP experience.).

BIOL 400/500. Flowering Plant Families. 5 Credits.
Lecture 3 hours; laboratory 4 hours; 5 credits. Prerequisites: BIOL 292 (BIOL 303 and 308 recommended). An evolutionary survey of flowering plant families; emphasis on recognition and identification of plant families and the principles and methodologies that define them; and evolution of biodiversity. Focus on local representatives and large families in the field and laboratory. An activity oriented, hands-on course.

BIOL 401/501. Entomology. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Prerequisites: BIOL 291 and 292. A comprehensive survey of the insects, including taxonomy, morphology, physiology, reproductive and developmental biology, and ecology. Research techniques in entomology will be learned through both field and laboratory work.

BIOL 404/504. Conservation Biology. 5 Credits.
Lecture 3 hours; laboratory 4 hours; 5 credits. Prerequisites: BIOL 291, junior standing or permission of instructor. The application of fundamental biological principles to the preservation of biodiversity, including the role of ecological and evolutionary theory to the preservation of biotas on a regional and global basis. Lectures will cover modern approaches to conservation biology, including conservation ethics and management issues. Laboratories will include discussion of case studies, introduction to software applicable to conservation biology, presentations by regional conservation practitioners, and visits to relevant field sites.

BIOL 405W. Biology Seminar. 3 Credits.
3 hours lecture, 3 credits. Prerequisites: BIOL 291, BIOL 292, BIOL 293, and BIOL 303 and two 300- or 400-level elective and a grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C. This course offers a capstone experience in scientific writing, faculty-mentored library research, the review and synthesis of material from the primary technical literature, and oral presentation. Students will develop a deeper understanding of the purposes and types of scientific writing, the structure and interpretation of technical papers, and the oral and written communication skills appropriate to the discipline. (This is a writing intensive course.).
BIOL 408/508. Introduction to Pharmacology. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Prerequisites: BIOL 250 or permission of the instructor. This is a general introductory course in pharmacology dealing with chemistry, general properties and pharmacological effects on various physiological systems, therapeutic usefulness and toxicities of drugs. The course is designed to prepare upper-level undergraduate and graduate students for more advanced courses in pharmacology.

BIOL 409/509. Immunology. 1-4 Credits.
Lecture 3 hours; 3 credits. Prerequisite: BIOL 315 or permission of the instructor. A comprehensive study of the phenomena of immune resistance, the cells and tissues involved in immune responses, and the consequences of immunization.

BIOL 410/510. Immunology Laboratory. 2 Credits.
Laboratory 4 hours; 2 credits. Prerequisite: junior standing. Serologic and cellular immune reactions and other immunologic methodologies.

BIOL 412/512. Plant Physiology. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Prerequisite: BIOL 292. Corequisites: BIOL 293 and CHEM 211. A study of the physiological processes which occur in plants. A laboratory and greenhouse oriented course stressing plant nutrients, cell metabolism-respiration, photosynthesis, nitrogen metabolism, and plant hormones.

BIOL 415/515. Marine Ecology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N, 116N, 331 and previous course in ecology. When offered during the fall semester, Marine Ecology Laboratory (BIOL 442/542) is a corequisite. An introduction to ecological processes in the marine environment, with an emphasis on coastal ecosystems. The course covers synthetic topics as well as the ecology of specific marine habitats.

BIOL 416/516. Clinical Immunology. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: BIOL 409/509. A description of common immunological problems seen in the clinic.

BIOL 419/519. Wetland Plants. 5 Credits.
Lecture 2 hours; laboratory 6 hours; 5 credits. Prerequisites: BIOL 291 and 308. A field-oriented course on the identification of plants used to delineate wetlands including ecology, variability, and distribution.

BIOL 420/520. Ichthyology. 5 Credits.
Lecture 3 hours; laboratory 4 hours; 5 credits. Prerequisites: BIOL 292 and junior standing. The biology of marine and freshwater fishes including morphology, physiology, evolution, distribution, ecology, and reproduction.

BIOL 421/521. Ornithology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 291, 292 or permission of the instructor. The basic biology of birds, their evolution, behavior, classification, and ecological relationships. Biology majors must take BIOL 422 to receive concentration credit for this course.

BIOL 422/522. Field Studies in Ornithology. 4 Credits.
Lecture 2 hours; laboratory 4 hours; 4 credits. Prerequisites: BIOL 291, 292 or permission of the instructor. A combined lecture and field study of birds with emphasis on identification, behavior, and field methods. Extensive field trips, including at least one weekend, are taken.

BIOL 423/523. Cellular and Molecular Biology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites for 423: BIOL 293 and 303. Prerequisite for 523: course background in cell biology and genetics or permission of instructor. The molecular organization of eucaryotic cells is presented along with cell evolution, molecular genetics, the internal organization of the cell and the behavior of cells in multicellular organisms.

BIOL 424/524. Comparative Animal Physiology. 5 Credits.
Lecture 3 hours; laboratory 4 hours; 5 credits. Prerequisite: BIOL 292. An introduction to the basic mechanisms by which different animals function. How organisms acquire and use energy, regulate their internal environment, circulate and exchange gases and wastes, receive and conduct information about their environment, and move and use muscles will be some of the topics covered. Emphasis will be on how organisms make changes in these basic mechanisms to deal with differing environmental conditions.

BIOL 426/526. Histology. 5 Credits.
Lecture 3 hours; laboratory 4 hours; 5 credits. Prerequisites: BIOL 250, 293. The structure and function of cells, tissues and organs at both the light microscopic and ultrastructural levels.

BIOL 427/527. Neurobiology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 250/251 or 458/558. Survey of current areas of neurobiology including evolution of the nervous system from invertebrates through primates and mechanisms of nervous system function such as sensation and biological clocks.

BIOL 428/528. Physiological Ecology of Animals. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: BIOL 292. Prerequisite: BIOL 291. An integrative approach to understanding how animals function in and respond to their natural environment. Adaptations by a variety of invertebrate and vertebrates to marine, coastal/estuarine, freshwater, terrestrial, and parasitic environments will be covered. Responses of intertidal organisms to periodic aerial and aquatic exposure, osmotic stress on crustaceans in brackish waters, sensory adaptations in freshwater fish, thermal regulation by reptiles in desert climates, and respiratory adaptation by parasites are among the topics that will be discussed.

BIOL 430/530. Microbial Pathogenesis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite for 430: BIOL 315. Prerequisite for 530: microbiology course. Examination of bacterium-host interactions with an emphasis on how bacteria cause disease, particularly the means by which the bacterium is able to circumvent host defense mechanisms.

BIOL 431/531. Mammalogy. 5 Credits.
Lecture 3 hours; laboratory 4 hours; 5 credits. Prerequisites for 431: BIOL 291, 292, junior standing or permission of the instructor. Prerequisite for 531: undergraduate ecology and evolution courses. The ecology, behavior, distribution, physiology, diversity, and evolution of mammals will be emphasized.

BIOL 435/535. Marine Conservation Biology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: BIOL 115N, BIOL 116N, and BIOL 331. This highly interdisciplinary science of conserving marine biodiversity will be taught through a review of old and new literature. This will include its history, marine ecology related to conservation biology, threats to marine biodiversity, assessment of extinction risk, conservation challenges of marine habitats and regions, and methods for conserving marine biodiversity.

BIOL 438/538. Dendrology. 4 Credits.
Lecture 2 hours; laboratory 5 hours; 4 credits. Prerequisite: BIOL 308 or equivalent. The study of trees and shrubs, their identification, ecology, structure and anatomy, lobe and uses. A field-oriented course.

BIOL 441/541. Animal Behavior. 5 Credits.
Lecture 3 hours; laboratory 4 hours; 5 credits. Prerequisites: BIOL 291 and 292 and junior standing or permission of the instructor. Animal behavior with special attention to its evolution and ecological significance. Field and laboratory activities will emphasize observational and experimental techniques used to study behavior.
BIOL 442/542. Marine Ecology Laboratory. 2 Credits.
4 hours; 2 credits. When offered during the fall semester, Marine Ecology (BIOL 415/515) is a corequisite. A laboratory/field course in which students gain practical experience with research techniques common to coastal marine ecology, and become familiar with the organisms and ecological conditions present in the various marine habitats visited by the class. A field trip of several days is required.

BIOL 443/543. Environmental Impact Assessment. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: biology major or permission of the instructor. Topics will include the history and legislation pertaining to environmental impact assessment. Emphasis will be placed on ecological concerns and management of tidal and non tidal wetlands plus shore line and estuarine habitats. Assignments will include evaluation of environmental impact conditions within this region.

BIOL 444/544. Field Studies in Marine Biology. 5 Credits.
Lecture, 3 hours; laboratory, 6 hours. 5 credits. Prerequisite: BIOL 331. An intensive summer field course conducted at an off-campus marine laboratory where students will be engaged in lectures and field studies of coastal marine environments. This will often be offered as a study abroad course. Check with the Director of the Marine Biology Concentration Program for details.

BIOL 445/545. Community Ecology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: BIOL 291. The goal of this course is to introduce and evaluate both classical and emerging paradigms in community ecology. This will be achieved by examining those processes (biotic and abiotic) that structure ecological communities, and by exposing students to quantitative and theoretical aspects of these paradigms.

BIOL 446/546. Comparative Biomechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: BIOL 293; recommended courses: PHYS 111N, 112N. The principles of fluid and solid mechanics will be applied to a variety of plant and animal systems to understand how organisms deal with the immediate physical world and its accompanying constraints. A diverse range of topics will be covered, including aerial flight in insects, wind resistance in trees, jet propulsion in squid, flow within blood vessels, forces on intertidal organisms, viscoelasticity in biological materials, and energy storage during terrestrial movement.

BIOL 450/550. Principles of Plant Ecology. 4 Credits.
Lecture 2 hours; laboratory 4 hours; 4 credits. Prerequisites: BIOL 291 and senior standing. Course covers the general theoretical concepts in plant ecology with statistical methods. The structure, development, processes, and history of plant communities are studied. Laboratories involve extensive fieldwork. A weekend field trip is required.

BIOL 454/554. Parasitology. 4 Credits.
Lecture 2 hours; laboratory 4 hours; 4 credits. Prerequisites: BIOL 293 and 303. A basic course which treats parasitism as one of several biological interactions. The principles discussed are structural and physiological adaptations to parasitism, host specificity, immunity, parasitic life cycles, and evolution of parasitism. Representative species are examined in the laboratory.

BIOL 455/555. Molecular Systematics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N, 116N, 292 and 303. An introduction to the processes and procedures used to reconstruct the evolutionary history of living organisms using chromosomes, proteins, and nucleic acids. Topics include project planning and sampling, molecular techniques, and analytical and tree-building programs used to infer phylogeny. Assignments include readings followed by participation in group discussions and an oral presentation followed by a written paper on the analyses of a molecular data set.

BIOL 456/556. Population Genetics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: BIOL 303. An introduction to the principles of population genetics and addresses topics such as inheritance, genetic variation, fitness, natural selection, mutation, genetic drift, gene expression, and single- and multi-locus models of different types of selection. Human disease is addressed. Students will write a mock-grant proposal.

BIOL 457/557. General Virology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N, 116N, 293 and 303 for BIOL 457 only. For 557, students are expected to have had courses in cell biology and genetics prior to enrollment in the course. A basic course covering the history of virology, viral taxonomy, genetics, and the molecular biology and host responses to the major mammalian virus groups. Examples of recent impacts of viruses on human health such as influenza pandemics will also be covered.

BIOL 458. Comparative Anatomy of the Chordates. 5 Credits.
Lecture 2 hours; laboratory 6 hours; 5 credits. Prerequisites: BIOL 115N, 116N, and 292. The evolution of form in chordates, with an emphasis on the vertebrates. Changes in the function and adaptive significance of structures through time are considered. The detailed anatomy of representative species is introduced and compared in the laboratory.

BIOL 459/559. Genomics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N, 116N, 293 and 303. This course will introduce genomics as a scientific approach that combines molecular biology, high-throughput methodologies, bioinformatics and computing to reveal the secrets hidden within a genome. Topics will include how whole genomes are studied, including large scale sequencing, RNA expression profiling, proteomics and bioinformatics.

BIOL 460/560. Frontiers in Nanoscience and Nanotechnology. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisites: BIOL 293, junior, senior or graduate standing for 560. Review of the structure, synthesis and properties of key nano-materials and their impact on living systems.

BIOL 461/561. Human Cadaver Dissection. 4 Credits.
Lecture 2 hours; laboratory 4 hours; 4 credits. Prerequisite: BIOL 250-251 or equivalent. Students will dissect a human cadaver and learn all major structures. All exams will be practical tag-tests using human tissue. The major emphasis will be on head, neck, trunk, and joints with some clinical application to injuries and surgery.

BIOL 472/572. Marine Conservation Biology. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: BIOL 115N, 116N, and 331. This highly interdisciplinary science of conserving marine biodiversity will be taught through a review of old and new literature. This will include its history, marine ecology related to conservation biology, threats to marine biodiversity, assessment of extinction risk, conservation challenges of marine habitats and regions, and methods for conserving marine biodiversity.

BIOL 473/573. Herpetology: The Biology of Amphibians and Reptiles. 5 Credits.
Lecture 3 hours; laboratory 4 hours; 5 credits. Prerequisites: BIOL 292 and junior standing or permission of the instructor. The biology of amphibians and reptiles, emphasizing their evolution, classification, and morphological and ecological adaptations. Field trips and laboratory exercises introduce techniques for observation, collection, preservation, and study.

BIOL 474/574. Mushrooms. 4 Credits.
Lecture 2 hours; laboratory 6 hours; 4 credits. Prerequisite: BIOL 308. The identification, classification ecology, culture, and uses of mushrooms and other fleshy fungi. A field oriented course.
BIOL 477/577. Origins of Biological Principles. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N-116N or BIOL 105N-106N or BIOL 108N-109N plus a minimum of 6 credits of biology courses at the 200 level or above, all taken before enrollment. Covers the historical origins of major concept areas in the biological sciences including evolution, cell biology, ecology, systematics, botany, biomedical sciences, and molecular biology. Includes discussions of the philosophers and scientists behind the discovery of these principles. Includes a significant writing component.

BIOL 478/578. Microbial Ecology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite for 478: BIOL 315 or equivalent or permission of instructor. Prerequisite for 578: a general microbiology course. Study of the interactions between microorganisms, particularly bacteria, and their environment. Emphasis is placed on nutrient cycling and the influence of microbes on global mineral dynamics. The effects of physical and chemical factors on distribution and activity of microbes in their environments and applications of these interactions are studied (biotechnology).

BIOL 479/579. Microbial Ecology Laboratory. 1 Credit.
Laboratory 3 hours; 1 credit. Corequisite or prerequisite: BIOL 478/578. A laboratory for measurement of microbial numbers and activity in natural environments.

BIOL 480/580. Advanced Human Physiology Laboratory. 2 Credits.
Laboratory 4 hours; 2 credits Corequisite or prerequisite: BIOL 250/251. A study of the cardiovascular, respiratory, nervous and digestive systems using mammals.

BIOL 481/581. Forensic and Medical Entomology. 5 Credits.
Lecture 3 hours, laboratory 5 hours, 5 credits. Prerequisites: BIOL 115N, 116N, 291 and 292. A comprehensive survey of insects important to legal and medical fields, including their biology, use in criminal investigations and roles as disease vectors. Laboratories will include exercises in both field and bench laboratory activities.

BIOL 483. Bio-micro/Nanofluidics. 4 Credits.
Lecture 2 hours, lab 2 hours, 4 credits. Prerequisite: junior standing. This course is intended for biology and engineering students interested in learning the basics of micro/nanofluidic technology and its application to problems in biology research. Students will learn fundamentals of DNA manipulation, including polymerase chain reaction, and will then learn how to fabricate "lab-on-a-chip" devices to perform these techniques. Cross-listed with AE 483.

BIOL 487. Honors Research in Biology. 4 Credits.
487 is prerequisite to 488W. Independent study and scheduled meetings with faculty advisor; 4 credits each semester. Prerequisites: admission to the Honors Program and senior standing. Supervised independent study in an area of individual interest in biology. The work in this course results in the production of a thesis. (qualifies as a CAP experience).

BIOL 488W. Honors Research in Biology. 4 Credits.
Prerequisite: grade of C or better in ENGL 211C or 221C or 231C and BIOL 487. Independent study and scheduled meetings with faculty advisor; 4 credits each semester. Prerequisites: admission to the Honors Program and senior standing. Supervised independent study in an area of individual interest in biology. The work in this course results in the production of a thesis. (This is a writing intensive course) (qualifies as a CAP experience).

BIOL 490/590. Advanced Human Physiology. 4 Credits.
Lecture 4 hours; 4 credits. Prerequisite: BIOL 250 or equivalent. All major physiological systems with emphasis on normal physiology. Some clinical applications made but not stressed.

BIOL 496/596. Topics. 1-3 Credits.
1-3 credits. Prerequisites: BIOL 115N/116N, junior standing, permission of instructor. A specially designed, structured course concerning specific topics in the biological, environmental, or allied health fields.

BIOL 497. Undergraduate Research. 1-3 Credits.
1-3 credits. Prerequisites: BIOL 115N/116N, junior standing, permission of instructor, permission of CDA. Student performs lab and/ or field research under supervision of ODU faculty or other approved professional. Requires a minimum of 3 hours per week or equivalent for 1 credit, completion of lab/ field notes and written report and evaluation by supervisor. May qualify as lab experience (see CDA). (qualifies as a CAP experience).

BIOL 498/598. Independent Study. 1-3 Credits.
1-3 credits. Prerequisites: BIOL 115N/116N, junior standing, permission of the CDA, permission of instructor. Supervised (non-lab/field) project selected to suit the needs of the individual student. Requires completion of formal scientific paper documented with appropriate primary technical literature (see CDA for details). Unstructured course.

BME - Biomedical Engineering

BIOMEDICAL ENGINEERING Courses

BME 401/501. Biomedical Engineering Design and Innovation. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: Junior standing. This course is designed for students completing the biomedical engineering interdisciplinary minor. The course will expose students to the design strategies, techniques, tools, and protocols commonly encountered in medical technology innovation. Needs identification, concept generation, technology development, market analysis, regulation and integration will be discussed.

BME 402/502. Biomedical Engineering Principles. 3 Credits.
Lecture, 3 hours. 3 credits. This course is for students taking the biomedical engineering interdisciplinary minor. The course exposes students to principles used in biomedical engineering. Areas discussed include modeling of physiological processes, biomedical signal acquisition and processing, biomaterials, rehabilitation engineering, and ethical principles in biomedical engineering.

BNAL - Business Analytics

Business Analytics Courses

BNAL 206. Probability, Decision Analysis and Business Statistics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 162M with a grade of C or better or placement into a higher level math course. An introduction to methods of probability assessment and statistical inference. Topics include descriptive statistics, normal and binomial distributions, decision making under uncertainty and under risk, decision analysis incorporating sample information, sampling distributions and Central Limit Theorem, interval estimation, and hypothesis testing. Business and economic applications are emphasized. Computer software, as a tool for problem solving, is utilized where appropriate.
BNAL 306. Statistical Data Analysis and Management Science. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 200, BNAL 206 and a declared major in the University or permission of the Dean’s Office of the CBPA. Quantitative methods for solving business problems. Topics include advanced hypothesis testing, analysis of frequency data, correlation analysis, simple and multiple regression, time series forecasting, linear programming formulation and managerial analysis, distribution models, and PERT/CPM models. Computer software, as a tool for problem solving, is utilized throughout the course. Emphasis is on the interpretation of the varied aspects of quantitative solutions.

BNAL 367. Cooperative Education. 1-3 Credits.
1-3 credits. Prerequisite: junior standing and a declared major in the University or permission of the Dean’s Office of the CBPA. Approval for enrollment and allowable credits are determined by the department and Career Management in the semester prior to enrollment. (qualifies as a CAP experience).

BNAL 368. Internship. 1-3 Credits.
1-3 credits. Prerequisites: BNAL 306 and a declared major in the University or permission of the Dean’s Office of the CBPA. Approval for enrollment and allowable credits are determined by the department and Career Management in the semester prior to enrollment. (qualifies as a CAP experience).

BNAL 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisites: BNAL 206 and BNAL 306 and a declared major in the University or permission of the Dean’s Office of the CBPA. Approval for enrollment and allowable credits are determined by the department CAP adviser and the Career Management Center in the semester prior to enrollment. Student participation in a professional work experience. (Qualifies as a CAP experience).

BNAL 406. Spreadsheet Modeling and Analysis for Business Decisions. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: BNAL 306 with a grade of C or better and a declared major in the University or permission of the Dean’s Office of the CBPA. This course introduces students to the use of spreadsheet modeling to analyze and make business decisions. Course topics include spreadsheet design, data analysis for modeling, and Monte Carlo simulation. Students will improve their proficiency in using spreadsheet applications and advanced spreadsheet features through the use of software such as Excel.

BNAL 407/507. Business Analysis. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: BNAL 306 and a declared major in the University or permission of the Dean’s Office of the CBPA, for BNAL 407 and OPMT 611 for BNAL 507 or permission of the instructor. Formulation and solution of mathematical models and their uses and limitations in business. Topics include linear, integer, and goal programming, network models, queuing, utility theory, and Markov analysis. Cases and computer solution of topics introduced in this class, as well as topics from BNAL 206 and 306, are incorporated.

BNAL 432/532. Forecasting. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: BNAL 306 and a declared major in the University or permission of the Dean’s Office of the CBPA. Techniques for preparing business forecasts. Applications include both shorter term forecasting for sales and operations management as well as forecasting for long term planning. Emphasis is on statistical methods to obtain and evaluate forecasts. Statistical models are implemented using standard software such as MINITAB or EXCEL.

BNAL 441. Supply Chain Management and Logistics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: OPMT 303, BNAL 306 and a declared major in the University or permission of the Dean’s Office of the CBPA. Supply chain management integrates all activities associated with the flow of materials and information from product start to customers. Examples include order processing, warehousing, inventory management, transportation and logistics, and the costs and information systems supporting these activities. Particular application is made to global logistics systems supporting port and maritime activities. Supply chain relationships can be improved through effective integration of management and via such technologies as the World Wide Web, electronic data exchange, and enterprise resource planning (ERP). (cross-listed with MSCM 441).

BNAL 476/576. Simulation Modeling and Analysis for Business Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: OPMT 303, BNAL 306 with a grade of C or better, senior standing and a declared major in the University or permission of the Dean’s Office of the CBPA. Methods and techniques of digital computer simulation of business systems utilizing knowledge of data processing, statistics, probability theory and operations research. Areas of application include systems that experience waiting problems. Topics include the methodology for the construction of computer simulation models, model verification, validation, and analysis of results. This course also includes a CAP experience. (qualifies as a CAP experience).

BNAL 495. Topics in Business Analytics. 3 Credits.
3 credits. Prerequisites: senior standing and a declared major in the University or permission of the Dean’s Office of the CBPA. Selected advanced topics in decision sciences. Taught on an occasional basis. See the course schedule for the particular topic being taught each semester.

BNAL 497. Independent Study. 1-3 Credits.
1-3 credits. Prerequisite: permission of department. Affords students the opportunity to undertake independent study under the direction of a faculty member.

BUSN - Business Administration

BUSINESS ADMINISTRATION Courses

BUSN 110. Introduction to Contemporary Business. 1 Credit.
Lecture 1 hour; 1 credit. Provides students with a preliminary understanding of business and gives them an opportunity to use office productivity software to enhance communications and presentations. Students should be able to identify career prospects for each of the primary business areas (such as Accounting, Finance, Management, etc.) and basic business terminology. Office productivity software (word processing, spreadsheets, and presentation) will be heavily used by the faculty and students for communication in the form of presentations and essays.

CDSE - Comm Disorders & Special Educ

COMM DISORDERS SPECIAL EDUCATION Courses

CDSE 465. Sign Language I-Beginning Nonverbal Communication. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor.

CDSE 495/595. Topics in Education. 1-6 Credits.
1-6 credits. Prerequisite: junior standing or permission of the instructor. Selected topics in education.
CDSE 497/597. Independent Study in Special Topics in Education. 1-3 Credits.
1-3 credits. Prerequisite: junior standing or permission of the instructor. Independent study of selected topics.

CEE - Civil/Environmental Engineer

CIVIL/ENVIRONMENTAL ENGINEER Courses

CEE 111. Information Literacy and Research. 2 Credits.
Lecture, 2 hours. 2 credits. Prerequisite: ENGN 110. This course will introduce students to the needs, access, evaluation, use, impact and ethical/legal aspects of information, as well as to the application of information literacy and research in the fields of civil and environmental engineering.

CEE 195. Topics in Civil and Environmental Engineering. 1-3 Credits.
Lecture 1-3 hours; 1-3 credits. Prerequisite: Permission of the department chair. Special topics in civil and/or environmental engineering at the introductory level.

CEE 204. Statics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 211. Corequisite: PHYS 231N. Introduction to engineering problems and their solutions through a study of the statics of particles and rigid bodies.

CEE 240. Geographic Information Systems in Civil and Environmental Engineering. 3 Credits.
Lecture 1 hour; laboratory 4 hours; 3 credits. Prerequisite: MATH 212, sophomore standing or higher. Geographic Information Systems as they apply to civil and environmental engineering. Spatial data acquisition, generation and analysis methods from terrestrial, aerial and satellite sources. Modeling of terrain, land, and hydrographic information using CADD. Use of GIS software in the creation and application of GIS spatial data bases to engineering problems.

CEE 250. Principles of Environmental Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CHEM 117, PHYS 231N. Fundamentals of environmental engineering. Introduction to contaminant generation, release, and transport in the environment. Engineering analysis of natural systems and introduction to engineered systems control of contaminants.

CEE 259. Topics in Civil and Environmental Engineering. 1-3 Credits.
Lecture 1-3 hours; 1-3 credits. Prerequisite: Permission of the department chair. Topics in civil and/or environmental engineering at the basic engineering level.

CEE 303. Probability Statistics and Risk in Civil and Environmental Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing in CEE. CEE infrastructure systems definitions and methodology. CEE economics basics and use. Probability theory and applications. Statistics parameters, functions, variance, regression, and correlation analysis. Professional practice issues of ethics, licensure, procurement of work, and professional interaction.

CEE 305. Civil and Environmental Computations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing, MATH 307, CS 150. Introduction to selected numerical methods and their specific application to solving problems in many of the areas of civil and environmental engineering. Further development of computer programming proficiency.

CEE 310. Structures I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MAE 220 and a grade of C or better in CEE 204. Analysis of statically determinate structures. Influence lines and structural design. Displacement calculations. Introduction to analysis of indeterminate structures.

CEE 320. Civil Engineering Materials. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: MAE 220. Properties of steel, portland cement concrete, bituminous concrete, aggregates, and timber.

CEE 332. Soil Mechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MAE 220. Corequisite: CEE 335. Fundamental engineering properties of soil and their application to earth structures and foundations. Topics include seepage, compaction, strength, and deformation characteristics of soils.

CEE 330. Hydromechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 212. Fluid properties, fluid statics and fundamentals of fluid kinematics. Steady, incompressible conservation laws for mass, momentum and energy including real fluid energy losses. Turbulent, incompressible fluid flows in closed conduits and with a free surface. Introduction to thermodynamics.

CEE 335. CE Soils and Hydraulics Laboratory. 1 Credit.
Laboratory 2 hours; 1 credit. Corequisites: CEE 323 and 340. Soils and hydraulics tests, including index testing, compaction, permeability, consolidation, shear tests for soils. Pipe flow, open channel flow, surface hydrology, groundwater, and hydraulic structures for hydraulics.

CEE 340. Hydraulics and Water Resources. 3 Credits.

CEE 350. Environmental Pollution and Control. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CHEM 121N-122N, MATH 211, PHYS 231N. Introduction to the fundamental principles of environmental engineering. Topics in water quality, water and wastewater treatment, air quality, and solid waste and landfills are discussed.

CEE 355. Environmental Engineering Analysis. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: PHYS 231N, CHEM 123N-124N or CHEM 117. Introduction to laboratory analytical techniques used in environmental engineering analysis. Integrates field and laboratory testing with engineering analysis and design of treatment systems.

CEE 356. Public Health Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 355 or 350. Principles of public health engineering. Includes the study of contaminant interactions with human populations, pathogen identification and transport in the environment and design of on-site wastewater treatment systems.

CEE 376. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Career Management in accordance with the policy for granting credit for cooperative education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (qualifies as a CAP experience).

CEE 386. Internship. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by department and Career Management. Available for pass/fail grading only. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. (qualifies as a CAP experience).
CEE 369. Practicum. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by department and Career Management. Available for pass/fail grading only. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. (qualifies as a CAP experience).

CEE 395. Topics. 1-3 Credits.

CEE 402. Professional Practice of Engineering. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: Senior standing. The course will cover the practice and business aspects of engineering including concepts in management, business, public policy, and leadership. It will also cover public and private procurement of work, project management and execution, responsibility to clients, contracting, project finances, professional liability, and public safety.

CEE 403W. Civil Engineering Design Project and Professional Practice. 3 Credits.
3 credits. For graduating seniors only. Prerequisite: grade of C or better in ENGL 211C or 221C or 231C. Group design project of civil engineering systems requiring synthesis, data gathering, preliminary investigation, master planning, conceptual designs, layouts, support studies, cost estimates and report writing. Emphasis will be on alternatives, constraints, economics, ethics and professional practice, business and project management, public policy and leadership. (This is a writing intensive course.).

CEE 404W. Environmental Engineering Design Project and Professional Practice. 3 Credits.
3 credits. For graduating seniors only. Prerequisite: grade of C or better in ENGL 211C or 221C or 231C. Synthesis of environmental engineering fundamentals into integrated systems design. Emphasis on pollution prevention and life cycle design concepts. Semester long project leads to engineering report and oral presentation. Includes consideration of technical and social constraints on engineering design and impacts on society. (This is a writing intensive course.).

CEE 410. Concrete Design I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 310. Fundamental concepts of reinforced concrete analysis and design by ultimate strength and working stress methods.

CEE 411/511. Concrete Design II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 410 or equivalent. Analysis and design of complex concrete structural members, flat and two-way slabs, special topics and introduction to prestressed concrete design.

CEE 414/514. Masonry Structures Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 310. Masonry materials, reinforced beams and lintels, walls, columns and pilasters, shear walls, and buildings.

CEE 415/515. Steel Structures Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 310. Load and resistance factor design methods for steel structures.

CEE 416/516. Wood Structures Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 310. Design of wood structures based on national design specification and load and resistance factor design.

CEE 430/530. Foundation Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 323. Subsurface exploration, site preparation, design of shallow and deep foundations, and retaining structures.

CEE 431/531. Earth Structures Design with Geosynthetics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 323. Seepage and stability analysis and design of manmade and natural slopes and retaining structures. Applications of geosynthetic material to seepage control, reinforcement of earth works, and containment of hazardous materials.

CEE 432/532. Introduction to Earthquake Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: senior standing and permission of the instructor. An overview of earthquake processes and details of the characteristics of destructive ground motion; the effects of such motion on civil engineering structures; reviews of current design practice in mitigating earthquake hazards for various civil engineering structures such as buildings, bridges, dams, lifelines, ports and harbors, etc.

CEE 440/540. Hydraulic Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 340. Hydraulic transients; flow control structures; computer analysis of hydraulic systems; design of pipelines, open channels and culverts.

CEE 446/546. Urban Stormwater Hydrology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 340. Storm rainfall analysis, design rainfall hyetographs, runoff calculation procedures, detention basins, use of mathematical models to analyze and design urban storm drainage systems.

CEE 447/547. Groundwater Hydraulics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 340. Description of well hydraulics in single and multiple well systems. Determination of aquifer parameters from pumping tests. Use of computer models to determine drawdowns due to multiple well systems.

CEE 450/550. Water Distribution and Wastewater Collection System Design. 3 Credits.

CEE 451. Water and Wastewater Treatment. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CEE 330, CEE 250 or 350. Discussion of water quality constituents and introduction to the design and operation of water and wastewater treatment facilities.

CEE 452/552. Air Quality. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 250 or 350. Study of air quality management standards and regulations and pollutant dynamics. Design and operation of emission control equipment for mobile and stationary sources of air pollution.

CEE 454/554. Hazardous Wastes. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CEE 250 or 350. Study of sources, generation rates and characteristics of hazardous wastes and their regulation, handling, and design of treatment and disposal facilities.

CEE 458/558. Sustainable Development. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing and permission of instructor. Overview of social, economical, technical environmental aspects of regional, national and international efforts to achieve sustainable development. Discussion of the integration of industrial activity and ecological concerns utilizing principles of zero emissions, pollution prevention and design for the environment.

CEE 459/559. Biofuels Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. Course covers the overview of renewable energy sources; fundamentals of biofuels; biomass and types of biomass (e.g., woody biomass, forest residues, agricultural residues, energy crops); composition of lignocellulosic (cellulose, hemicellulose, and lignin); biomass conversion technologies; thermochemical, supercritical water, and biochemical conversion processes; types of biofuels from biomass; liquid fuels (bioethanol, bio-oil, biocrude, and hydrocarbons); gaseous fuels (synthesis gas, hydrogen, biodiesel); solid fuels (biochar, torrefied biomass); biodiesel from vegetable oils, algae to biofuels; value-added processing of biofuel residues; economic and environmental assessments; policies and future R&D.
CET 470/570. Transportation Fundamentals. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing. This course surveys the current practice of transportation engineering in the United States. It focuses on various ground transportation modes and covers policy, institutional, planning and operational issues. Students are introduced to planning models, capacity analysis, traffic impact analysis, and parking studies.

CET 471/571. Transportation Operations I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 470. This is the first course in transportation operations and traffic flow theory. Topics include traffic engineering studies, capacity analysis, intersection control, traffic flow models, shockwave analysis, signal warrant analysis, and safety analysis. Course includes applications of modeling and simulation to isolated intersections.

CET 476/576. Transportation Operations Applications. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 470. This course deals with operations applications in transportation. It covers theory and practical examples of traffic engineering studies, capacity analysis, intersection control, signal warrant analysis, and safety analysis. Topics discussed also include traffic management, access management, traffic calming, and regional operations management.

CET 482/582. Introduction to Coastal Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CET 330 and permission of the instructor. Classical small amplitude wave theory, wave transformations in shallow water, shoaling, refraction, diffraction, reflection, breaking. Wave induced near shore currents and sediment transport processes. Alternatives to mitigate coastal erosion processes. Introduction to coastal structures.

CET 495/595. Topics in Civil and Environmental Engineering. 1-3 Credits.
Lecture 1-3 hours; 1-3 credits. Prerequisite: Permission of the department chair. Special topics of interest with emphasis placed on recent developments in civil and/or environmental engineering.

CET 306. Principles of Surveying. 3 Credits.
Lecture 2.5 hours; laboratory 1 hour; 3 credits. Prerequisites: MATH 163 and MET 120. Basic plane surveying measurements and computations, survey control systems, elementary digital mapping and simple curves, and building construction survey and stakeout. Field exercises using standard surveying instrumentation, traverse and leveling techniques, topographic mapping and curve layout.

CET 310. Fundamentals of Building Construction. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. Introduction to various materials and methods available for design and construction of buildings. Covers application and combination of traditional materials and methods, and recent innovations in construction systems.

CET 313. Advanced Surveying. 3 Credits.
Lecture 2.5 hours; laboratory 1 hour; 3 credits. Prerequisites: CET 305 and MET 120. Advanced traverse and leveling techniques, astronomic determination of meridian, state plane coordinate systems, automated field-to-finish mapping systems, horizontal and vertical curves, highway construction surveying and pipeline and tunnel surveying.

CET 314. Boundary Law. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 305. Laws, evidence and procedures in boundary surveying. Topics include written, unwritten and riparian rights, easements, interpretation of written and field boundary evidence, subdivisions, and preparation of boundary descriptions and plans. Boundary project management and professional practice are emphasized throughout the course.

CET 318. Control/GPS Surveying. 3 Credits.
Lecture 2.5 hours; laboratory 1 hour; 3 credits. Prerequisite: CET 313. Fundamental concepts and computations for higher order control surveys using terrestrial and satellite (GPS) based systems. Use of least squares adjustment techniques.

CET 319. Surveying for Engineers. 1 Credit.
Laboratory 3 hours; 1 credit. Prerequisite: MATH 163. Special topics in surveying for civil engineering students and professional engineers. Not open to civil engineering technology majors.

CET 320. Adjustment Computations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CET 305 and EET 305. This course covers the numerical and statistical analysis of system of spatial measurements, formation and solution of simultaneous observational equations, propagation of errors, adjustment by least squares, weights and precision of adjusted quantities, error ellipses and applications to typical surveying, geodesy and photogrammetry problems.

CET 330. Fluid Mechanics for Civil Engineering Technology. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: CET 220. Elementary mechanics of fluids. Fluid properties; hydrostatics; fluid kinematics; equations of motion; energy equation; momentum principles; flow of fluids and gasses in closed conduits; flow in open channels and/or compressible flow. Use of spreadsheets is required.

CET 340. Soils and Foundations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 220. A study of the engineering properties of soil including stress, shear strength, and bearing capacity. Movement of water through soils, consolidation and settlement of structures and the design of shallow and deep foundations are also covered.

CET 341W. Soils Testing Laboratory. 2 Credits.
Laboratory 3 hours; Lecture 1 hour. 2 credits. Prerequisite: CET 220: grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C. Pr- or corequisite: CET 340. Course includes standard methods for inspecting, sampling, testing, and evaluating soils. Students use typical test equipment and perform tests on samples of local soils. A written report is required for each experiment. (This is a writing intensive course.)
CET 345W. Materials Testing Laboratory. 2 Credits.
Laboratory 3 hours; Lecture 1 hour. 2 credits. Prerequisite: grade of C or better in ENGL 211C or 221C or 231C. Pre- or corequisite: CET 220. Standard methods of inspecting and testing structural materials used in construction are followed. A written report is required for each experiment. (This is a writing intensive course.).

CET 360. Plans and Specifications. 3 Credits.
Lecture 2 hours; laboratory 3 hours; 3 credits. Prerequisites: CET 310 and MET 120. A detailed study of the form and content of typical plans and specification documents used in the construction industry. The use of computer-aided drafting in assembling a set of plans and specifications.

CET 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Career Management in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (offered fall, spring, summer) (qualifies as a CAP experience).

CET 368. Internship. 1-3 Credits.
1-3 credits. Prerequisite: approval by department and Career Management. Available for pass/fail grading only. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. (qualifies as a CAP experience).

CET 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: approval by department and Career Management. Available for pass/fail grading only. (qualifies as a CAP experience).

CET 395. Topics. 1-3 Credits.
Prerequisite: permission of the instructor.

CET 396. Topics. 1-3 Credits.
Prerequisite: permission of the instructor.

CET 400. Computer Applications in Structural Design. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisite: CET 301. The use of computer programs to assist in structural analysis and design projects.

CET 410. Reinforced Concrete Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 220. Structural analysis and design of reinforced concrete members. Topics include flexural analysis and design of structures, including slabs, beams and columns using strength design procedures.

CET 411. Photogrammetry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CET 305 and MATH 102M or equivalent. This course covers the study of aerial and close range photogrammetry and the corresponding reduction and interpretation of data.

CET 413. Elements of GIS. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 305. The study of geographic and land information systems as they relate to the practice of land surveying. Surveying reference systems for control, attributes of computerized land data bases, and their impact on the recording of land titles and boundaries are treated, as well as the use of CAD enhancements and satellite technology.

CET 420. Hydrology and Drainage. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing. Hydrologic and hydraulic principles are utilized in the planning, design, operation and construction of water management projects. Topics include elements of stormwater drainage pertaining to hydrology, hydraulics of open channel and pipe flow, stormwater management, and issues pertinent to state stormwater regulations and the Chesapeake Bay Preservation Act. The course also covers water distribution and sewage collection systems.

CET 422. Remote Sensing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CET 305 and MATH 102M or equivalent. A course in differential calculus, such as MATH 211, is recommended but not required. This course covers electromagnetic energy, passive and active sensing systems, earth resource satellite systems, digital image formats, image enhancement, image interpretation and applications of computer-assisted interpretation in mapping, geology, soils, water quality and urban and regional planning. It also covers image rectification, registration and image data merger with GIS.

CET 425. Land Design and Development. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CET 340 and 420. Applications of fundamental site engineering principles, land design principles and permitting issues. A brief historical review of exemplary subdivision, NewTown, and urban designs and their impact on current practice. Site surveying and engineering issues including hydrology, storm water management, site geometry, grading, design of roads, engineering design standards and computer applications in site engineering are examined. The principles of siting and theories of design for esthetic and efficient alignment of roads, layout of structures and subdivision parcels are introduced.

CET 434. Introduction to Senior Project. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: senior standing. This course must be taken in the semester prior to the Senior Project course. A collection of career-related topics pertaining to engineering technology. Topics include engineering codes and standards, engineering ethics, technical report writing, job search and resume writing techniques, patents and property rights, and professional engineering licensure. The course concludes with the selection of the student’s project topic for the subsequent Senior Project course.

CET 440. Contract Documents. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 310. The basic concepts of contracts and the standard contract documents used in construction. Also included is a study of the dispute resolution process in arbitration.

CET 445. Construction Planning and Scheduling. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 310. The basic elements of planning and scheduling building construction projects. All elements of building construction, including the precedence methods of scheduling. Use of computers and planning and scheduling software are emphasized.

CET 450. Structural Steel Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 220. Structural analysis and design of steel structures, including beams, girders, columns, composite sections, trusses, rigid frames and connections using the LRFD method. Analysis of statically-determinate cantilever (hungspan) systems also are covered.

CET 452. Wood Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 220. Analysis and design of wooden structural elements of buildings to satisfy design codes. Included are shearwall design and connections as well as beams, columns and other elements.

CET 455. Sustainable Building Practices. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: CET 310. The course will examine industry trends in sustainable building practices. It explores the green building strategies used in the design and construction of sustainable buildings. The role of site selection, water efficiency, energy, materials and resources, and indoor environmental quality will be explored.

CET 460. Construction Cost Estimating. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 310. Evaluation and analysis of the basic elements of estimating construction costs for buildings. Elements of take off and pricing for Division 1 through Division 6 are covered. Use of computers and estimating software are emphasized.
CET 465. Construction Project Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CET 310. An introduction to the procedures and methods that are used by a contractor during the construction phase of a project. Special emphasis on planning, managing and documenting project activities. Topics include jobsite layout and control, subcontracting and purchasing and changes and claims/progress payments.

CET 475. Senior Design Project. 3 Credits.
Lecture 1 hour; laboratory 6 hours; 3 credits. Prerequisites: CET 434, final semester or permission of the instructor. Students in the structural design emphasis area must also have CET 360. Independent or group design projects in the various CET emphasis areas with instructor and/or mentor guidance. Projects should include development and design, leading to appropriate engineering documents, with written and oral reports. (qualifies as a CAP experience).

CET 495. Topics in Civil Engineering Technology. 1-3 Credits.
1-3 credits each semester. Prerequisite: permission of the instructor.

CET 496. Topics in Civil Engineering Technology. 1-3 Credits.
1-3 credits each semester. Prerequisite: permission of the instructor.

CHEM - Chemistry And Biochemistry

CHEMISTRY AND BIOCHEMISTRY Courses

CHEM 103. Introductory Chemistry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: knowledge of basic algebra. An introductory course designed to acquaint the student with the basic principles of chemistry.

CHEM 105N. Introductory Chemistry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: knowledge of basic algebra. Corequisite: CHEM 106N. This course is the first part of a two-semester sequence of chemistry covering topics in general, organic, and biological chemistry. In this part, an introduction to the principles of inorganic (general) chemistry is provided. The topics to be covered include measurements, atoms and elements, compounds and their bonds, energy and matter, gases, solutions, acids and bases, chemical reactions and quantities, chemical equilibrium, and nuclear chemistry. This course does not meet the prerequisite for CHEM 123N, and cannot be used toward the CHEM major or minor. Students wishing to pursue advanced study in chemistry should take CHEM 121N, 122N, 123N, and 124N. Credit for CHEM 105N is not allowed if a student has prior credit for CHEM 121N. CHEM 105N + CHEM 106N satisfy four credits of the University’s Nature of Science general education requirement.

CHEM 106N. Introductory Chemistry Laboratory. 1 Credit.
Laboratory 2 hours; 1 credit. Corequisite: CHEM 105N. An introduction to common laboratory techniques and the process of science is provided. CHEM 105N + CHEM 106N satisfy four credits of the University’s Nature of Science general education requirement.

CHEM 107N. Introductory Organic and Biochemistry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CHEM 105N with a grade of C or better. Corequisite: CHEM 108N. This course is the second part of a two-semester sequence of chemistry covering topics in general, organic, and biological chemistry. In this part, an introduction to organic compounds and their role in biological systems is provided. The topics to be covered include the structure, nomenclature, and reactivity of organic compounds, the structure and function of important biomolecules, and the chemistry of metabolic pathways. This course does not meet the prerequisite for CHEM 211, and cannot be used toward the CHEM major or minor. Students wishing to pursue advanced study in chemistry should take CHEM 121N, 122N, 123N, and 124N. CHEM 107N + CHEM 108N satisfy four credits of the University’s Nature of Science general education requirement.

CHEM 108N. Introductory Organic and Biochemistry Laboratory. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisite: CHEM 106N with a grade of C or better. Corequisite or prerequisite: CHEM 107N. Laboratory experiments involving organic compounds and biomolecules are performed. CHEM 107N + CHEM 108N satisfy four credits of the University’s Nature of Science general education requirement.

CHEM 117. Principles of Chemistry. 3 Credits.
Lecture 3 hours; recitation 1 hour; 3 credits. Prerequisite: CHEM 121N, 122N or 126N with a grade of C or better. Content identical to CHEM 116N but includes no laboratory. Normally taken only by engineering majors. Does not satisfy General Education Natural Science perspective requirement.

CHEM 121N. Foundations of Chemistry I Lecture. 3 Credits.
Lecture 3 hours, 3 credits. Co-requisite or prerequisite: CHEM 122N. Prerequisite: MATH 102M or higher with a grade of C or better. High School chemistry or CHEM 103 is strongly recommended. This is the first of a two-course series, designed for science and engineering majors, that prepares the student for subsequent studies in molecular science and constitutes the foundation for all upper-level chemistry courses. Topics include the descriptive chemistry of selected elements, modern atomic and molecular structure, stoichiometry, thermochemistry, and gas laws. A student receiving credit for CHEM 121N cannot receive additional credit for CHEM 103 or CHEM 105N or CHEM 135N. CHEM 121N + CHEM 122N satisfy 4 credits of the University’s Nature of Science general education requirement.

CHEM 122N. Foundations of Chemistry I Laboratory. 1 Credit.
Laboratory 2 hours; Recitation 1 hour; 1 credit. Corequisite or prerequisite: CHEM 121N. Laboratory experiments are designed to complement the topics presented in the companion lecture course, CHEM 121N. A student receiving credit for CHEM 122N cannot receive additional credit for CHEM 106N. CHEM 121N + CHEM 122N satisfy 4 credits of the University’s Nature of Science general education requirement.

CHEM 123N. Foundations of Chemistry II Lecture. 3 Credits.
Lecture 3 hours, Recitation 1 hour. 3 credits. Corequisite or prerequisite: CHEM 121N. Prerequisite: CHEM 122N or 126N with a grade of C or better. This is the second of a two-course sequence, designed for science majors, that prepares the student for subsequent studies in molecular science and constitutes the foundation for all upper-level chemistry courses. Topics include the descriptive chemistry of selected elements, modern atomic and molecular structure, stoichiometry, thermochemistry, and gas laws. A student receiving credit for CHEM 123N cannot receive additional credit for CHEM 121N. CHEM 123N + CHEM 124N satisfy 4 credits of the University’s Nature of Science general education requirement.

CHEM 124N. Foundations of Chemistry II Laboratory. 1 Credit.
Laboratory 2 hours; 1 credit. Corequisite or prerequisite: CHEM 123N. Prerequisites: CHEM 121N and CHEM 122N with grades of C or better. Laboratory experiments are designed to complement the topics in the companion lecture course, CHEM 123N. CHEM 123N + CHEM 124N satisfy 4 credits of the University’s Nature of Science general education requirement.
CHEM 137N. Advanced General Chemistry I and II Lecture. 4 Credits. Lecture 3 hours; recitation 1 hour; 4 credits. Pre- or corequisite: MATH 162M. This lecture, along with CHEM 138N, will fulfill all requirements for a complete year of general chemistry. This combination will satisfy all general chemistry prerequisites for upper level chemistry courses.

CHEM 138N. Advanced General Chemistry I and II Laboratory. 4 Credits. Laboratory 6 hours; 4 credits. Prerequisite: CHEM 137N. This laboratory course is intended for students who have completed CHEM 137N. Experiments cover foundational topics and skills in chemistry and introduce students to chemical research.

CHEM 195. Selected Topics. 1-3 Credits. 1-3 credits. Prerequisite: permission of the chief departmental advisor or chair of the department. Selected laboratory or lecture topics designed for students who need to supplement a transfer course to fulfill a course requirement.

CHEM 211. Organic Chemistry Lecture. 3 Credits. Lecture 3 hours; 3 credits each semester. Prerequisite: CHEM 123N or CHEM 137N with a grade of C or better. Chemistry of carbon compounds with in-depth treatments of reaction mechanisms, modern spectral techniques, and new synthetic methods to meet the needs of chemistry and biochemistry majors.

CHEM 212. Organic Chemistry Laboratory. 2 Credits. Laboratory 4 hours; 2 credits each semester. Pre- or corequisites: CHEM 211 with a grade of C or better. Prerequisites: CHEM 124N or CHEM 138N with a grade of C or better. Experience is offered in synthetic, separation, and analytical methods of organic chemistry. Modern synthetic and spectroscopic techniques are introduced.

CHEM 213. Organic Chemistry Lecture. 3 Credits. Lecture 3 hours; 3 credits each semester. Prerequisite: CHEM 211 with a grade of C or better. Chemistry of carbon compounds with in-depth treatments of reaction mechanisms, modern spectral techniques, and new synthetic methods to meet the needs of chemistry and biochemistry majors.

CHEM 214. Organic Chemistry Laboratory. 2 Credits. Laboratory 4 hours; 2 credits each semester. Pre- or corequisites: CHEM 213 with a grade of C or better. Prerequisites: CHEM 212 with a grade of C or better. Experience is offered in synthetic, separation, and analytical methods of organic chemistry. Modern synthetic and spectroscopic techniques are introduced.

CHEM 321. Analytical Chemistry Lecture. 3 Credits. Lecture 3 hours; 3 credits. Prerequisites: CHEM 123N or CHEM 137N/138N and MATH 162M or 163 or 166 with a grade of C or better. A study of the fundamental principles of quantitative chemical analysis including the application of principles of equilibria to analytical processes. Emphasis is given to gravimetric and titrimetric methods as well as consideration of electrical, optical, and other methods of chemical analysis.

CHEM 322. Analytical Chemistry Laboratory. 2 Credits. Laboratory 4 hours; 2 credits each semester. Prerequisite: CHEM 124N or CHEM 138N with a grade of C or better. Pre- or corequisite: CHEM 321 or permission of the instructor. Statistical principles or measurements and error analysis are integrated with experiments designed to evaluate and refine techniques of fundamental measurements to a level of analytical competency. These techniques are applied to the analysis of samples using gravimetric, titrimetric, electrical and optical methods.

CHEM 331. Physical Chemistry Lecture. 3 Credits. Lecture 3 hours; 3 credits each semester. Pre- or corequisite: MATH 312 with a grade of C or better for CHEM 331. Prerequisites: CHEM 321 and PHYS 231N-232N with a grade of C or better for CHEM 331. CHEM 331 and MATH 312 with a grade of C or better for CHEM 333. Chemical thermodynamics of pure substances and solutions, chemical equilibrium, electrochemistry, chemical kinetics, quantum chemistry, molecular structure, and statistical thermodynamics.

CHEM 332W. Experimental Physical Chemistry I. 2 Credits. Laboratory 4 hours; 2 credits each semester. Prerequisite: grade of C or better in ENGL 211C or 221C or 231C. Pre- or corequisite: CHEM 331 with a grade of C or better. Physical chemical techniques are applied to studies on thermodynamics, solution phenomena, gases, electrochemistry, chemical kinetics, and spectroscopy. Statistical analysis of data. (This is a writing intensive course.).

CHEM 333. Physical Chemistry Lecture. 3 Credits. Lecture 3 hours; 3 credits each semester. Pre- or corequisite: MATH 312 with a grade of C or better for CHEM 331. Prerequisites: CHEM 321 and PHYS 231N-232N with a grade of C or better for CHEM 331. CHEM 331 and MATH 312 with a grade of C or better for CHEM 333. Chemical thermodynamics of pure substances and solutions, chemical equilibrium, electrochemistry, chemical kinetics, quantum chemistry, molecular structure, and statistical thermodynamics.

CHEM 334W. Experimental Physical Chemistry II. 2 Credits. Laboratory 4 hours; 2 credits each semester. Prerequisite: grade of C or better in ENGL 211C or 221C or 231C. Pre- or corequisite: CHEM 332W and 333 with a grade of C or better. Physical chemical techniques are applied to studies on thermodynamics, solution phenomena, gases, electrochemistry, chemical kinetics, and spectroscopy. Statistical analysis of data. (This is a writing intensive course.).

CHEM 351. Inorganic Chemistry. 3 Credits. Lecture 3 hours, 3 credits. Prerequisites: Grade of C or better in CHEM 117 or CHEM 137N or CHEM 123N. This foundational course provides an introduction to inorganic chemistry. Topics include periodic law, bonding theory, oxidation/reduction, acid/base theory, descriptive chemistry of the main group, and an introduction to transition metal coordination chemistry.

CHEM 352. Inorganic Chemistry Laboratory. 2 Credits. Laboratory 4 hours, 2 credits. Co- or prerequisite: CHEM 351 with a grade of C or better. Synthesis of metal and nonmetal inorganic compounds and organometallic compounds, their characterization by physical methods, and a study of their properties.

CHEM 365. Undergraduate Teaching Experience. 1-3 Credits. Teaching experience in a chemistry classroom or laboratory setting under the direct supervision of the course instructor. Available for Pass/Fail grading only.

CHEM 367. Cooperative Education. 1-3 Credits. 1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Cooperative Education/Career Management in accordance with the policy for granting credit for Cooperative Education programs. Student participation for credit is based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and the Cooperative Education program prior to the semester in which the work experience is to take place. Available for pass/fail grading only. (qualifies as a CAP experience).

CHEM 369. Chemistry Practicum. 1-3 Credits. 3 credits. Prerequisite: CHEM 331/332W (Chemistry major) or CHEM 441/442 (Biochemistry major) and the approval of the appropriate departmental coordinator. A student may choose a coop, internship, research, or student teaching experience to gain out-of-class experience related to the major. The department will accept ECI 487 in lieu of CHEM 369. (qualifies as a CAP experience).
**CHEM 415/515. Intermediate Organic Chemistry. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisite: CHEM 211-213 with a grade of C or better. An in-depth treatment of the chemistry of carbon compounds, including reaction mechanisms, spectral techniques, polymerization, pericyclic reactions, and biomolecules.

**CHEM 421/521. Instrumental Analysis Lecture. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisite: CHEM 331 with a grade of C or better. Designed to be taken concurrently with CHEM 422/522. A study of the basic principles of spectroscopic, chromatographic, and electrochemical methods of quantitative chemical analysis. Methods of chemical instrumentation are also included.

**CHEM 422/522. Instrumental Analysis Laboratory. 3 Credits.**
Laboratory 6 hours; 3 credits. Prerequisite: CHEM 332W with a grade of C or better. Pre- or corequisite: CHEM 421/521 with a grade of C or better. An intensive laboratory study of the principles of analytical chemistry. Experiments in spectroscopic, chromatographic, and electrochemical methods are conducted to illustrate fundamental principles and to provide the opportunity to develop skills in the use of instrumentation for chemical measurement.

**CHEM 441/541. Biochemistry Lecture. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisite: CHEM 213 with a grade of C or better. This course is a one-semester survey of the major molecular constituents, bioenergetics, enzymes, nucleic acid structure, and genetic information transfer pathways fundamental to biochemistry.

**CHEM 442W/542. Biochemistry Laboratory. 4 Credits.**
Lecture 1 hour; laboratory 6 hours; 4 credits. Pre- or corequisite: CHEM 441/541 with a grade of C or better. Prerequisite: CHEM 214 with a grade of C or better and ENGL 211C or 221C or 231C with a grade of C or better. Principles and techniques of biochemical and immunological procedures involving protein characterization and isolation, enzymology, bioinformatics, and common molecular biology techniques for nucleic acids will be presented. (This is a writing intensive course.).

**CHEM 443/543. Intermediate Biochemistry. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisite: CHEM 441/541 with a grade of C or better or equivalent. This course presents in-depth study of protein structure, folding, and synthesis. The major metabolic pathways will be studied in detail regarding thermodynamics and mechanism of regulation or control of individual enzymes and entire metabolic pathways. Concepts of metabolic disease will be introduced and effects on integrated metabolism will be presented.

**CHEM 449. Environmental Chemistry. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisites: CHEM 123N or CHEM 137N, CHEM 213 and CHEM 321 with a grade of C or higher or permission of the instructor. An overview of the natural chemical systems operating in Earth’s atmosphere, hydrosphere (natural waters), and terrestrial environment, and the effects that human activities may have on them. Specific topics to be discussed include: origin and evolution of Earth and life, chemistry of the atmosphere (including the ozone layer and greenhouse effect), organic and inorganic components of soil and water, the hydrologic cycle, chemical weathering, chemical speciation and complexation, and micorbial processes in soil and water.

**CHEM 451/551. Advanced Inorganic Chemistry. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisite: CHEM 333 with a grade of C or better. Theoretical aspects of modern inorganic chemistry: bonding theories, stereochemistry, acid-base theories, coordination compounds, organometallic and bioinorganic compounds.

**CHEM 452/552. Advanced Inorganic Chemistry Laboratory. 2 Credits.**
Laboratory 4 hours; 2 credits. prerequisite: CHEM 351 and CHEM 352. Synthesis of metal and nonmetal inorganic compounds and organometallic compounds, their characterization by modern physical methods, and a study of their properties.

**CHEM 453/553. Essentials of Toxicology. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisite: CHEM 213 with a grade of C or higher. Fundamental principles of toxicology: dose-response relationship, toxicologic testing, chemical and biological factors influencing toxicity, organ toxicology, carcinogenesis, mutagenesis, teratogenesis.

**CHEM 460/560. Frontiers in Nanoscience and Nanotechnology. 1 Credit.**
Lecture 1 hour; 1 credit. Prerequisite: junior standing. Nanotechnology presents unparalleled opportunities for advances in technology and medicine. Simultaneously, nanotechnology presents new challenges to organisms and to our environment. These undefined risk factors threaten to slow the development of new technologies and novel medical therapies. This course will review: structure, synthesis and properties of key nanomaterials; key applications of nanomaterials in technology and medicine; and impacts of nanomaterials on plant and animal physiology and the environment more generally. This course will be team-taught by faculty members in Biological Sciences, Chemistry and Biochemistry, and Engineering.

**CHEM 485. Chemistry and Biochemistry Seminar, 1 Credit.**
1 credit. Prerequisite: CHEM 331 and Senior standing. The formal presentation of a chemical or biochemical topic before students and faculty. Students will also take Major Field Test during this course.

**CHEM 490. Senior Thesis I. 1 Credit.**
Laboratory, 2 hours; 1 credit. Prerequisite: Chemistry or Biochemistry major; Senior standing; Cumulative GPA of 3.20 or higher. Part one of a two-semester thesis project involving literature research, development of scientific writing skills, and obtaining lab experience using a variety of techniques and equipment. Each student will undertake a research experience under the supervision of a departmental faculty member. A preliminary report of research findings is required at the end of the semester.

**CHEM 495. Selected Topics. 1-3 Credits.**
1-3 credits. Prerequisite: permission of the instructor.

**CHEM 497. Independent Study. 1 Credit.**
Consultation and individual work, 497: 2 hours; 1 credit. Prerequisites: course background appropriate to the proposed study project and approval of the department chair and the faculty/research advisor. An opportunity is afforded students to undertake independent study or an original investigation under the direction of a faculty member.

**CHEM 498. Independent Study. 2 Credits.**
Consultation and individual work, 498: 4 hours; 2 credits. Prerequisites: course background appropriate to the proposed study project and approval of the department chair and the faculty/research advisor. An opportunity is afforded students to undertake independent study or an original investigation under the direction of a faculty member.

**CHEM 499. Senior Thesis II. 2 Credits.**
Laboratory, 4 hours; 2 credits. Prerequisite: CHEM 490 and a cumulative GPA of 3.20 or better. Continuation of Senior Thesis I research. The research culminates in a thesis that includes a literature review, description of methods, results and conclusions, and an oral presentation.

**CHIN - Chinese**

**CHINESE Courses**

**CHIN 111F. Beginning Chinese. 6 Credits.**
Lecture 6 hours; 6 credits. Aural comprehension, oral drill and discussion of grammar principles, written exercises, and reading assignments.

**CHIN 212. Intermediate Chinese. 6 Credits.**
Lecture 6 hours; 6 credits. Prerequisite CHIN 111F. Lecture 3 hours; 3 credits each semester.
CHIN 295. Topics in Chinese. 1-3 Credits.

CHIN 311. Advanced Chinese Language and Culture I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CHIN 212.

CHIN 312. Advanced Chinese Language and Culture II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CHIN 311.

CHIN 395. Topics in Chinese. 1-3 Credits.
1-3 credits each semester. Prerequisite: junior standing or permission of the instructor. A study of selected topics for elective credit. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

CHIN 396. Topics in Chinese. 1-3 Credits.
1-3 credits each semester. Prerequisite: junior standing or permission of the instructor. A study of selected topics for elective credit. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

CHIN 495. Topics in Chinese. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. This course will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

CHP - Community Health Professions

COMMUNITY HEALTH PROFESSIONS Courses

CHP 200. Principles of Public Health. 3 Credits.
3 hrs. Lecture. Overview of the principles and practices of public health in the world. What is public health? What are its origins, evolution, and how is it structured and administered globally? A discussion of the mission, concepts, principles and practices of population-based public health will predominate. Topics will include global health and environmental health.

CHP 201. Public Health in the United States after 9/11. 3 Credits.
3 hours lecture. This course will focus on the changing practices of protecting the public’s health in the United States. Topics include biosecurity, bioterrorism, food safety, disease surveillance, and the new threats of biological, chemical and physical hazards.

CHP 318. Principles of Nutrition. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CHEM 105N-106N and CHEM 107N-108N or CHEM 121N-122N and 123N-124N; BIOL 250 or 251 or permission of the instructor. Course designed especially for those entering the health education or health care field, covering the physiology of each of the major body systems as a basis for understanding those aspects of its function that reflect the importance of various nutrients.

CHP 360. Introduction to Global Health. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ENGL 110C, SOC 201S or ANTR 110S, or permission of the instructor. This course introduces students to health-care delivery systems of non-Western countries, specifically developing countries. The various factors that influence health-care planning and delivery of health services are addressed.

CHP 368. Internship. 1-3 Credits.
Internship, 1-3 credits. Prerequisites: CHP 200, 360, 450, and 465; ENRH 301W, 448; and DNTH 415. This course will allow a BSHS student to complete an internship for gaining basic job entry skills or to enhance a job skill.

CHP 369. Practicum in Health Sciences. 1-3 Credits.
1-3 credits. Prerequisites: junior standing and approval of the Health Sciences Advisor and the Career Management Center. This is a 1-3 credit course intended for the student in the College of Heath Sciences seeking a CAP experience. (qualifies as a CAP experience).

CHP 395. Topics in Health. 1-3 Credits.
1-3 credits.

CHP 400/500. Ethics in Health Administration. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. A survey of philosophical problems common to health sciences, including an analysis of the nature of health in its historical and contemporary contexts.

CHP 415S/515. Critical Issues in Public/Community Health Administration. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ENGL 110C and ENGL 211C or ENGL 221C or ENGL 231C with a grade of C or better. Identification and analyses of critical issues currently facing public/community health and the American health care system. This is a writing intensive course.

CHP 420/520. Foundations of Gerontology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of instructor. Focuses on changes in the characteristics, status, and roles of the elderly; personality development, mental health, and adjustment of individuals with emphasis on biophysical and psychosocial processes as they influence capacity and performance in the elderly.

CHP 425/525. Health Aspects of Aging. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CHP 420/520 or permission of the instructor. Identifies major issues and problems in meeting health care needs of the aged. Emphasis on role of social assets and supports in determining effects of life changes on the aging process.

CHP 426/526. Skills in Health Services Administration I. 1-3 Credits.
Lecture 2 hours; 1 hour web; 1-3 credits. Prerequisite: permission of instructor. Introduction of basic concepts which will allow for development of critical skills in a variety of managerial areas pertinent to the delivery of health care. Prerequisite: permission of instructor. Experts in various fields will provide students with useful strategies used in the administration of health care services.

CHP 427/527. Skills in Health Services Administration II. 1-3 Credits.
Lecture 2 hours; 1 hour web; 1-3 credits. Prerequisite: permission of instructor. Continuation of basic concepts and development of critical management skills pertinent to the delivery of health care. Experts in various fields will provide students with useful strategies in the administration of health care services.

CHP 430W/530. Community Health Resources and Health Promotion. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ENGL 110C and ENGL 211C or ENGL 221C or ENGL 231C with a grade of C or better and permission of the instructor. Designed to provide information about community health resources. This is a writing intensive course.

CHP 440/540. Finance and Budgeting in Healthcare. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of instructor. Analysis of the nature of health in its historical and contemporary contexts. A survey of philosophical problems common to health sciences, including an analysis of the nature of health in its historical and contemporary contexts.

CHP 450/550. Public and Community Health Administration. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of instructor. A review of the principles and practice of administering public and community health organizations and programs at federal, state, and local levels. Constitutional, statutory and administrative bases for organizing and conducting public/community health programs will be discussed. CHP 400, CHP 415S or CHP 430W, and CHP 450 meet the oral communication requirement in the major. All three courses must be taken to meet the requirement.
CHP 455/555. Interpersonal and Counseling Skills for Health Professionals. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of instructor. Study and practice in human relations for health practitioners. The course is designed to incorporate the latest and best techniques from the health sciences with a 'therapeutic use of self'.

CHP 456/556. Substance Use and Abuse. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of instructor. Focuses on facts about drugs and drug abuse, on value judgments concerning drugs, and on interaction of facts and value judgments. Emphasis is on drug abuse prevention.

CHP 465/565. Policy and Politics of Health. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course will explore both health policy and the politics of health. Students will develop an understanding of the systematic and analytical framework for developing health and health care policy issues.

CHP 470/570. Death, Dying and Survivorship. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of instructor. Utilizes readings from sociology, psychology, literature, art, law, religion, and the medical and nursing sciences to explore death in its personal, cultural and professional significance. Audiovisual presentations and guest speakers will provoke thought and discussion to allow students to come to terms with their attitudes toward death and assist others in dealing with this important life experience.

CHP 475/575. Healthcare Marketing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. This course provides a basic understanding of marketing in a health care setting. It will cover the following: the history of marketing in a health care setting, health care markets, marketing techniques, and leadership skills in managing and supporting the marketing efforts.

CHP 480/580. Health Ethics and the Law. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of instructor. This course provides the students with a basic knowledge of health law and examines legal issues confronting health services administrators in various health care environments.

CHP 485/585. Health Informatics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course focuses on healthcare informatics (information systems) and applications in health care organizations. It provides an overview of health information system concepts, management, and integration of technology in healthcare organizations.

CHP 495/595. Topics in Public/Community Health Administration. 1-3 Credits.
1-3 credits. Prerequisite: permission of the instructor. This course provides the opportunity for the study of selected topics in public/community health, including informatics, under the supervision of a faculty member.

CHP 496/596. Topics in Public/Community Health Administration. 1-3 Credits.
1-3 credits. Prerequisite: permission of the instructor. This course provides the opportunity for the study of selected topics in public/community health, including informatics, under the supervision of a faculty member.

CHP 497/597. Readings in Public/Community Health Administration. 1-3 Credits.
1-3 credits. Prerequisite: permission of the instructor. This course provides the opportunity for advanced investigations of selected issues/concerns in public/community health administration, under the supervision of a faculty member. It must be taken by students who wish to pursue topics not covered by regularly scheduled courses.

COMM - Communications

COMMUNICATIONS Courses

COMM 101R. Public Speaking. 3 Credits.
Lecture 3 hours; 3 credits. Preparation, delivery, and analysis of types of speeches with emphasis on extemporaneous speaking.

COMM 103R. Voice and Diction. 3 Credits.
Lecture 3 hours; 3 credits. An introduction to the analysis and practice of effective voice and articulation. Applications across various communication contexts, such as public communication, media, and social communication.

COMM 112R. Introduction to Interpersonal Communication. 3 Credits.
Lecture 3 hours; 3 credits. An introduction to concepts, processes, and effects of communication in personal and social relationships. Emphasis on fundamental communication skills necessary for the formation and maintenance of relationships.

COMM 126R. Honors: Public Speaking. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. A study of the theory, strategies, and techniques of public speaking with emphasis on its application to effective conflict resolution.

COMM 195. Topics in Communication. 1-3 Credits.
1-3 credits each semester. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

COMM 196. Topics in Communication. 1-3 Credits.
1-3 credits each semester. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

COMM 208S. Introduction to Human Communication. 3 Credits.
Lecture and discussion 3 hours; 3 credits. An introduction to the discipline and methods of human communication. Survey of the major approaches to studying communication across the range of human communication contexts and functions.

COMM 225. Introduction to Production Technology. 3 Credits.
Lecture 3 hours; 3 credits. Fundamentals of construction, lighting, and production techniques in contemporary theatre and film. Students will apply acquired skills to active productions for ODU Theatre and Film productions. (cross-listed with THEA 225).

COMM 226S. Honors: Introduction to Human Communication. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. Special honors section of COMM 208S.

COMM 227A. Honors: Film Appreciation. 3 Credits.
Lecture 2 hrs; lab 2 hours; 3 credits. This class will focus on both contextual and close text analysis of masterworks as they have influenced film art and industry. Students in this course are expected to develop basic research, communication, viewing and critical thinking skills as they apply their knowledge to the analysis of the film experience. Open to students in the Honors Program only. (cross-listed with THEA 227A).

COMM 260. Understanding Media. 3 Credits.
Lecture 3 hours; 3 credits. An examination of mass communication--books, newspapers, magazines, radio, TV, film, sound recordings, and the Internet--as a global institution, industry, and social force. Media literacy skills are emphasized, as are matters of technology, content, economics, history and impact.
COMM 270A. Film Appreciation. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. This class will focus on both contextual and close text analysis of masterworks as they have influenced film art and industry. Students in this course are expected to develop basic research, communication, viewing and critical thinking skills as they apply their knowledge to the analysis of the film experience. (cross-listed with THEA 270A).

COMM 271. Introduction to Digital Filmmaking. 3 Credits.
Lecture 3 hours; 3 credits. This course will introduce the beginning student to the elements of digital filmmaking from the script to the screen. Students will learn the basics of cameras, lights, sound, editing and post productions, as well as scripting and storyboarding. This is a hands-on production course. (cross-listed with THEA 271).

COMM 300. International Sojourning. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. A course designed to prepare ODU study-abroad students for successful international sojourns. Topics to be covered include culture, culture shock, reverse culture shock.

COMM 301. Critical Methodologies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 260. This survey course will introduce students to critical methodologies utilized in the study of media texts. Through case studies and hands-on exercises, students will learn how to study the production, consumption, and engagement with popular culture and how to decode its meanings.

COMM 302. Communication Research Methods I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: STAT 130M, COMM 200S and six hours of 300-400 level communication courses or permission of instructor. An introduction to communication research from a social science perspective. Experiment, survey, content analysis and observational approaches are covered. Students learn statistical data collection and data analysis techniques.

COMM 303. Introduction to Public Relations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 200S or permission of the instructor. A study of interactions within and among communication workplaces and the public. Attention is given to the media, promotions, community relations, and public information.

COMM 304. Advanced Public Speaking. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 101R. An analysis and expression of professional speeches, delivered in public, business and special occasion contexts. Attention is given to audience analysis, library research, development of arguments/evidence as content, creation and use of professional visual aids, expression of appropriate verbal and nonverbal speech cues, speaker credibility, and extemporaneous delivery skills.

COMM 305. Professional Communication. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. An examination of both the theory and practice of communication in the professional setting. Content includes communication theory, as well as the roles of interpersonal, small group, organizational, and mass media communication as related to the workplace. A student receiving credit for COMM 305 cannot receive credit for COMM 200S.

COMM 306. Diplomatic Communication. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 300 or 400W. This course is designed to familiarize students with the basic elements of diplomatic communication by providing them with an overview of the language, the protocol, contact practices, and administrative policies of the Diplomatic Corps. Students will be trained in the technical aspects of diplomatic discourse from resolution writing to mission briefings, and the ever-evolving use of computers and other electronic modes of communication in carrying out government business.

COMM 307. Understanding European Film. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: junior standing or permission of instructor. This course provides students with an historic overview of films from a variety of European countries. Students will gain the vocabulary necessary to analyze individual films and for the comparative analysis of films from different cultural and historical contexts. The course will focus on issues such as national and individual identity, film as aesthetic form, gender and sexuality, and popular culture. (cross-listed with PLET 307).

COMM 308. Public Relations Writing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 303 or permission of the instructor. This course is designed to introduce students to the basic elements of public relations writing. Through an examination of scholarly texts, case studies and media coverage of public relations scenarios, students will develop an understanding of the crucial role that writing plays in effective public relations. Students will also be required to complete several writing assignments that relate to actual public relations scenarios.

COMM 314. Nonverbal Communication. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and COMM 200S, or permission of the instructor. An introduction to the theories, processes and effects of communication in nonverbal codes. Topics include kinesics, proxemics, paralanguage. Critical analysis and contemporary research emphasized.

COMM 315W. Communication Between the Sexes. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing, a grade of C or better in ENGL 211C or 221C or 231C, COMM 200S, or permission of the instructor. An overview of communication theory and research examining verbal and nonverbal communication between men and women. Topics include communication differences as a function of gender, theories that seek to explain these differences, and prescriptions for change: "the hope of androgyne." (This is a writing intensive course.).

COMM 321. Production Management for Television and Stage. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course will assist students in understanding the elements of production management both in television and on stage. The course emphasizes organizational and communication skills; technical production knowledge; professional rehearsal and performance protocol according to the rules of AEA, AFTRA and SAG as well as basic production budgeting and scheduling. (cross-listed with THEA 321).

COMM 323. Leadership and Events Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 200S or permission of the instructor. The course covers the systematic process of organizational assessment from basic communication channels (verbal, printed, and electronic modes of communication), to interpersonal and group communication, to the management of events and staff. This course will examine the importance of leadership roles within organizations in planning any event as well as the communication dynamics between management and those being supervised.

COMM 325. Sound Design for Stage and Camera. 3 Credits.
3 credits. This class will introduce the concepts and techniques of sound design and sound effects for the stage and camera. Students will learn design of sound elements in both a live and recorded environment as well as learn the current equipment and software in digital sound reproduction. (cross-listed with THEA 325).

COMM 326. Foundations of Group Communication. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and COMM 200S, or permission of the instructor. An introduction to the study of communication in task groups. Course reviews foundational literature and emphasizes communication competencies relevant to optimizing group outcomes including group observation, participation, assessment, and leadership.
COMM 330. The Short Script. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course introduces the principles of screenwriting using the short script as a basis for the exploration. The intent of the course is to introduce concepts of format, characterization, plot, dialogue and narrative style for the short script. (cross-listed with THEA 330).

COMM 331. Argumentation and Debate. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 101R or permission of the instructor. Study of the principles of argumentation; frequent practice in debating current public problems.

COMM 333. Persuasion. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 200S or permission of the instructor. An overview of the rhetorical and social scientific theories and research about persuasion and applications in speeches and campaigns.

COMM 335W. Rhetorical Criticism. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 101R, a grade of C or better in ENGL 211C or 221C or 231C, or permission of the instructor. With the goal of being able to critique a communication event, students will study a variety of rhetorical approaches that may include neo-Aristotelian, generic, feminist, metaphorical, fantasy theme, and pentadic approaches to rhetorical criticism. (This is a writing intensive course.).

COMM 337. Model League of Arab States. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 101R. A study of the basic principles of negotiation and diplomacy through the vehicle of a simulation. The students will study political, economic and social issues that impact upon the Middle East, research and prepare issue positions and debate/discuss these positions in a model.

COMM 340. Media and Popular Culture. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 260. This course examines the basic ways in which the mass media intersect with the currents of contemporary culture. Both historical and critical approaches to the study of mass communication and popular culture trace the full implications of their mutual determination and interdependence.

COMM 341. Lighting Design for Stage and Film. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM/THEA 370 or permission of instructor. This is a production course introducing students to the world of light and shadow, mood and composition by surveying lighting design, its technologies for stage and camera, and such principles as basic electrical theory and stage/studio/location design aesthetics. (cross-listed with THEA 341).

COMM 346. Screenwriting I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A course that exposes the student to the fundamental narrative screenwriting principles taught through text reading, film viewing and analysis, class discussions, and writing assignments. (cross-listed with THEA 346).

COMM 348. Acting for the Camera. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 252. Course will examine the process of building characters for the camera, and the ways in which the conventions of the stage are adapted for the film or video audience. (cross-listed with THEA 348).

COMM 349. Costume Design for Stage and Camera. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 244. This course explores the design aesthetic, historical context, and contemporary impact on performance of the costume garment and its accessories. Students will explore the application of design principles in a practical experience. (cross-listed with THEA 349).

COMM 351. Interpersonal Communication in Organizations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and COMM 200S, or permission of the instructor. Focuses on communication theory, research, and applications of a variety of forms of communication in organizational relationships. Topics include superior-subordinate communication, interviewing, and presentations with an emphasis on a diversity of perspectives and types of organizations.

COMM 355. Organizational Communication. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 200S or permission of instructor. Focuses on critical analysis of theory and research organizations as functional communication systems at the individual, dyadic, small group, and organizational levels. Topics include information processing, problem solving, impression management, compliance gaining, and network analysis.

COMM 364. Radio. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 260 or permission of the instructor. Focuses on programming, station practices, ownership, and operations of radio stations in the context of past, present, and future market and regulatory restrictions. Demonstration audio tapes and station visits required.

COMM 365. Electronic News. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 260 or permission of instructor. Theory and techniques of preparing news for the electronic media, including evaluation of newscasts and news reports for radio, television, and cable. Electronic news on the local, national, and international levels is analyzed as an institution and as a social force.

COMM 366. Public Journalism in the Digital Age. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ENGL 110C and ENGL 211C or either ENGL 380 or ENGL 382 or COMM 260 or permission of the instructor. This course exposes students to conventional and alternative approaches to reporting in public journalism. Students use a combination of conventional and alternative approaches as they research, interview, and construct a story on a local community issue or concern. (cross-listed with ENGL 366).

COMM 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval of the department and Career Management, in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience takes place. (qualifies as a CAP experience).

COMM 368. Internship. 3 Credits.
3 credits. Prerequisite: approval of department chair prior to registration. Available for pass/fail grading only. A structured work experience with or without remuneration, in a communication-related field. A paper, a log and portfolio of work time plus satisfactory evaluations by supervisor and cooperating faculty member are required. (qualifies as a CAP experience).

COMM 369. Research Practicum. 3 Credits.
3 credits. Prerequisites: completion of core courses and 6 hours of upper-level major courses, and approval of supervising faculty and department chair, prior to registration. A structured research experience, under the supervision of communication faculty member. A paper evaluating/analyzing the research, a log of research progress, and satisfactory evaluation by the supervising faculty are required. (qualifies as a CAP experience).

COMM 370. The Video Project. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA or COMM 271, junior standing or permission of the instructor. A studio course that presents an opportunity for the student to produce digital video content. This is a hands-on course which is organized to allow the student to experience the entire process of developing a project for the camera from scripting through filming to editing and finishing detail. (cross-listed with THEA 370).
COMM 371. History of Animation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course traces the evolution of the animated film worldwide, from the silent to the modern era. The purpose of the course is to provide students with a broad chronological and international overview of animated film masterworks. (cross-listed with THEA 371).

COMM 372T. Introduction to New Media Technologies. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: Junior standing or permission of the instructor. Introduction to new media practices and theories. Focuses upon the powers of composition, networked communities, information management, social networking and identification in digital environments. Students will examine practical applications such as blogging, online mapping and tagging, online collaborative work such as wikis, and self-composition in online social networks.

COMM 375. Television Production. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. The purpose of this course is to explore and understand the basic process of producing television from script to presentation. (Cross-listed with THEA 375).

COMM 380. The Video Documentary I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 271 or THEA 271. This course offers the student an opportunity to explore the world of documentary filmmaking. By using the camera as a research tool in developing evidence in support of a thesis, the student is better able to understand documentary filmmaking. Students will develop projects leading towards the completion of a short documentary film or video. (cross-listed with THEA 380).

COMM 382. Reporting News for Television and Digital Media. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ENGL 110C and ENGL 211C. This course focuses on writing for television news and producing online news reports. Students will strengthen their journalistic skills and learn the importance of writing clearly for a viewing audience while working under newsroom deadlines. By the end of the course, students should feel confident in producing accurate, detailed reports for television news and online news sites. (cross-listed with ENGL 382).

COMM 385. Cinematography. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM/THEA 370. Introduces students to the fundamentals of the videographed digital image. The course explores live-action photography, composing, filters, digital formats, motion control, and grip equipment. The concepts of the course are applied to fiction and nonfiction cinema. (cross-listed with THEA 385).

COMM 395. Topics in Communication. 1-3 Credits.
1-3 credits each semester. Prerequisites: junior standing and permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

COMM 396. Topics in Communication. 1-3 Credits.
1-3 credits each semester. Prerequisites: junior standing and permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

COMM 400W/500. Intercultural Communication. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: COMM 200S, a grade of C or better in ENGL 211C or 221C or 231C, or permission of instructor. This course is designed to introduce students to the study of communication in cultural contexts, the purpose of which is to prepare one to live and work within an increasingly multicultural world. This will be accomplished by first defining and critically analyzing concepts of culture. Throughout the semester, the course will investigate theories of culture and communication that address the development of cultural identity, intercultural communication competence, the role of verbal and nonverbal communication across cultures, the cultural composition of the U.S., and ethical communication and challenge in a globalized era. (This is a writing intensive course.).

COMM 401/501. Communication Theory. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 200S or permission of the instructor. An overview of general and contextual theories of communication. Focus is on the nature of communication theory, the role of theory in communication inquiry, and the relationships among theory, research, and practice.

COMM 403/503. Public Relations and Crisis Communications. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 303 or permission of instructor. This course introduces students to the basic elements of public relations as it pertains to assisting organizations avoid, mitigate and recover from crisis situations. Students will have the opportunity to both observe and participate in crisis communications situations.

COMM 405/505. Communication and Culture in the Middle East. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: six hours of lower-level social science. The course examines the tensions between modernity and tradition in the context of Middle East culture. Cultural variables for study include myth and religion, family structures and the use of science and technology. (cross-listed with MIDE 405).

COMM 407/507. Communication and Culture in Asia. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours of lower-level social science. Course provides theoretical models for examining the values, communication patterns and cultural perspectives of the peoples of Asia. Films, folklore, newspapers and literature from Asia will be investigated.

COMM 412W/512. Interpersonal Communication Theory and Research. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 200S and ENGL 211C or 221C or 231C with a grade of C or better. A survey of classic and contemporary theories and research of communication in personal and social relationships across the lifespan. Emphasizes communication as a means to facilitate conditions for development of positive relational outcomes. (This is a writing intensive course.).

COMM 421/521. Communication and Conflict Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and COMM 200S or permission of the instructor. Focus on theory and research of communication processes in conflict episodes across social and personal relational contexts. Applications of communication approaches to conflict management emphasized.

COMM 423. Nonviolent Communication and Peace. 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisite: Junior standing. Perspectives on nonviolent communication and peace are covered from the micro level (e.g., individual beliefs and worldviews) to interpersonal relationships (e.g., conflict management), groups (e.g., tribes, gangs), organizational systems (e.g., businesses, governments), and macro or global level (e.g., political relationships between nations).
COMM 425/525. Family Communication Theory and Research. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and COMM 200S or permission of the instructor. A survey of classic and contemporary theories and research of communication in family units, family relationships, and family interfacings with society. The course emphasizes communication in the social construction of evolving 'family' realities as well as communication as means to facilitate conditions for development of positive domestic outcomes.

COMM 426. Group Communication Theory and Research. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: COMM 200S and 326. A survey of classic and contemporary theories and research of communication in task groups as well as the interconnections of task groups with societal institutions such as the family, government, and health care. Communication factors that facilitate conditions for creating and maintaining optimally functioning groups are emphasized.

COMM 427/527. Children’s Communication Theory and Research. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 200S or permission of instructor. A survey of theories and research of communication during childhood. Emphasis is on children as developing communicators, their relationships, and their interactions with media. Factors affecting optimal development of children’s communication and development of applications to enhance children’s communication development are emphasized.

COMM 434/534. African-American Rhetoric Voices of Liberation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 200S or permission of the instructor. With the goals of examining the rhetorical strategies and their historical context, students will study and critique original speeches and various forms of discourse by African-American speakers.

COMM 441. The Music Industry and Communication. 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisite: COMM 260 or permission of instructor. This course will seek to better understand the music industry. To do this, the organization and operation of the modern music industry will be examined. Issues of publishing, copyright and intellectual property and technology will also be examined.

COMM 443/543. Hispanic Film. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM/THEA 270A or permission of instructor. A topical study of the major works of Spanish and Latin American film from Bunuel to the present. The course will explore many issues, including those related to gender, race, symbolism, and class struggle. (cross-listed with SPAN 469/569).

COMM 444/544. German Cinema. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: COMM 200S. This course will focus on the German cinema from perspectives such as fascism and its legacy, film as historical critique, or Weimar cinema. (cross-listed with GER 445/545 and FLET 445/545).

COMM 445/545. Communication Analysis and Criticism. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 200S or permission of the instructor. A survey of the key methods used in critiquing various forms of human and mediated communication for the purpose of becoming more discerning consumers of public and mass mediated messages. Analysis will include films, television, and radio programs, advertisements, newspapers, public discourses, speeches, and conversations.

COMM 446. Directing for the Camera. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 271 or THEA 271. This course seeks to provide students with fundamental principles and practical techniques of directing the narrative fiction film: script development and analysis, production planning, shot composition and framing, and working with actors and crew. (cross-listed with THEA 446).

COMM 447W/547. Electronic Media Law and Policy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 260, a grade of C or better in ENGL 211C or 221C or 231C, or permission of the instructor. Course will focus on legal and policy issues related to modern media systems and technologies, with an emphasis on legal considerations of electronic media. Subjects will include First Amendment issues concerning news, programming, and advertising; station licensing; and challenges to traditional legal thought brought about by new technologies. (This is a writing intensive course.).

COMM 448/548. Transnational Media Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: COMM 260, or permission of the instructor. An examination of the rise of broadcast technology and world flow of information and entertainment. Theory and policy issues of systems of broadcast ownership, access, regulation, programming, transborder, broadcasting and cultural imperialism and dominance of Western programming will be addressed.

COMM 455/555. Critical Analysis of Journalism. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 260 or permission of instructor. A critical examination of the news industry as practiced in the printed press, network and cable television, magazines, the Internet, and alternative press. Class examines the political economy of journalism, the sociology of journalistic practice, international news flows, ideological/political control of news, and mythological narrative forms within news.

COMM 456/556. Organizations and Social Influence. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: COMM 333 or COMM 355 or permission of the instructor. Focuses on theories, research and applications of the social influence function of communication in a variety of organizational contexts. Examines traditional and nontraditional social influence theories and research as applied to organizational change.

COMM 465/565. Mass Media and the National Elections. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 260, junior standing, or permission of the instructor. Focuses on use of media in presidential elections from 1952 to the present. Topics include image creation and management, and the relationship between media and voting behavior.

COMM 467/567. Media, Politics and Civic Engagement. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 260 or permission of instructor. Focuses on the ways in which citizens develop knowledge of, engage with, and practice politics through mass media and personal media forms. Students examine historical and contemporary practices of civic engagement and political organizing via media such as the alternative press, talk radio, rebel radio, letters-to-the-editor, the Internet, cinematic representations, public access television, and others. Students seek to understand the power available to citizens for political engagement via mediated communication forms.

COMM 468/568. Communication and Political Symbolism. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM 260 or permission of instructor. The persistent communication and display of symbols and rituals of political meaning are central to how political power is built and legitimately exercised. This course examines such symbols and rituals by focusing on public rituals such as elections, the State of the Union address, and wars; political symbols such as the American and Confederate flag, Statue of Liberty, and television news; and institutions and practices related to public memory, such as war memorials, historical reenactments, museum and theme park displays, and firm narratives.

COMM 469. Communication Education Practicum. 3 Credits.
3 credits. Prerequisites: completion of core courses and 6 hours of upper-level major courses, and approval of supervising faculty and department chair, prior to registration. An examination of communication education theory and methodology via structured experiences and readings. Students taking this course serve as teaching assistants for COMM 200S, which serves as a lab for practicing skills and techniques.
COMM 471W/571. International Film History, 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: COMM/THEA 270A, a grade of C or better in ENGL 211C or 221C or 231C, and junior standing or permission of the instructor. An examination of world cinema as a technology, a business, an institution, and an art form from its inception to the present. Emphasis is on the narrative fiction film, its technological and aesthetic development, economic organization, and socio-cultural context. Representative classic and contemporary works will be screened and analyzed. (This is a writing intensive course.).

COMM 472/572. New Media Topics: Theories and Practices, 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: COMM 372T or permission of instructor. This upper-division seminar investigates one or two particular emergent new media practices and theories. The topics will be chosen at the discretion of the instructor but may include issues such as "mobile media," "micro media and audiences," and "social media," etc.

COMM 473/573. Television and Society, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and COMM 260. The role of television in the cultural, psychological, and economic life of America. The structure and design of television programs; and the history and function of television in reinforcing or altering public perceptions of ideas, events, and people. Major critical approaches are employed in examining television’s social impact and global reach.

COMM 478/578. Principles of Media Marketing and Promotion, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing, COMM 260, or permission of the instructor. Course will introduce students to the ways in which different media forms are used for advertising and marketing purposes. Emphasis is on electronic media, though other approaches, such as direct marketing techniques and the increasing use of new media technologies for marketing, will also be examined.

COMM 479W/579. American Film History, 3 Credits.
Lecture 2 hours, laboratory 2 hours; 3 credits. Prerequisite: COMM/THEA 270A and ENGL 211C or 221C or 231C with a grade of C or better and junior standing or permission of the instructor. An examination of American motion pictures as an art form, a business and an institution from its inception to the present. Primary attention is accorded to the narrative fiction film, its aesthetic and technological development, economic organization and social impact. This course highlights the many connections between film history and American culture. (cross-listed with THEA 479W/579) (This is a writing intensive course.).

COMM 480/580. The Video Documentary II, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM/THEA 380. This is a production/studio course designed to complete the preparatory work developed in Theatre 380: The Video Documentary I. Discussion/ presentation topics range from production field work to post-production editing. The final third of the semester will be devoted to compiling the rough footage in post production. (cross-listed with THEA 480/580).

COMM 481/581. The Documentary Tradition, 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: COMM 260 or permission of instructor. An in-depth investigation of the history and theory of the documentary tradition in film, television, and radio. Examining both American and international examples, the course will look at major schools, movements, goals, and styles of documentary production. Representative texts will be studied for their socio-political influences, persuasive techniques, and aesthetic formulas.

COMM 482. Screenwriting II, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM/THEA 346. Students explore visual storytelling through the theories guiding character development, narrative construction, thematic layers, scene analysis, and many more. Students participate in a variety of critical and writing exercises to enhance their knowledge of the craft of screenwriting. (cross-listed with THEA 482).

COMM 483. Advanced Video Project, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM/THEA 370. This course introduces students to the processes and techniques of a narrative film production. Students experience pre-production, production, and post-production phases in creating a product to be entered in regional and national competitions. (cross-listed with THEA 483).

COMM 485/585. Film and Television Genres, 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisite: Comm/THEA 270A or COMM 260. This course is designed to examine the conventions and meanings of various film and television genres within their broader aesthetic, socio-historical, cultural, and political contexts. Each time the class is offered it will focus in depth on a different genre, such as the gangster, the Western, the musical, the comedy, science fiction, among others.

COMM 486/586. Advanced Filmmaking, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: COMM 346, 370, 385, and THEA 446, and 483. Offers the advanced film/video maker an opportunity to produce a project beyond the scope of previous classroom projects. Students come to the course in production teams (typically 5 members), with each member assigned a specific duty (cinematography, editing, directing, etc.). Students are permitted into the course solely by instructor approval and only after demonstration of superior skills in subordinate courses and acceptance of a submitted screenplay. (cross-listed with THEA 486/586).

COMM 495/595. Topics in Communication, 1-3 Credits.
3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

COMM 496/596. Topics in Communication, 1-3 Credits.
3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

COMM 497. Topics in Counseling, 1-6 Credits.
3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

COMM 498/598. Tutorial Work in Special Topics in Communication, 3 Credits.
3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

COUN - Counseling

COUNSELING Courses
COUN 497. Topics in Counseling, 1-6 Credits.

CRJS - Criminal Justice
CRIMINAL JUSTICE Courses

CRJS 215S. Introduction to Criminology. 3 Credits.
Lecture 3 hours; 3 credits. Introduction to criminology as a science, including the study of crime, criminals, and society’s response to them.

CRJS 222. The Criminal Justice System. 3 Credits.
Lecture 3 hours; 3 credits. A study of social response to criminal behavior as cases move through the machinery of justice. Describes the interdependence of crime statistics, law enforcement, criminal courts, and correctional procedures for purposes of analyzing the entire system.

CRJS 226S. Honors: Introduction to Criminology. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. Special honors section of CRJS 215S.

CRJS 262. Law and the Criminal Justice System. 3 Credits.
Lecture 3 hours; 3 credits. The course covers both substantive and procedural law related to the definitions, investigations, processing and punishment of crimes. It is meant to provide the students with an overall understanding of the articulation between law and the criminal justice system.

CRJS 316. Juvenile Delinquency. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or SOC 201S or permission of instructor. A study of juvenile misbehavior in the contemporary community, its nature, extent, treatment, and control, including juvenile court procedure and philosophy. (cross-listed with SOC 316).

CRJS 317. Correctional Institutions. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or CRJS 222 or permission of the instructor. Examines the history of prisons and jails, their formal and informal organization, their effects on individuals, and issues and philosophies of penal reform.

CRJS 318. Probation, Parole and Community-Based Corrections. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or permission of the instructor. Examines the history, law, administration and social setting of probation, parole and other noninstitutional sentencing alternatives. Also explores nontraditional alternatives to criminal adjudication such as arbitration and diversion programs.

CRJS 319. Public and Private Security. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or permission of the instructor. The organization of security systems in public and private agencies and institutions.

CRJS 320. Law and Social Control. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or permission of the instructor. Examines the creation, use and effectiveness of formal and informal mechanisms of social control for both criminal and noncriminal deviant behavior. Cross-cultural comparisons are given special emphasis.

CRJS 323. Police in American Society. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or CRJS 222 or permission of the instructor. Examines the role of police in a free society. Police functions, subculture, community relations and decision making receive special attention. Problems such as police corruption, violence and the methods by which society attempts to control police behavior are also discussed.

CRJS 325. Women and Crime. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or permission of the instructor. Examines the role of women as offenders, victims and employees of the criminal justice system. Theories of female criminality and the treatment of female offenders are explored. Attention is given to the victimization of women, specifically wife abuse and rape, problems of minority women, and the impact of current legislation.

CRJS 340. White-Collar Crime. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S. This course will describe and explain corporate, state-corporate, government (state) crime and crimes of globalization from sociological and criminological perspectives. Although the course will deal with the general topic of white collar crime, the specific focus will be on organizational offenders such as business corporations, government, state agencies and international finance organizations.

CRJS 345. Organized Crime: A Survey of Domestic and World-Wide Organized Crime Activities. 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisite: CRJS 215S, CRJS 222, or CRJS 262. A broad survey of the history and consequences of organized crime in the United States and the world. Special focus will be directed at the economic, social and developmental effects of organized criminal activities.

CRJS 350. Victimology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S or six hours of social science perspective or permission of the instructor. Examination of the multifaceted problem of criminal victimization. Focuses on defining victimization, the incidents of victimization, social characteristics of victims, treatment of victims in the criminal justice system, and efforts designed to alleviate the consequences of victimization.

CRJS 355. Crime and the Community. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or SOC 201S or permission of the instructor. This course will focus on the effect of crime on communities and the ways in which communities affect crime. The class will consider both ethnographic community studies as well as larger-scale demographic analysis.

CRJS 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval of the department and Career Management in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/ fail grading only. Students must volunteer for 50 hours per course credit. Internships for less than three credits require prior approval by the Internship Faculty Director. (qualifies as a CAP experience).

CRJS 368. Internship. 1-6 Credits.
1-6 credits. Prerequisite: approval by the department. This course allows students to volunteer in an agency related to their major for pass/fail credit. Students must volunteer for 50 hours per course credit. Internships for less than three credits require prior approval by the Internship Faculty Director. (qualifies as a CAP experience).

CRJS 369. Practicum. 3-6 Credits.
1-3 credits. Prerequisite: permission of the department. (qualifies as a CAP experience).

CRJS 395. Topics in Criminal Justice. 1-3 Credits.
3 credits each semester. Prerequisite: CRJS 215S or permission of the instructor. A study of selected topics designed for nonmajors or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

CRJS 396. Topics in Criminal Justice. 1-3 Credits.
3 credits each semester. Prerequisite: CRJS 215S or permission of the instructor. A study of selected topics designed for nonmajors or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.
CRJS 401/501. Understanding Violence. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or SOC 201S or permission of instructor. Examines a variety of forms of violence from suicide, child abuse, rape and family violence, terrorism, torture, death squads and the death penalty and hate violence. Explores the circumstances, rationalizations, patterns, explanations and effects on survivors.

CRJS 403. Violence in the World of Children. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours in the social science perspective or SOC 201S or CRJS 215S or permission of the instructor. This child-centered course examines the interaction of adults in violent conflict with the world of children, children’s experience of violence and its meaning in the lives of children. Topics include: values children, violence toward children in culture, families, and schools; child physical and sexual abuse and neglect; gangs, violent communities and children and war. The effects of childhood experiences of violence, children’s coping with violence, and alternatives to violence are also developed. (cross-listed with SOC 403).

CRJS 410/510. Correctional Treatment. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CRJS 215S or CRJS 222 or permission of the instructor. Methods and programs which attempt to correct the behaviors of juvenile delinquents and adult criminal offenders are explored. Treatment strategies employed in both community and institutional settings are examined. Techniques of classification and the role of the correctional worker are also discussed.

CRJS 415. Courtroom As a Social System. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 222 or permission of the instructor. An overview of the role of all of the actors in the American courtroom, the interaction of these actors and the effect of social forces on their behavior. Includes prosecutor, plaintiff and defense lawyers, judges, juries, eye witnesses, expert witnesses, and court staff.

CRJS 416. The American Jury. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 222 or permission of the instructor. A critical exploration of media portrayals of crime and criminal justice. News and entertainment genres are examined. Connections between crime, culture, politics, society and individual behavior, and the mass media receive special attention.

CRJS 418. Crime, Society, and the Media. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or CRJS 222 or permission of the instructor. A critical exploration of media portrayals of crime and criminal justice. News and entertainment genres are examined. Connections between crime, culture, politics, society and individual behavior, and the mass media receive special attention.

CRJS 421/521. Deviant Behavior. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S or permission of the instructor. A study of various definitions and forms of deviant behavior, theoretical explanations of causes of deviant behavior, and the impact of deviant behavior on society and the individual. (cross-listed with SOC 421/521).

CRJS 426W/526. Criminological Theory. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: grade of C or better in ENGL 211C or 221C or 231C and CRJS 215S and senior standing, or permission of the instructor. An in-depth study of the major theoretical issues in criminology. Deals extensively with issues of crime causation. (This is a writing intensive course.).

CRJS 427/527. Violence Against Women. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S or completion of social science perspective or permission of instructor. A critical analysis of violence against women as an institution of social control. Examines violence in the context of social and political inequality and feminist critique. Issues explored include pornography, prostitution, sexual harassment, incest, battering and rape. (cross-listed with SOC 427).

CRJS 430. Homicide. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S or completion of a social sciences perspective course. This course explores the topic of homicide in the U.S. It includes a discussion of the types of homicide, historical patterns and trends, and characteristics of offenders and victims. A variety of theoretical frameworks are utilized to examine homicide at micro and macro levels. In-depth examination of specific types of homicide is included.

CRJS 436. Capstone Research Project. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: STAT 130M, SOC 337 and senior standing. Students will work in groups to plan, design, and carry out a research project. Final papers which report the results for the study will be presented in a formal research seminar. The projects will reflect knowledge gained from undergraduate work and training received in STAT 130M and SOC 337.

CRJS 441/541. Drugs and Society. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S. The study of sociological and social psychological explanations of drug-using behaviors and of legal and medical control of drugs. Topics include changes in the legal status of drugs, cross-cultural and historical variations in the control of drugs, and social epidemiology of drug use in contemporary society. (cross-listed with SOC 441).

CRJS 444. Community Justice. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S. This is a service learning course designed to study how the emerging field of community justice, a neighborhood-based strategy, can reduce crime and improve public safety by investing in social, human and cultural capital. (cross-listed with SOC 444).

CRJS 448/548. Women, Sex Discrimination and the Law. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or permission of the instructor. This course introduces students to legal issues which specifically affect women and examines historical attitudes that have been used to justify differential treatment of women. It explores various legal approaches used to achieve equal protection under the law and examines a variety of specific topics such as: the equal protection analysis; Title VII and Title IX and their relationship to sex discrimination; affirmative action; and reproductive freedom.

CRJS 450/550. Blacks, Crime and Justice. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CRJS 215S and CRJS 222 or permission of the instructor. Examines historical and contemporary theories and research on African-Americans, criminal behavior and the administration of justice. Selected topics will include African-American perspectives, the death penalty, victimization, police brutality, and justice systems in Africa and the Caribbean.

CRJS 452. Diversity in Criminal Justice Organizations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S or permission of instructor. This course examines the impact of diversity, culture, and ethnic origin in criminal justice organizations. The course is designed to better prepare students to meet the challenge of diversity in criminal justice organizations. (cross-listed with SOC 452).

CRJS 462/562. Substantive Criminal Law. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: CRJS 215S or CRJS 222 or permission of the instructor. This course deals with the major substantive concepts involved in American criminal law, including development of criminal law, elements of criminal liability, defenses against criminal responsibility, and descriptions and definitions of specific offenses.
CRJS 475/575. Criminal Justice Systems Around the World. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or CRJS 222 or permission of the instructor. The study of criminal justice systems around the world in order to understand how criminal behavior is defined and responded to in various cultures. Cultural differences will be highlighted in order to recognize that definitions of and responses to crimes closely reflect the cultures in which they exist.

CRJS 495/595. Topics in Criminal Justice. 3 Credits.
3 credits each semester. Prerequisite: CRJS 215S or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule and will be more fully described in information distributed to all academic advisors.

CRJS 496/596. Topics in Criminal Justice. 3 Credits.
3 credits each semester. Prerequisite: CRJS 215S or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule and will be more fully described in information distributed to all academic advisors.

CRJS 497/597. Tutorial Work in Special Topics in Criminal Justice. 1-3 Credits.
1-3 credits. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

CRJS 498/598. Tutorial Work in Special Topics in Criminal Justice. 1-3 Credits.
1-3 credits. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

CS 470. Intermediate Spreadsheets. 1 Credit.
Lecture 1 hour; 1 credit. An introduction to data management and analysis using spreadsheets. No prior computer experience required. Computer-based training using a project-based approach teaches students to solve realistic problems as they practice and learn the features in Microsoft Excel.

CS 480. Intermediate Presentation Software. 1 Credit.
Lecture 1 hour; 1 credit. An intermediate course in utilizing presentation software to produce quality slideshows. Computer-based approach teaches students to solve realistic problems as they practice and learn the features of Microsoft PowerPoint.

CS 110. Introduction to Computer Science. 1 Credit.
Lecture 1 hour; 1 credit. Available for pass/fail grading only. Introduction to the Computer Science Department, College of Sciences, Old Dominion University, and to the profession of computer science. This course provides students with a broad introduction to the scientific research efforts of computer science and the applications using those research efforts. Required for incoming computer science majors.

CS 120G. Introduction to Information Literacy and Research. 3 Credits.
Lecture 3 hours; 3 credits. Students will learn to locate, manage, critically evaluate and use information for problem solving, research and decision making. Includes collaborative tools for document development and office productivity tools for presentation. Information security, laws and etiquette related to use and access of information are covered.

CS 121G. Introduction to Information Literacy and Research for Scientists. 3 Credits.
Lecture 3 hours; 3 credits. Students will learn to locate, manage, critically evaluate and use information for scientific problem solving and research. Includes mathematical tools for data analysis and presentation and office and collaborative tools, as well. Information security, laws and etiquette related to use and access of information are covered.

CS 126G. Honors: Introduction to Information Literacy and Research. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. A special honors version of CS 120G.

CS 133. Introduction to Programming in Java. 4 Credits.
Lecture, 3 hours; lab, 2.5 hours; 4 credits. Prerequisite: MATH 102M. Laboratory work required. Introduction to computer-based problem solving and programming in Java. Topics include problem solving methodologies, program design, algorithm development, and testing. Java language concepts include variables, data types and expressions, assignment, control-flow statements, functions, arrays, and classes. Algorithms covered include sorting, searching, and linked list manipulations.

CS 150. Problem Solving and Programming I. 4 Credits.
Lecture 3 hours; laboratory 2.5 hours; 4 credits. Prerequisite: MATH 102M or equivalent. Laboratory work required. Introduction to computer-based problem solving and programming in C++. Topics include problem solving methodologies, program design, algorithm development, and testing. C++ language concepts include variables, data types and expressions, assignment, control-flow statements, functions, arrays, pointers, structs, and classes.

CS 170. Introduction to Computer Architecture I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 102M and a grade of C or better in CS 150. Fundamentals of the architecture and operation of modern computers. Basic computer logic: logic equations; gates; combinatorial logic. Basic computer arithmetic: binary numbers; floating point representation. System hierarchy, overview of a computer; integrated circuit technology. Performance: metrics; choosing benchmarks; Amdahl’s law. Instruction Sets and Operations: assembly language; machine language; examples of other instruction sets.
CS 250. Problem Solving and Programming II. 4 Credits.
Lecture 3 hours; laboratory 2.5 hours; 4 credits. Prerequisites: MATH 162M and a grade of C or better in CS 150. Corequisite: CS 252. Laboratory work required. Design issues arising in software systems and C++ programming techniques aiding in their solution. Topics include the software life cycle, methods of functional decomposition, design documentation, abstract data types and classes, common data structures, dynamic data structures, algorithmic patterns, and testing and debugging techniques. Term project required.

CS 252. Introduction to Unix for Programmers. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisites: A grade of C or better in CS 150. Pre- or Corequisite: CS 333. Laboratory work required. Available for pass/fail grading only. An introduction to Unix with emphasis on the skills necessary to be a productive programmer in Unix, Linux, and related environments. Topics include command line shells, files and directories, editing, compiling and common command line utilities.

CS 270. Introduction to Computer Architecture II. 3 Credits.

CS 295. Topics in Computer Science. 1-3 Credits.
1-3 credits. Special topics in computer science which are not part of the current curriculum at the freshman/sophomore level.

CS 300T. Computers in Society. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: ENGL 110C. Covers changes in the world’s society due to continuing implementation of computing technologies. Evaluation of technological expansions in areas of governments, business/industry, education, medicine, transportation, communication and entertainment. Topics include: intellectual property, software piracy, computer crimes and ethics. Students must research a societal topic and present in written and oral forms.

CS 312. Internet Concepts. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CS 252. Laboratory work required. An in-depth introduction to the Internet and the World Wide Web for CS or similar majors as a basis for more advanced studies in Web programming. Topics include: historical and current development of the Internet Web document publishing. Internet design, communication, and application protocols and the tools that use them. Internet search tools and their design. Internet issues such as netiquette, copyright, spam, computer viruses, cookies, security, and future of the Internet.

CS 330. Object-Oriented Programming and Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 163, CS 252 and a grade of C or better in CS 250 or CS 333. Laboratory work required. The techniques and idioms of object-oriented programming in C++ and Java. Methods of object-oriented analysis and design with the Unified Modeling Language. Multi-threaded programs and synchronization.

CS 333. Programming and Problem Solving in C++. 4 Credits.
Lecture 4 hours; 4 credits. Prerequisites: MATH 163 and a grade of C or better in CS 150 (or an equivalent course in a high level language). Laboratory work required. Corequisite: CS 252. Topics include C++ syntax and semantics, principles of design and basic software engineering skills. This course satisfies the requirements of both CS 150 and 250. It is intended for the student who has already been introduced to programming, possibly in another language. This web-based course requires considerable maturity and independent responsibility on the part of the student.

CS 334. Computer Architecture Fundamentals. 4 Credits.
Lecture 4 hours; 4 credits. Prerequisites: MATH 163 and a grade of C or better in CS 150 (or an equivalent course in a high level language). Topics include: number representation, base conversion, Boolean algebra, combinatorial circuits, arithmetic units, registers, memory, hardwired and microprogrammed control units, architecture of typical microcomputers, and the development of systems from basic components. The performance of competing architectures will be a major concern. This course satisfies the requirements of both CS 170 and 270. This web-based course requires considerable maturity and independent responsibility on the part of the student.

CS 350. Introduction to Software Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 330 or 361 or corequisite of CS 333. Laboratory work required. Topics include: use of a defined software process (such as PSP), software costing methods, software metrics, quality assurance, inspection teams, testing methodologies, schedules and budgets, and configuration management. The course requires each student to participate as a member of a team in a significant team project. Each student will be required to demonstrate proficiency in several software development tools.

CS 355. Principles of Programming Languages. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in CS 250 and 252. Laboratory work required. Survey of significant features of programming languages. Language types including imperative, functional, logical, and object-oriented are covered. Concepts include lexical and syntactic analysis, type systems, flow control, modularity, and parallel programming. Small programs in several languages required.

CS 361. Advanced Data Structures and Algorithms. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 163, CS 252 and a grade of C or better in CS 250 or 333. Laboratory work required. Common abstract data types, including vectors, lists, stacks, queues, sets, maps, heaps, and graphs. Standard C++ interfaces for these ADTs. Generic programming via iterators and templates. Choosing data structures and algorithms to implement ADTs, via analysis of their time and space complexity.

CS 367. Cooperative Education. 1-3 Credits.
1-3 credits. Prerequisite: approval by the CS Department and Career Management in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. Written report required. (qualifies as a CAP experience).

CS 368. Computer Science Internship. 1-3 Credits.
3 credits. Prerequisite: approval by CS Department and Career Management. Available for pass/fail grading only. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. An academic project may be required by the department to enhance the value of the educational experience. Written report required. (qualifies as a CAP experience).

CS 381. Introduction to Discrete Structures. 3 Credits.
Lecture 3 hours; recitation 1 hour; 3 credits. Prerequisites: MATH 163 and a grade of C or better in CS 150. Topics include propositional and predicate logic, rules of inference, methods of proof, set operations, functions, complexity of algorithms, growth of functions, induction, counting, relations, equivalence relations and graphs.
CS 382. Introduction to JAVA. 1 Credit.
Lecture, 1 hour; 1 credit. Prerequisites: A grade of C or better in CS 250 or CS 333. Laboratory work required. An introduction to the Java programming language for students who are familiar with programming in C++. Topics include basic language syntax, data structures, control flow, classes, exception handling, and basic elements of the Java API. This web-based class requires independent responsibility and online communication skills on the part of the student.

CS 390. Introduction to Theoretical Computer Science. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in CS 250 and 381. Elementary study of theoretical aspects of computer science. Topics in formal languages and automata theory are covered including regular languages, regular expressions, finite automata, context-free languages, pushdown automata, grammars, Turing machines, and unsolvable problems.

CS 395. Topics in Computer Science. 1-3 Credits.
1-3 credits. Prerequisite: permission of the instructor.

CS 410/510. Professional Workforce Development I. 3 Credits.
Lecture 3 hours; recitation 1 hour; 3 credits. Prerequisites: A grade of C or better in CS 300 and 350. Laboratory work required. Provides students with challenges of business environments in developing a technology based project. Students identify a societal problem, identify solutions, define project solutions, develop project objectives, conduct feasibility analysis, establish organizational group structure to meet project objectives and develop formal specifications. Students make formal technical project presentations and develop web documentation. Students prepare a draft grant proposal.

CS 411W/511. Professional Workforce Development II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in ENGL 211C or 221C or 231C and a grade of C or better in CS 330 and 410. Laboratory work required. Students write professional and non-technical documents and continue the development of the project defined in CS 410. Written work is reviewed and returned for corrective rewriting. Students will design and develop a project prototype, and demonstrate the prototype to a formal panel along with delivering the formal product specifications and a draft formal grant proposal. (qualifies as a CAP experience) (This is a writing intensive course.).

CS 417/517. Computational Methods and Software. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 316 and a grade of C or better in CS 250. Laboratory work required. Algorithms and software for fundamental problems in scientific computing. Topics: properties of floating point arithmetic, linear systems of equations, matrix factorizations, stability of algorithms, conditioning of problems, least-squares problems, eigenvalue computations, numerical integration and differentiation, nonlinear equations, iterative solution of linear systems.

CS 418/518. Web Programming. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in CS 312 and 330. Laboratory work required. Overview of Internet and World Wide Web; web servers and security, HTTP protocol; web application and design; server side scripts and database integration, and programming for the Web.

CS 450/550. Database Concepts. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in CS 381 and either CS 330 or 361. Laboratory work required. Database Architecture. The relational model and relational algebra. Interactive SQL, SQL and programming languages (PL/SQL and PHP). Entity Relationship Modeling. Functional dependencies and normalization. Transactions, concurrency and recovery.

CS 451/551. Software Engineering Survey. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 330 or 361. Laboratory work required. Evaluation of software development methodologies. Topics include: software life cycle models, software specification and design methodologies, informal specification techniques, formal specifications, design tools, software analysis, quality assurance, life cycle management, software costing models and complexity.

CS 454/554. Network Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 455. Laboratory work required. The administration of computer networks and their interaction with wide area networks: network topologies for local and wide area networks, common protocols and services, management of distributed file services, routing and configuration, security, monitoring and trouble-shooting.

CS 455/555. Introduction to Networks and Communications. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: STAT 330 and a grade of C or better in CS 270. Laboratory work required. OSI and TCP IP reference models and protocols. Hardware survey, datalink, network, and transport layers. Broadcast and point-to-point networking techniques, routing, switching, and LAN media access. Internetworking, ATM, Gigabit Ethernet, wireless networks, and network security.

CS 456/556. Database Administration I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 381 and either CS 330 or 361. Laboratory work required. Programming in SQL and PL/SQL and hands-on development of DBA administration skills in the ORACLE database environment. Creating database objects, querying and manipulating, and PL/SQL programming constructs. Setup and administer databases. Create, organize, and manage database files, users, privileges and other resources.

CS 457/557. Database Administration II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 381 and either CS 330 or 361. Laboratory work required. Advanced DBA administration skills in the Oracle database environment. Topics in planning and implementing backup and recovery of the database. Performance optimization and tuning of database and applications including memory and disk structures. Configuration and maintenance of clients and servers in a network environment.

CS 458/558. Unix System Administration. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: experience with UNIX. Laboratory work required. Aspects of administering a SOLARIS/UNIX operating system in a networked environment are covered. Topics covered include installation, file system management, backup procedures, process control, user administration, device management, Network File Systems (NFS), Network Information Systems (NIS), UNIX security, Domain Name Services (DNS), and integration with other operating systems.

CS 460/560. Computer Graphics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 361. Laboratory work required. An introduction to graphical systems and methods. Topics include basic primitives, windowing, transformations, hardware, interaction devices, 3-D graphics, curved surfaces, solids, and realism techniques such as visible surface, lighting, shadows, and surface detail. Requires project involving OpenGL programming.

CS 471. Operating Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in CS 270 and 361. Laboratory work required. Operating system structures. Multiprogramming and multiprocessing. Process management. Memory and other resource management. Storage management, I/O systems, distributed systems. Protection and security. The concepts will be illustrated through example systems such as Unix and Windows.
CS 472. Network and Systems Security. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 361.
Laboratory work required. Basic protocols, techniques and programming
issues to secure network and computer systems. Topics include:
cryptographic algorithms and concepts (Secret Key Cryptography, Hashes
and Message Digests, Public Key and Authentication); Security Standards
(Kerberos, Public Key Infrastructure, IPSec, SSL/TLS); Security applications
(PEM, S/MIME, PGP, HTTP, Firewalls); Hands-on programming using
OpenSSL.

CS 475/575. Introduction to Computer Simulation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: STAT 330 and a grade of C or
better in CS 330 or 361. Laboratory work required. Efficient implementation
methods. Time management. Planning and design of simulation experiments.
Statistical issues in simulation. Generation of random numbers and
stochastic variates. Programming with graphically- and text-based
simulation languages. Verification and validation of simulation models.
Distributed simulation. Special topics such as HLA will be discussed.

CS 476/576. Systems Programming. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 330
and 361. Laboratory work required. This course is to help students fully
understand and utilize the internal workings and capabilities provided by
modern computing, networking and programming environments. Topics
include: Shell Script Programming, X Windows (Xlib and Motif), UNIX
internals (I/O, Processes, Threads, IPC and Signals), Network Programming
(UDP/TCP Sockets and Multicasting) and Java Systems Programming
(SWING, Multithreading and Networking).

CS 480/580. Introduction to Artificial Intelligence. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 361.
Laboratory work required. Introduction to concepts, principles, challenges,
and research in major areas of AI. Areas of discussion include: natural
language and vision processing, machine learning, machine logic and
reasoning, robotics, expert and mundane systems.

CS 486/586. Introduction to Parallel Computing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 316; knowledge of a high
level language. Laboratory work required. The motivation for and successes
of parallel computing. A taxonomy of commercially available parallel
computers. Strategies for parallel decompositions. Parallel performance
metrics. Parallel algorithms and their relation to corresponding serial
algorithms. Numerous examples from scientific computing, mainly in linear
algebra and differential equations. Implementations using public-domain
network libraries on workstation clusters and computers.

CS 487. Applied Parallel Computing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 270
and either CS 361 or CS 330. (CS 417 or linear algebra is recommended.)
Laboratory work required. Fundamental concepts of parallel computing:
Machine models, architectures, parallel topologies and languages, parallel
algorithm design and parallel programming, architecture independent
message passing interface (MPI) communication library, and scaled-
speedup. Group project required.

CS 488/588. Principles of Compiler Construction. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in CS 361.
Laboratory work required. Theoretical and practical aspects of compiler
design and implementation. Topics include lexical analysis, parsing,
translation, code generation, optimization, and error handling.

CS 495/595. Topics in Computer Science. 1-3 Credits.
1-3 credits. Prerequisite: permission of the instructor.

CS 497/597. Independent Study in Computer Science. 1-3 Credits.
1-3 credits. Prerequisite: permission of the instructor. Independent study
under the direction of an instructor.

CSD - Communication Sci & Disorders

COMMUNICATION SCI DISORDERS Courses

CSD 351. Anatomy of Speech, Language, and Hearing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. Study
of the psycholinguistic, acoustic, anatomical, and physiological aspects of
speech.

CSD 352. Phonetics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. Study
of the production and classification of sounds in American English; practice
in phonetic transcription.

CSD 447/547. Introduction to Language Disorders in Children. 3
Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. This
course presents an introduction to the various language disorders manifested
by children and adolescents with a focus on characteristics, etiologies and
general intervention approaches.

CSD 448/548. Speech-Language and Hearing Programs in the Public
Schools. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CSD 450/550 and 460/560.
The emphasis of this course is on the organization and administration of
public school speech-language and hearing programs, as well as clinical,
professional and legal issues related to service delivery.

CSD 449W/549. Introduction to Clinical Procedures in Speech-
Language Pathology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in ENGL
211C or 221C or 231C and permission of the instructor. This course
provides an introduction to basic clinical procedures and competencies
in speech-language pathology with an emphasis on language sampling
and identification of grammatical categories. Professionals practicing in
the field of speech-language pathology require these skills. This course
includes structured and supervised observation activities. ASHA requires 25
supervised hours of therapy observation. (This is a writing intensive course.).

CSD 450/550. Survey of Communication Disorders. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. This
course is designed to acquaint the student with recognition, identification,
and understanding of speech and language disorders.

CSD 451/551. Articulation and Phonological Disorders. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CSD 352 and CSD 450/550. This
course emphasizes causes, identification and treatment of articulation and
phonological disorders.

CSD 452/552. Voice Disorders. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CSD 351 and 450. This course
focuses upon anatomical and physiological bases, etiologies, assessment and
treatment of voice disorders.

CSD 453/553. Language Development. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CSD 450/550. This course
emphasizes language development from the perspective of the speech-
language pathologist.

CSD 454/554. Clinical Practica in Speech Pathology/Audiology I, II. 4
Credits.
Lecture 3 hours; practicum 6 hours; 4 credits each. 3 separate semesters.
Prerequisites: CSD 351 or 650, 352, 449W/549, 450/550, 451/551, 453/553,
459/559, 460/560, and permission of program faculty. These practica
are designed to provide students with experiences in the evaluation and
treatment of communication disorders. (qualifies as a CAP experience).
CSD 457/557. Language Diagnosis and Remediation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CSD 450/550 and CSD 453/553. This course acquaints the student with diagnostic methods and remediation techniques for the language-disordered and nonverbal child.

CSD 458/558. Speech and Hearing Science. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. The content of this course focuses upon basic acoustics, speech acoustics, psychoacoustics, speech perception, and clinical laboratory instrumentation. The course is designed to provide fundamental information regarding normal and abnormal aspects of speech and hearing processes.

CSD 459/559. Seminar in Speech Pathology Methods and Materials. 3 Credits.
Seminar 3 hours; 3 credits. Prerequisites: CSD 450/550 and 451/551. This course focuses upon current therapy methods, equipment, and materials which are utilized in the remediation of communicative disorders.

CSD 460/560. Hearing Disorders and Basic Audiometry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CSD 351. A study of the physics of sound, anatomy, and physiology of the human ear, basic audiometry and hearing disorders.

CSD 461/561. Aural Rehabilitation I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CSD 351 and 460. A study of audiological findings and the implications for hearing therapy; speech and language development of the deaf.

CSD 465/565. Signing I-Beginning Nonverbal Communication. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. Study of the grammatical structure and use of American sign language; exposure to ideals and culture of the deaf community. (This course does not satisfy the general education foreign language skills requirement.)

CYTO - Cytotechnology

CYTOTECHNOLOGY Courses

CYTO 403. Gynecological Screening Laboratory. 3 Credits.
Laboratory: 3 credits. Prerequisites: advanced standing and/or permission of the cytotechnology program director. Laboratory experience in the screening of gynecological smears.

CYTO 404. General Pathology. 3 Credits.
Lecture; 3 credits. Prerequisites: BIOL 250 and 251 or equivalent. This course is an overview of general disease processes and causes in the human. All body systems will be covered including respiratory, gastrointestinal, circulatory, nervous, reproductive, and urinary. Aging, dietary, and stress factors will be discussed in the disease process. Bacteria, fungi, and viruses will be discussed in general and for each body system. Neoplasms will be covered for each body site. This course will be of benefit to anyone interested in diseases of the human body or entering the medical field. (cross listed with MEDT 401).

CYTO 405. Normal Gynecological Cytology. 3 Credits.
Lecture/laboratory; 3 credits. Prerequisite: permission of program director. Introduction to histological and cytological features of the normal female genital tract with emphasis on normal and non-neoplastic abnormalities. Principles of cytological diagnostic techniques will be discussed.

CYTO 406. Body Fluids Cytology. 2 Credits.
Lecture/laboratory; 2 credits. Prerequisites: CYTO 405, 415, 444, 445, 446. Study of the pathology and cytology of the body fluids, with emphasis on benign, inflammatory, parasitic conditions, gastric ulcers, premalignant and malignant lesions.

CYTO 407. Clinical Histology. 3 Credits.
Lecture/Laboratory; 3 credits. Prerequisites: permission of the instructor. This course consists of the systematic study of cellular components as well as the grouping/organization of tissues into major ‘organ’ systems. Microscopic and virtual identification and morphology of cells, tissues, and organ substructures will be emphasized. This course will be of benefit to anyone interested in diseases of the human body or entering the medical field.

CYTO 415. Abnormal Gynecological Cytology. 4 Credits.
Lecture/laboratory; 4 credits. Prerequisites: CYTO 405 and permission of the program director. Introduction to diagnostic cytological techniques and pathology of the female reproductive tract with emphasis on premalignant and malignant changes.

CYTO 424. Respiratory Cytology. 3 Credits.
Lecture/laboratory; 3 credits. Prerequisites: CYTO 405 and 415. Principles of diagnostic cytology and pathology of the respiratory tract, including benign conditions, inflammatory and infectious diseases, premalignant conditions and primary and metastatic malignancies.

CYTO 428. Cytopreparatory Techniques and Procedures. 2 Credits.
Lecture/laboratory; 2 credits. Prerequisite: permission of program director. Introduction to collection, processing, and preparation of cytologic samples from all body sites.

CYTO 442. Gastro-Intestinal Cytology. 2 Credits.
Lecture/laboratory; 2 credits. Prerequisites: CYTO 405 and 415. Study of the pathology and cytology of the gastro-intestinal tract, including the oral cavity, esophagus, stomach, colon, and rectum. Emphasis on normal conditions, benign inflammatory, infections, parasitic conditions, gastric ulcers, premalignant and malignant lesions.

CYTO 444. Genitourinary Cytology. 2 Credits.
Lecture/laboratory; 2 credits. Prerequisites: CYTO 405 and 415. Study of the pathology and cytology of the genitourinary tract, with emphasis in normal conditions, benign inflammatory and infectious conditions, crystals, premalignant and malignant lesions.

CYTO 445. Breast Cytology. 3 Credits.
Lecture/laboratory; 3 credits. Prerequisites: CYTO 405 and 415. Study of patholgy and cytology of the breast, with emphasis on benign, inflammatory conditions, premalignant and malignant disease in both breast smears and fine needle aspirations.

CYTO 446. Body Fluids Cytology. 2 Credits.
Lecture/laboratory; 2 credits. Prerequisites: CYTO 405 and 415. Study of the pleural, peritoneal and pericardial cavity fluids, synovial and cerebral spinal fluids, with emphasis on benign, inflammatory conditions, and primary and metastatic malignancies.

CYTO 448. Non-Epithelial Cytology. 2 Credits.
Lecture/laboratory; 2 credits. Prerequisites: CYTO 405, 415, 424, 444, 445, 446. Study of the pathology and cytology of non-epithelial lesions with emphasis on benign, inflammatory, and malignant conditions.

CYTO 455. Fine Needle Aspiration. 5 Credits.
Lecture/laboratory; 5 credits. Prerequisites: CYTO 405, 415, 424, 444, 445, 446. Study of specialized collection techniques, processing and diagnosis of fine needle aspirations from various body sites, including, but not limited to, thyroid, liver, lymph nodes, pancreas, lung, kidney, etc. Emphasis will be on benign, inflammatory, primary, and metastatic malignancies of all sites. Clinical practical application of these principles will be continued at the clinical sites.

CYTO 458. Cytology Internship I. 4 Credits.
4 credits. Prerequisites: CYTO 405 and 415. Directly supervised experience in a clinical setting; includes evaluation of gynecologic smears and study set assignments. Students will be exposed to cytopreparatory techniques. (qualifies as a CAP experience).
DANCE - Dance

DANCE Courses

DANC 185A. Dance and Its Audience. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Designed to acquaint students with the components of theatrical dance performance, its historical and ethnic origins, its role as a creative expression of peoples and societies and its relationship to other art forms. Through films, videos, live performances, guest speakers, readings and discussions, students consider philosophical approaches to language, communication, aesthetics and style of choreography.

DANC 195. Topics in Dance. 1-3 Credits.
1-3 credits each semester. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

DANC 196. Topics in Dance. 1-3 Credits.
1-3 credits each semester. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

DANC 201. Ballet Technique 1. 2 Credits.
Studio 4 hours; 2 credits. Introduction to classical ballet technique.

DANC 211. Modern Dance Technique 1. 2 Credits.
Studio 4 hours; 2 credits. Introduction to modern dance technique.

DANC 231. Ballroom Dance 1. 1 Credit.
Laboratory 2 hours; 1 credit. This class will introduce students to basic American and Latin ballroom dance. Basic steps of the foxtrot, waltz, swing, tango, cha cha and rumba will be covered. Focus will be on rhythm, technique, leading and following. The class is open to single students and couples.

DANC 232. Ballroom Dance 2. 1 Credit.
Laboratory 2 hours; 1 credit. This class is a continuation of basic American and Latin ballroom dance. Basic steps of the foxtrot, waltz, swing, tango, cha cha and rumba will be covered. Focus will be on rhythm, technique, leading and following. The class is open to single students and couples.

DANC 233. Ballroom Dance 3. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisite: DANC 231 or 232 or permission of the instructor. This class is a continuation of American and Latin ballroom dance 2. Basic steps of the foxtrot, waltz, swing, tango, cha cha and rumba will be covered. Focus will be on rhythm, technique, leading and following. This class is open to single students and couples.

DANC 234. Ballroom Dance 4. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisite: DANC 231, 232 or 233 or permission of the instructor. This class is a continuation of American and Latin ballroom dance 3. Basic steps of the foxtrot, waltz, swing, tango, cha cha and rumba will be covered. Focus will be on rhythm, technique, leading and following. This class is open to single students and couples.

DANC 235. Yoga 1. 2 Credits.
Laboratory 4 hours; 2 credits. Introduction to Hatha Yoga as a tool for reducing stress and increasing flexibility. Students will acquire a basic understanding of the practice of Hatha Yoga in its complete form including yoga postures, breathing exercises and meditation. Focus will be on spinal fitness, health, centering and breath to enhance quality of life.

DANC 236. Yoga 2. 2 Credits.
Laboratory 4 hours; 2 credits. Prerequisite: DANC 235 or permission of the instructor. Continuation of Hatha Yoga as a tool for reducing stress and increasing flexibility. Students will acquire a basic understanding of the practice of Hatha Yoga in its complete form including yoga postures, breathing exercises and meditation. Focus will be on spinal fitness, health, centering and breath to enhance quality of life.

DANC 241. Pilates Mat Class 1. 1 Credit.
Laboratory 2 hours; 1 credit. The Pilates method of body conditioning is an exercise system focused on improving flexibility and strength for the total body without building bulk. It is a series of controlled movements engaging the body and mind supervised by an extensively trained teacher. It promotes physical harmony and balance while providing a refreshing and energizing workout. Currently the Pilates method is used internationally by individuals at all levels of fitness as well as by dance companies, sports teams, fitness enthusiasts and physical therapists.

DANC 242. Pilates Mat Class 2. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisite: DANC 241 or permission of the instructor. The Pilates method of body conditioning is an exercise system focused on improving flexibility and strength for the total body without building bulk. It is a series of controlled movements engaging the body and mind supervised by an extensively trained teacher. It promotes physical harmony and balance while providing a refreshing and energizing workout. Currently the Pilates Method is used internationally by individuals at all levels of fitness as well as by dance companies, sports teams, fitness enthusiasts and physical therapists. This course will continue the concepts introduced in Pilates Mat Class 1.

DANC 251. Tap Dance 1. 1 Credit.
Laboratory 2.5 hours; 1 credit. Introduction to tap dance styles including classic, hoof and rhythm. Fundamental movements such as time steps, grab-offs, riffs, etc. will be incorporated using counterpoint rhythms and challenges. Students will gain an understanding of tap dance as an American art form.
DANC 252. Tap Dance II. 1 Credit.
Laboratory 2.5 hours; 1 credit. Prerequisite: DANC 251 or permission of the instructor. Continuation of tap dance styles including classic, hoof and rhythm. Fundamental movements such as time steps, grab-offs, riffs, etc. will be incorporated and developed using countermelody rhythms and challenges. Students will gain an understanding of tap dance as an American art form.

DANC 260. Introduction to Dance Technique. 1 Credit.
Laboratory 2.5 hours; 1 credit. Introduction to Dance Technique will serve as an elective course for students interested in beginning their dance training in the spring semester. The class will focus on basic universal dance vocabulary and will prepare students both physically and mentally to enter Ballet I, Modern Dance 1 or Jazz Dance 1 in the fall semester.

DANC 295. Topics in Dance. 1-3 Credits.
1-3 credits each semester. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be fully described in a booklet distributed to all academic advisors.

DANC 296. Topics in Dance. 1-3 Credits.
1-3 credits each semester. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be fully described in a booklet distributed to all academic advisors.

DANC 302. Ballet Technique 2. 2 Credits.
Studio 4 hours; 2 credits. Prerequisite: DANC 201 or permission of the instructor. Continuation of classical ballet technique.

DANC 303. Ballet Technique 3. 1-4 Credits.
Studio 2-8 hours; 1-4 credits. Prerequisite: DANC 302 or permission of the instructor. Continuation of ballet technique at an intermediate level.

DANC 312. Modern Dance Technique 2. 2 Credits.
Studio 4 hours; 2 credits. Prerequisite: DANC 201 or permission of the instructor. Continuation of modern dance technique.

DANC 313. Modern Dance Technique 3. 1-4 Credits.
Studio 2-8 hours; 1-4 credits. Prerequisite: DANC 312 or permission of the instructor. Continuation of modern dance technique at an intermediate level.

DANC 321. Jazz Dance 1. 1 Credit.
Studio 2.5 hours; 1 credit. Prerequisite: DANC 201 or 211 or 260 or permission of instructor. Introduction to jazz dance technique.

DANC 322. Jazz Dance 2. 1 Credit.
Studio 2.5 hours; 1 credit. Prerequisite: DANC 321 or permission of the instructor. Continuation of jazz dance technique.

DANC 350. Dance Improvisation. 2 Credits.
Studio 4 hours; 2 credits. Prerequisites: DANC 201, 211 or permission of the instructor. An exploration of movement invention through structured exercises, games and problems. Emphasis will be on the creative development of the individual dancer as a performer and choreographer.

DANC 360. Rhythmic Analysis. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisites: DANC 201, 211 or permission of the instructor. A study of basic music theory specifically designed for the dancer. Emphasis will be on score reading, accompaniment for dance, tone values and rhythms as they directly relate to choreography in a classroom as well as in the rehearsal studio. Students will perform movement studies based on rhythmic structures.

DANC 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval of the department and Career Management, in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience takes place. (qualifies as a CAP experience).

DANC 368. Internship. 3 Credits.
3 credits. Prerequisite: approval of department chair and Career Management, if necessary, prior to registration. Available for pass/fail grading only. A structured work experience with or without remuneration; a paper, a log and portfolio of work time plus satisfactory evaluations by supervisor and cooperating faculty member are required. (qualifies as a CAP experience).

DANC 369. Practicum. 1-3 Credits.
1-3 credits. (qualifies as a CAP experience).

DANC 370. Dance Composition 1. 2 Credits.
Lecture and laboratory 3 hours; 2 credits. Prerequisite: DANC 211 and 350 or equivalent (312, 313, 414, 415, 416). Designed for dance majors or minors, this course is a study of the elements and craft of choreography through practical and written experience. Time, space and dynamics will be explored through assigned movement studies. Projects are designed for the creative development of personal movement repertoire and compositional skills for the dancer, choreographer and dance educator.

DANC 375. African-American Perspectives in Dance. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. A study of African-American dance, with emphasis on the contributions of African-Americans to the world of American dance and concert dance. The influence of African-American dance and dances of the African Diaspora will also be explored.

DANC 376. Dance Composition 2. 2 Credits.
Lecture and laboratory 3 hours; 2 credits. Prerequisite: DANC 370 and 312 or equivalent (313, 314, 315, 316). Designed for dance majors or minors, this course is a study of the elements and craft of choreography through practical and written experience. Time, space and dynamics will be explored through assigned movement studies. Projects are designed for the creative development of personal movement repertoire and compositional skills for the dancer, choreographer and dance educator.

DANC 377. Dance Repertory and Performance 1. 1 Credit.
1 credit. Prerequisite: permission of the instructor. Additional fees may be charged. (qualifies as a CAP experience).

DANC 378. Dance Repertory and Performance 2. 1 Credit.
1 credit. Prerequisite: DANC 377 or permission of the instructor. Additional fees may be charged. (qualifies as a CAP experience).

DANC 389W. Dance History from 1900 until the Present. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in ENGL 211C or equivalent. Designed for dance majors or minors, this course focuses on the lives and contributions of dance artists who have most influenced the history of dance as an art form. This course is designed for the creative development of personal movement repertoire and compositional skills for the dancer, choreographer and dance educator.

DANC 391. African-American Perspectives in Dance. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: DANC 185A or permission of the instructor. Focuses on the contributions of African-Americans to the world of American dance and concert dance. The influence of African-American dance and dances of the African Diaspora will also be explored.

DANC 392. Anatomy and Kinesiology for Dance. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: DANC 201, 211 or permission of the instructor and concurrent enrollment in a dance technique class. Designed for dance majors or minors, this course is an analysis of human motion through a study of anatomy and principles of kinesiology in relation to dance techniques.

DANC 395. Topics in Dance. 1-3 Credits.
1-3 credits each semester. Prerequisite: permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be fully described in a booklet distributed to all academic advisors.
DANC 396. Topics in Dance. 1-3 Credits.
1-3 credits each semester. Prerequisite: permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

DANC 404. Ballet Technique 4. 1-4 Credits.
Studio 2-8 hours; 1-4 credits. Prerequisite: DANC 303 or permission of the instructor. Continuation of ballet technique at an intermediate level.

DANC 405. Ballet Technique 5. 1-4 Credits.
Studio 2-8 hours; 1-4 credits. Prerequisite: DANC 404 or permission of the instructor. Continuation of ballet technique at an advanced level.

DANC 406. Ballet Technique 6. 1-4 Credits.
Studio 2-8 hours; 1-4 credits. Prerequisite: DANC 405 or permission of the instructor. Continuation of ballet technique at an advanced level.

DANC 414. Modern Dance Technique 4. 1-4 Credits.
Studio 2-8 hours; 1-4 credits. Prerequisite: DANC 313 or permission of the instructor. Continuation of modern dance technique at an intermediate level.

DANC 415. Modern Dance Technique 5. 1-4 Credits.
Studio 2-8 hours; 1-4 credits. Prerequisite: DANC 414 or permission of the instructor. Continuation of modern dance technique at an advanced level.

DANC 416. Modern Dance Technique 6. 1-4 Credits.
Studio 2-8 hours; 1-4 credits. Prerequisite: DANC 415 or permission of the instructor. Continuation of modern dance technique at an advanced level.

DANC 423. Jazz Dance 3. 1 Credit.
Studio 2.5 hours; 1 credit. Prerequisite: DANC 322 or permission of the instructor. Continuation of Jazz dance technique at an intermediate/advanced level.

DANC 424. Jazz Dance 4. 1 Credit.
Studio 2.5 hours; 1 credit. Prerequisite: DANC 423 or permission of the instructor. Continuation of Jazz dance technique at an intermediate/advanced level.

DANC 470. Dance Composition 2. 2 Credits.
Lecture 1 hour; laboratory 2 hours; 2 credits. Prerequisite: DANC 370 and permission of the instructor. This course builds on the skills developed in Dance Composition 1, including the exploration of time, space and dynamics, with a focus on constructing fully realized group and solo dance compositions.

DANC 488. Advanced Repertory and Performance. 1 Credit.
1 credit. Prerequisite: DANC 388 or permission of the instructor. Additional fees may be charged. (qualifies as a CAP experience).

DANC 489. Principles of Teaching Dance. 2 Credits.
Lecture 1 hour; laboratory 2 hours. 2 credits. Prerequisite: permission of the instructor. This course will cover basic methods of movement education as applied to the teaching of ballet, modern dance, jazz, and movement for children. An understanding of anatomical structure and mechanics will be utilized in the analysis of student performance in dance class. Specific objectives for dance exercises will be explored. Practical experiences in the planning, organization and structure of technique classes of various styles are designed to prepare students as dance educators. (qualifies as a CAP experience).

DANC 490. Pedagogy for Dance Educators. 3 Credits.
Lecture 1 hour; laboratory 4 hours; 3 credits. Prerequisite: Must pass Praxis I or equivalent and be admitted into the Teacher Education program. Methods and instructional theories and strategies of movement education as applied to the teaching of ballet, modern dance, jazz, and movement for children. Practical experience in the structure, organization and assessment of dance arts programs for the K-12 public school setting.

DANC 495/595. Topics in Dance. 1-3 Credits.
1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

DANC 496/596. Topics in Dance. 1-3 Credits.
1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

DANC 497/597. Tutorial Work in Special Topics in Dance. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

DANC 498/598. Tutorial Work in Special Topics in Dance. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

DANC 499. Senior Project. 1 Credit.
1 credit. Prerequisite: senior standing as dance major and approval of the department chair. Completion of paper during a student’s senior year related to a major project in the student’s interest area. Topics to be selected under the direction of an instructor with conferences as appropriate. (qualifies as a CAP experience).

DNTH - Dental Hygiene

DENTAL HYGIENE Courses

DNTH 300. Dental Hygiene Theory I. 4 Credits.
Lecture 4 hours; 4 credits. Corequisites: DNTH 301 and 302. An introduction to the theoretical foundations of preventive and therapeutic oral health services used in the dental hygiene process. Emphasis is on prevention of disease transmission, patient assessment, basic dental hygiene instrumentation, oral health instruction, treatment planning and ethical decision making. (offered fall).

DNTH 301. Dental Hygiene Services I. 3 Credits.
Laboratory/clinic 8 hours; 3 credits. Corequisites: DNTH 300 and 302. Preclinical experience in the on-campus supervised clinic. Clinical and laboratory application of introductory skills essential to rendering oral health services to patients with emphasis on basic dental hygiene instrumentation. (offered fall) (qualifies as a CAP experience).

DNTH 302. Oral Anatomy and Histology. 4 Credits.
Lecture 4 hours plus laboratory demonstration; 4 credits. Prerequisites: BIOL 250 and 251 or equivalent. A study of the anatomical, histological, embryological and morphological features and development of the head, neck and dentition. Emphasis is on nomenclature, nerve and vascular innervation, muscles of mastication, orofacial embryology and histological features of the oral cavity including the dentition. Lab section covers nomenclature and anatomy of the dentition plus hands on experiences.

DNTH 303. Applied Dental Materials. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: CHEM 105N-CHEM 106N. An introduction to dental materials with emphasis on those restorative materials and techniques commonly used in dental practice and which may be required for use by the dental hygienist. An overview of current trends in dental materials is presented. (offered fall).
DNTH 304. Oral Radiology I. 2 Credits.
Lecture 1 hour; laboratory 2 hours; 2 credits. Prerequisite: permission of the instructor. Corequisite: DNTH 302. Study of the nature and production of x-rays and basic principles and procedures in oral radiology. Emphasis is on radiation physics, radiation biology, radiation protection, basic intraoral radiographic techniques and film processing and mounting procedures. (offered fall).

DNTH 305. Dental Hygiene Theory II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: DNTH 300 and 301. Continuation of study of the theoretical foundation of preventive and therapeutic oral health services used in the dental hygiene process. Emphasis is on preparation for client care. (offered spring).

DNTH 306. Dental Hygiene Services II. 3 Credits.
Clinic 8 hours; 3 credits. Prerequisites: DNTH 300, 301 and 304. Corequisite: DNTH 305. Clinical experience in the on-campus supervised clinic. Continued development of clinical proficieny and decision making in rendering comprehensive preventive oral health services using the dental hygiene process. Emphasis is on clinical application and development of skills in maintenance, management and evaluation of the periodontal patient; treatment planning, disease control strategies; and scaling and root planing on periodontally involved patients (offered spring). (qualifies as a CAP experience).

DNTH 307. Pharmacology and Medical Emergencies. 2 Credits.
Lecture 3 hours; 3 credits. Prerequisites: DNTH 302 and BIOL 250-251. A study of pharmacologic agents used in dentistry and of medications that the patient may be taking, their clinical effects, adverse effects, and dental implications, and the prevention and management of medical emergencies. Emphasis is on agents commonly used by patients which require the alteration of treatment procedures, therapeutic agents used adjunctively in dental hygiene therapy and agents used in medical emergency procedures. (offered spring).

DNTH 308. Oral Pathology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: DNTH 302. Principles of the disease process and general pathology including cell injury, inflammation, neoplasia and circulatory disturbances are followed by the study of pathology of the teeth, supporting and associated oral structures. Emphasis is on the clinical and radiological appearance of local and systemic disease processes affecting the oral and facial structures. (offered spring).

DNTH 309. Oral Radiology II. 2 Credits.
Seminar 1 hour; laboratory 2 hours; 2 credits. Prerequisite: DNTH 304. Continued development of the principles and techniques obtained in Oral Radiology I with emphasis on supplemental intraoral techniques especially for client management; extraoral techniques; digital imaging techniques; radiographic interpretation of film-based and digitally acquired images; and the incorporation of dental photography into patient assessment. (offered spring).

DNTH 310. Dental Hygiene Therapies and Practice. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: DNTH 300 and DNTH 301. Emphasis is on principles of periodontics, evaluation of periodontal disease, and theoretical and clinical preparation for delivery of dental hygiene interventions. (offered spring).

DNTH 316. Dental Hygiene Theory and Services III. 3 Credits.
Seminar 1 1/2 hours; clinic 9 hours; 7 weeks; 3 credits. Clinical experience in the on-campus supervised clinic. Prerequisites: DNTH 305, 306, 307 and 309. Continued development of clinical competency in rendering comprehensive preventive oral health services using the dental hygiene process. Introduction of principles of local anesthesia injections will be incorporated. (offered summer) (qualifies as a CAP experience).

DNTH 317. Anxiety and Pain Control. 2 Credits.
Lecture 15 hours; laboratory 30 hours; 1 week; 2 credits. Clinical experience in the on-campus supervised clinic. Prerequisites: DNTH 305, 306, 307, 309 and 316. Introduction of principles of local anesthesia injections and nitrous oxide analgesia administration, neurophysiologic considerations and laboratory application of techniques. Five hours of lecture will be on Blackboard. (Offered summer) (qualifies as a CAP experience).

DNTH 397. Topics in Dental Hygiene Practice. 1-6 Credits.
1-6 credits. Prerequisite: permission of the instructor. Selected topics in dental hygiene; topics vary by semester. (offered fall, spring, summer).

DNTH 410. Dental Hygiene Theory IV. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: DNTH 305, 306, 316. Corequisite: DNTH 411. Study of the psychosocial, physical and oral characteristics of patients with special needs. Emphasis is on the care and clinical management of the following patients: cognitively, developmentally and physically challenged, aged, pregnant, epileptic, diabetic, cancer, AIDS, chemically dependent and the blind and deaf. (offered fall).

DNTH 411. Dental Hygiene Services IV. 6 Credits.
Clinic 16 hours; 6 credits. Prerequisites: DNTH 305, 306, 309. Corequisite: DNTH 410. Clinical experience in the on-campus supervised clinic. Continued development of clinical proficiency and decision making in providing comprehensive preventive oral health services. Emphasis is on clinical application and development of the skills necessary for the treatment of special needs and periodontically involved patients using the dental hygiene process. (offered fall) (qualifies as a CAP experience).

DNTH 412W/S12. Perspectives on Dental Hygiene Practice. 3 Credits.
3 credits. Prerequisites: grade of C or better in ENGL 211C or 221C or 231C and permission of the instructor. This course is designed for the licensed dental hygienist who seeks to maintain an awareness of changing trends, perspectives, interventions and technologies in dental hygiene, health, and society that impact the process of dental hygiene care. (Offered summer) (This is a writing intensive course.) Qualifies as a CAP experience.

DNTH 413. Community Oral Health Planning. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: DNTH 305, 306 or permission of the instructor. Introduction to the principles of dental public health, oral epidemiology, prevention and control of oral disease on a community basis, and community dental health services. Emphasis is on program assessment, planning, implementation, and evaluation for the development of community dental programs. This course will prepare the dental hygienist for the role of oral health educator and resource person in community settings. (offered fall).

DNTH 414/514. Educational Concepts for the Health Professional I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. Explores principles, theories and methods of teaching and learning intended to meet the needs of health care professionals in practice, educational settings, community health organizations, and health care facilities. Emphasis is on instructional strategies, planning, implementing and evaluating instruction.

DNTH 415/515. Research Methods in the Health Sciences. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: STAT 130M. Designed to develop skills in scientific methods, evidence based decision making and critical analysis of research findings. Emphasis on types of research, problem selection and hypothesis writing, research planning and design, data collection and measuring techniques, analysis and interpretation of data, research proposal writing and computer application. A written research proposal is required for graduate credit. (offered fall).
DNTH 415/515. Administrative Leadership and Professional Development. 3 Credits. 
Lecture 3 hours; 3 credits. Prerequisite: permission of the instructor. A study of current trends that influence the profession of dental hygiene including oral health care delivery, manpower, financing mechanisms, quality improvement, third party payers, professional associations, regulatory agencies and legislation. Emphasis is on ethical, political, and legal issues as they relate to the dental hygiene profession. (offered spring).

DNTH 417W. Dental Hygiene Theory V. 3 Credits. 
3 credits. Prerequisites: DNTH 410, 411 and a grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C. Corequisite: DNTH 418. Designed to transition students into diverse employment settings nationally and globally. Emphasis is on written communication skills, practice management, working in multicultural settings, selecting an employment setting, values clarification, resume writing, interview techniques, networking, ethical dilemmas and cross-cultural competencies necessary for contemporary healthcare environments. Various national and international career opportunities are explored. (This is a writing intensive course.).

DNTH 418. Dental Hygiene Services V. 6 Credits. 
Clinic 16 hours; 6 credits. Prerequisites: DNTH 410, 411. Corequisite: DNTH 417W. Clinical experience in the on-campus supervised clinic or off-campus clinic practice site as determined by clinic faculty. Continued development of clinical proficiency and decision making in providing comprehensive preventive oral health services. Emphasis is on clinical application, decision making and development of the skills necessary for the treatment of periodontally involved and special needs patients and employment in a variety of settings. (offered spring) (qualifies as a CAP experience).

DNTH 419. Community Oral Health Practice. 3 Credits. 
Seminar/field experience 6 hours; 3 credits. Prerequisite: DNTH 413. Field experiences designed to prepare the dental hygienist to function as an oral health practitioner, educator, and resource person in a variety of community health settings. Emphasis is on providing educational and therapeutic services for special populations including geriatric, institutionalized, hospitalized, and cognitively, developmentally and physically challenged individuals. Participation in planning, implementing and evaluating a community health project. Design and delivery of a poster session is required. (offered spring).

DNTH 440T/540. Telehealthcare Technology. 3 Credits. 
Lecture 3 hours, 3 credits. Prerequisite: permission of the instructor. This course examines the concept, global impact, and trends in telehealthcare technology on the client/patient, multidisciplinary practitioners, and various healthcare systems. Emphasis is on effective evidence-based decision making to reduce errors in patient care, promote care in remote or underserved geographical areas, and the ability to retrieve and evaluate healthcare information that improves access to quality, cost effective health care. (Offered spring, summer).

DNTH 450. International Dental Hygiene. 3 Credits. 
Prerequisite: DNTH 414. International locations are determined by the School of Dental Hygiene in conjunction with the Office of Study Abroad. Program participation requires approval from the School of Dental Hygiene and the Office of Study Abroad. Provides an on-location international experience in oral care delivery, practice and regulation, and dental hygiene education. Students will be required to give presentations, review the dental care delivery system, and explore how the cultural beliefs and practices affect oral health, dental care seeking behaviors, and the oral health status of the population. Orientations will be conducted prior to travel.

DNTH 451. Ergonomics and Exercises for Static Posture Occupations. 1 Credit. 
Lecture, .5 hr; lab, .5 hr. 1 credit. Prerequisite: permission of instructor. This active participation course is designed for persons who work in static posture professions (e.g., dental hygienists, laboratory and computer office personnel) and who seek to practice ergonomic body mechanics and exercise therapies to prevent musculoskeletal disorders and repetitive strain injuries. Topics include biomechanics, types of disorders and injuries, risk management, comprehension and demonstration of full body exercises with emphasis on core strength training and self monitoring. (Offered summer only.).

DNTH 495. Topics in Dental Hygiene. 1-3 Credits. 
1-3 credits. Prerequisite: permission of the instructor. Seminars on selected topics in dental hygiene. Topics vary by semester. (offered fall, spring, summer).

DNTH 497/597. Independent Study in Dental Hygiene. 1-6 Credits. 
1-6 credits. Prerequisite: permission of instructor. Independent reading and study on a topic selected under direction of a faculty member. (Offered fall, spring, summer).

ECE - Elect Computer Engineering

ELECT COMPUTER ENGINEERING Courses

ECE 111. Information Literacy and Research for Electrical and Computer Engineering. 2 Credits. 
Lecture, 2 hours; 2 credits. Prerequisite: ENGN 110 and MATH 162M. An introductory course for ECE students that explores information literacy in terms of information basics, information need, searching, locating, and evaluating information sources, citing and ethics of information in relation to development and implementation of electrical and computer engineering projects.

ECE 200. Engineering Analysis Using Modern Software Tools for Electrical and Computer Engineers. 3 Credits. 
Lecture 3 hours; 3 credits. This course is only open to BSEE or BSCE majors. Corequisite: MATH 307. Prerequisite: a grade of C or better in MATH 212. This course will introduce the fundamental mathematical and scientific concepts with emphasis on applications specifically for electrical and computer engineering students needed for their intended major. The course will also introduce some important software tools such as MATLAB and EXCEL which will be integrated with the analysis. Topics will include: Integration and differentiation, Leibnitz’s rule, Linear algebra, Vector spaces, Complex variables, Matrices, Ordinary Differential Equations, Plotting and Linear Regression, Data Analysis, Discrete Mathematics, Aspects of Graph Theory and Proof-by-Induction, Laplace Transforms, and Aspects of Vector Calculus.

ECE 201. Circuit Analysis. 3 Credits. 
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in MATH 212. Corequisites: ECE 200, MATH 307 and PHYS 232N. An introduction to the analysis and theory of linear electrical circuits. Topics include: component definitions and connection rules; development of network reduction techniques; formulation of mesh-current and node-voltage equations; network theorems, operational amplifiers; introduction to energy storage elements; time-domain analysis of first-order and second-order electrical circuits; sinusoidal steady state analysis, phasors and frequency domain circuit analysis. (offered fall, spring).
ECE 202. Circuits, Signals and Linear Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in ECE 201. Corequisite: ECE 287. Frequency-domain analysis of linear electrical circuits. Laplace transforms and Laplace transform analysis of circuits. Linear systems. Classification of systems; Time and frequency domain representation of linear systems. Methods of linear system analysis including convolution and Laplace transforms. Frequency domain representation of signals including Fourier series, Fourier transforms. Application of analysis techniques to electrical filters, signal sampling, and signal multiplexing. (offered fall, spring, summer).

ECE 241. Fundamentals of Computer Engineering. 4 Credits.
Lecture 3 hours; recitation 1 hour; laboratory 2 hours; 4 credits. Prerequisites: CS 150 and MATH 211. This course develops the foundation of computer engineering for computer engineers as well as an introductory breadth appropriate for electrical engineers. Class topics include computer information, digital design (combinational and sequential circuits), computer organization, and assembly language. The laboratory includes building digital circuits (focusing on programmable logic), assembly language programming, and system interfacing. The use of a hardware description language is employed in class and the laboratory to specify, simulate and synthesize digital circuits.

ECE 287. Fundamental Electric Circuit Laboratory. 2 Credits.
Lecture 1 hour; laboratory 3 hours; 2 credits. Corequisite: ECE 202. Prerequisites: CS 150 and ECE 201. Objective of course is to provide students in electrical and computer engineering with a 'hands-on' introduction to selected topics in electrical engineering. Students will use basic circuit analysis skills and programming skills to design, build, and test electrical networks interfacing to a micro-controller. Labs also will provide an introduction to basic measurement techniques and electrical laboratory equipment (power supplies, oscilloscopes, voltmeters, etc).

ECE 303. Introduction to Electrical Power. 3 Credits.
Lecture 3 hours; 3 credits. This course is only open to BSEE or BSCE majors. Prerequisite: a grade of C or better in ECE 201. Basic concepts of AC systems, sinusoidal steady state response, phasor analysis, AC steady state power, single-phase and three-phase networks, electric power generation, transformers, transmission lines, electric machinery and the use of power. Energy resources, power plants, renewable energy, electric safety. (offered fall, summer).

ECE 304. Probability, Statistics, and Reliability. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in MATH 212. Introduction to probability, probability models, discrete and continuous random variables, statistics, reliability and stochastic processes. Examples discussed will focus on computer and electrical engineering applications that include both component- and system-level aspects. MATLAB and/or EXCEL are introduced as tools for data analysis, computation and simulation.

ECE 313. Electronic Circuits. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Prerequisite: a grade of C or better in ECE 202. Corequisite: ECE 241. Introduction to junction diodes, bipolar junction transistors (BJTs), MOS field-effect transistors (MOSFETs) and operational amplifiers (op-amps). Design concepts for discrete analog circuits with diodes, BJTs, MOSFETs and op-amps. The lab component introduces design and techniques for implementation of analog circuits.

ECE 332. Electromagnetics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in ECE 202. An introduction to electromagnetic waves, wave propagation in various media; propagation across interfaces; propagation in waveguides and transmission lines. Antennas and radiation from antennas.

ECE 333. Microelectronic Materials and Processes. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in ECE 202. An introduction to fundamental properties of semiconductors and device fabrication processes. The topics include crystal structure, bonding, energy bands, doping, carrier densities, mobility, resistivity, recombination, drift, and diffusion. Basic structure and operations of p-n junctions, BJTs and MOSFETs and their fabrication processes, including solid state diffusion, thermal oxidation of silicon, ion implantation, chemical vapor deposition, thin film deposition, photolithography and etching. (offered fall).

ECE 340. Digital Circuits. 4 Credits.
Lecture 3 hours; recitation 1 hour; laboratory 2 hours; 4 credits. Prerequisites: a grade of C or better in CS 150 and MATH 211. Not open to electrical and computer engineering majors. This course develops the foundations of computer engineering for students outside of electrical and computer engineering. Class topics include computer information, digital design (combinational and sequential circuits), and computer organization. The laboratory includes building digital circuits (focusing on programmable logic), and system interfacing. The use of a hardware description language is employed in class and the laboratory to specify, simulate and synthesize digital circuits.

ECE 341. Digital System Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in ECE 241. Tools and methodologies for top-down design of complex digital systems. Important topics include minimization, mixed logic, algorithmic state machines, microprogrammed controllers, creating and using a gold model, data and control path design and data movement and routing via buses. Design methodologies covered include managing the design process from concept to implementation, verification using a gold model, and introduction to design flow. A hardware description language is used extensively to demonstrate models and methodologies, and is also used in design exercises and projects. (offered fall, spring).

ECE 346. Microcontrollers. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in ECE 241. A hands-on approach to microprocessor and peripheral system programming, I/O interfacing, and interrupt management. A sequence of projects requiring the programming and integration of a microcontroller-based system is conducted. Project assignments require a microcontroller evaluation board and accessories supplied by the student. (offered spring).

ECE 355. Introduction to Networks and Data Communications. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing in an engineering discipline or related work experience. This course introduces the basic concepts of computer networks and data communications. Topics include protocol layers, the application layer, the transport layer, the network layer, the data link layer, and the physical layer. Students will learn how to use network packet analyzer tools to do simple network analysis. Emphasis is on gaining an understanding of network engineering as it relates to hardware configuration, system operation and maintenance.

ECE 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Career Management in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (offered fall, spring, summer) (qualifies as a CAP experience).

ECE 368. Student Internship. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: Approval by department and Career Management. Available for pass/fail grading only. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. (qualifies as a CAP experience).
ECE 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: approval by department and Career Management. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students an opportunity to gain short duration career related experience. (Qualifies as a CAP experience).

ECE 371. Circuits and Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in ECE 201. Corequisite: ECE 287. Frequency-domain analysis of linear electrical circuits. Laplace transforms and Laplace transform analysis of circuits. Classification of systems; Time and frequency domain representation of linear systems. Methods of linear system analysis including convolution and Laplace transforms. Frequency domain representation of signals including Fourier series, Fourier transforms. Application of analysis techniques to electrical filters, signal sampling, and signal multiplexing. This course is intended for non-ECE students. (Offered fall, spring, summer).

ECE 381. Introduction to Discrete-time Signal Processing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ECE 202 with a grade of C or better. This course covers fundamental digital signal processing techniques that form the basis for a wide variety of application areas. Topics include discrete-time signals and systems, time domain analysis, solutions of difference equations, Z-transform analysis, discrete Fourier transforms (DFT), sampling theorem, transform analysis of linear time-invariant systems, structure of discrete-time systems and introduction to power spectrum estimation. (Offered fall).

ECE 387. Microelectronics Fabrication Laboratory. 3 Credits.
Lecture 1 hour; laboratory 4 hours; 3 credits. Prerequisite: ECE 332. The laboratory course will enable students to fabricate MOSFETs, MOS capacitors, diffused resistors and p-n diodes. Students will be trained to operate the equipment required for wet and dry oxidation, thin film deposition, solid state diffusion, photolithography, and etching. Students will fabricate and analyze the devices by current-voltage characteristic, capacitance-voltage characteristic, film thickness and conductivity measurements. (Offered spring).

ECE 395. Topics in Electrical and Computer Engineering. 1-3 Credits.
Lecture 1-3 hours; 1-3 credits. Prerequisite: departmental approval.

ECE 396. Topics in Electrical and Computer Engineering. 1-3 Credits.
Lecture 1-3 hours; 1-3 credits. Prerequisite: departmental approval.

ECE 403/503. Power Electronics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 307 and ECE 303. Power electronics provides the needed interface between an electrical source and an electrical load and facilitates the transfer of power from a source to a load by converting voltages and currents from one form to another. Topics include: alternating voltage rectification, Pulse Width Modulation (PWM), DC converters (Buck, Boost, Buck-Boost, Cuk and SEPIC converters), negative feedback control in power electronics, isolated switching mode power supply, flyback and forward power supply, solid state power switches, AC inverter.

ECE 404/504. Electric Drives. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ECE 201 and ECE 303. Electric drives efficiently control the torque, speed and position of electric motors. This course has a multi-disciplinary nature and includes fields such as electric machine theory, power electronics, and control theory. Topics include: switch-mode power electronics, magnetic circuit, DC motor, AC motor, Brushless DC motor, induction motor, speed control of induction motor, vector control of induction motor, stepper-motor.

ECE 406/506. Introduction to Visualization. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CS 250. Introduction to computer graphics and visualization with emphasis on using 3D application programmer's interface (API) libraries. It covers mathematical foundations, rendering pipeline, geometrical transformations, 3D viewing and projections, shading, texture mapping, and programmable shaders. Various visualization applications are covered.

ECE 407/507. Introduction to Game Development. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CS 361 or equivalent. An introductory course focused on game development theory and practices using Microsoft XNA Game Studio with emphasis on educational game development. Topics covered include game architecture, computer graphics theory, user interaction, audio, high level shading language, animation, physics, and artificial intelligence. Students will develop games related to science (e.g., physics, chemistry, and biology), technology, engineering, and mathematics (STEM) education. The developed games can run on a variety of platforms, including Microsoft Windows, Xbox 360, Windows Phone 7 and Zane Digital Media Player. (Cross-listed with MSIM 408/508).

ECE 441/541. Advanced Digital Design and Field Programmable Gate Arrays. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ECE 341. Course will provide a description of FPGA technologies and the methods using CAD design tools for implementation of digital systems using FPGAs. It provides advanced methods of digital circuit design, specification, synthesis, implementation and prototyping. It introduces practical system design examples. (Offered spring).

ECE 443/543. Computer Architecture. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ECE 304 and 484W. Prerequisites: ECE 341, 346. An introduction to computer architectures. Analysis and design of computer subsystems including central processing units, memories and input/output subsystems. Important concepts include datapaths, computer arithmetic, instruction cycles, pipelining, virtual and cache memories, direct memory access and controller design. (Offered fall).

ECE 451/551. Communication Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ECE 304 and a grade of C or better in ECE 202. Fundamentals of communication systems engineering. Modulation methods including continuous waveform modulation (amplitude, angle). Design of modulation systems and the performance in the presence of noise. Communication simulation exercises through computer experiments.

ECE 452/552. Introduction to Wireless Communication Networks. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ECE 304 and a grade of C or better in ECE 202. Introduction to current wireless network technologies and standards. The radio spectrum and radio wave propagation models (pathloss, fading, and multipath). Modulation, diversity, and multiple access techniques. Wireless network planning and operation. Current and emerging wireless technologies (satellite systems, vehicular/sensor networks).

ECE 454/554. Introduction to Bioelectronics. 3 Credits.
Lecture and design 3 hours; 3 credits. Prerequisites: PHYS 111N or higher; MATH 200 or higher. Covers the electrical properties of cells and tissues as well as the use of electrical and magnetic signals and stimuli in the diagnosis and treatment of disease. Typical topics to be covered include basic cell physiology, endogenous electric fields in the body, electrocardiography, cardiac pacing, defibrillation, electrotherapy, electroporation, electrotherapy in wound healing. In addition, ultrashort electrical pulses for intracellular manipulation and the application of plasmas to biological systems will be covered. (Cross-listed with ENGR 454/554).

ECE 455/555. Network Engineering and Design. 3 Credits.
Lecture and design 3 hours; 3 credits. Prerequisite: ECE 355 or permission of the instructor. This course is an extension of ECE 355 into a semester long project. Emphasis is on gaining an understanding of networking design principles that entails all aspects of the network development life cycle. Topics include campus LAN models and design, VLANs, internetworking principles and design, WAN design, design of hybrid IP networks, differentiated vs. integrated services, traffic flow measurement and management.
ECE 458/558. Instrumentation. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: PHYS 102N, PHYS 112N, or PHYS 232N and a grade of C or better in ECE 202. Computer interfacing using a graphical programming language with applications involving digital-to-analog conversion (DAC), analog-to-digital conversion (ADC), digital input output (DIO), serial ports, and the general-purpose instrument bus (GPIB). Analysis of sampled data involving the use of the probability density function, mean and standard derivations, correlations, and the power spectrum. (offered spring, summer).

ECE 461/561. Automatic Control Systems. 3 Credits.

ECE 462/562. Introduction to Medical Image Analysis (MIA). 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in MATH 212. Introduction to basic concepts in medical image analysis. Medical image registration, segmentation, feature extraction, and classification are discussed. Basic psychophysics, fundamental ROC analysis and FROC methodologies are covered.

ECE 472/572. Plasma Processing at the Nanoscale. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ECE 323. The science and design of partially ionized plasma and plasma processing devices used in applications such as etching and deposition at the nanoscale. Gas phase collisions, transport parameters, DC and RF glow discharges, the plasma sheath, sputtering, etching, and plasma deposition.

ECE 473/573. Solid State Electronics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ECE 313, ECE 323 and ECE 332. The objective of this course is to understand basic semiconductor devices by understanding semiconductor physics (energy bands, carrier statistics, recombination and carrier drift and diffusion) and to gain an advanced understanding of the physics and fundamental operation of advanced semiconductor devices. Following the initial introductory chapters on semiconductor physics, this course will focus on p-n junctions, metal-semiconductor devices, MOS capacitors, MOS field effect transistors (MOSFET) and bipolar junction transistors.

ECE 474/574. Optical Fiber Communications. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ECE 323 and MATH 312. Electromagnetic waves; optical sources including laser diodes; optical amplifiers; modulators; optical fibers; attenuation and dispersion in optical fibers; photodectors; optical receivers; noise considerations in optical receivers; optical communication systems.

ECE 478/578. Lasers and Laser Applications in Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ECE 313 and MATH 312. Introduction and review of electromagnetic theory; atomic physics and interactions of radiation with matter; two- and three-level systems, and rate equations; gain; single- vs. multimode; homogeneous and inhomogeneous broadening; Q-switching and mode-locking; semiconductor lasers; vertical cavity surface emitting lasers (VCSELs); Raman spectroscopy, remote sensing and ranging; holography; and laser ablation.

ECE 483/583. Embedded Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ECE 346. This course covers fundamentals of embedded systems: basic architecture, programming, and design. Topics include processors and hardware for embedded systems, embedded programming and real time operating systems.

ECE 484W. Computer Engineering Design I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in ENGL 211C or 221C or 231C; ECE 341 and ECE 346. Emphasis is on the design of a complex digital circuit and microcontroller interfacing. A semester-long project involves the design, simulation and testing of a digital architecture and software GUI. Several moderate scale digital modules are designed, simulated, implemented and tested during the semester. Design methods incorporate CAD design tools, implementation with advanced integrated circuit technology and contemporary software tools. Oral and written communication skills are stressed. This is a writing intensive course. (offered fall) (qualifies as a CAP experience).

ECE 485W. Electrical Engineering Design I. 3 Credits.
Lecture 1 hour; laboratory 4 hours; 3 credits. Prerequisites: ECE 313 and a grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C. Corequisites: ECE 303, ECE 304, ECE 323 and ECE 332. Part one of the senior capstone design experience for electrical engineering majors. Lectures focus on providing professional orientation and exploration of the design process. Small group design projects focus on the development of electronic subsystems. Oral and written communication skills are stressed. (This is a writing intensive course.) (qualifies as a CAP experience) (offered fall, spring).

ECE 486. Preparatory ECE Senior Design II. 1 Credit.
Lecture 1 hour; 1 credit. Co- or Pre-requisite: ECE 484W or ECE 485W. The course is the preparatory, proposal development section of part two of the senior capstone design experience for electrical and computer engineering majors. The course will focus on developing a proposal for a group design project. The senior design projects aim at developing engineering design skills of a complete computer/electrical system. Elements of developing a successful proposal are emphasized along with written communication skills. Industry-sponsored multi-disciplinary design projects are an option. (qualifies as a CAP experience).

ECE 487. ECE Senior Design II. 2 Credits.
Lecture 1 hour; laboratory 2 hours; 2 credits. Prerequisite: ECE 486. Part two of the senior capstone design experience for electrical and computer engineering majors. In this course, students will implement the design proposal developed in ECE 486. The senior design projects aim at developing engineering design skills of a complete computer/electrical system. Oral and written communication skills are emphasized. Industry-sponsored multi-disciplinary design projects are an option.

ECE 488. ECE Senior Design III. 3 Credits.
Lecture 2 hours, Lab 3 hours; 3 credits. Prerequisite: ECE 487. Part Three of the senior capstone design experience for electrical and computer engineering majors. Individual and group design projects focus on the development of complete electrical and computer systems. Oral and written communication skills are stressed. Industry-sponsored multi-disciplinary design projects are an option. (qualifies as a CAP experience).
ECON 491. Microelectronics Design Experience. 3 Credits.
Lecture 1 to 3 hours; 1 to 3 credits each semester. Prerequisite: departmental approval.

ECE 495/595. Topics in Electrical and Computer Engineering. 1-3 Credits.
Lecture 1 to 3 hours; 1 to 3 credits each semester. Prerequisite: departmental approval.

ECE 496/596. Topics in Electrical and Computer Engineering. 1-3 Credits.
Lecture 1 to 3 hours; 1 to 3 credits each semester. Prerequisite: departmental approval.

ECON - Economics

ECONOMICS Courses

ECON 200S. Basic Economics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. The course presents an overview of the major principles of micro- and macroeconomics. Topics include opportunity costs, supply and demand, competition and monopoly, national income determination, creation of money and credit, and international problems. No credit will be given to students pursuing majors in the College of Business and Public Administration.

ECON 201S. Principles of Macroeconomics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: qualifying Math SATI/ACT score, qualifying score on the Math placement test, or completion of MATH 102M or higher. Development of the theory of supply and demand, and their interaction in a market economy. Classical, Keynesian, and monetarist explanations of inflation and unemployment are presented and analyzed. Emphasis is placed on income determination, fiscal policy, monetary policy, and the issue of government efforts to improve economic performance.

ECON 202S. Principles of Microeconomics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: qualifying Math SATI/ACT score, qualifying score on the Math placement test, or completion of MATH 102M or higher. An examination of how individuals and businesses interact in a market economy. Emphasis is placed on consumer behavior, price and output decisions of firms, the economic efficiency of the resulting allocation of society’s resources, and the gains from international trade and impact of trade barriers.

ECON 226S. Honors: Principles of Macroeconomics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Open only to students in the Honors College. A special honors section of ECON 201S.

ECON 227S. Honors: Principles of Microeconomics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Open only to students in the Honors College. A special honors section of ECON 202S.

ECON 301. Managerial Economics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ECON 201S or equivalent. Emphasis is placed on the global context of managerial decisions.

ECON 304. Intermediate Microeconomic Theory. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: MATH 162M or equivalent, ECON 2025 with a grade of C or better, and a declared major in the University or permission of the Dean’s Office of the CBPA. Develops methods of microeconomic analysis beyond the principles level. Major emphasis is placed on consumer behavior and demand, production and cost, market organization, distribution theory, and welfare theory.

ECON 305. Intermediate Macroeconomic Theory. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: MATH 162M or equivalent, ECON 2025 with a grade of C or better in each, and a declared major in the University or permission of the Dean’s Office of the CBPA. Provides an overall "big picture" of the economy, focusing on the central problems of unemployment, inflation, the business cycle, and economic growth. Important issues include national income accounting, fiscal policy, monetary policy, the money supply, the money market, interest rates, saving rates, labor markets, productivity, budget surpluses/deficits, trade deficits, and exchange rates.

ECON 368. Internship. 1-3 Credits.
1-3 credits. Prerequisites: ECON 304 and 305 and a declared major in the University or permission of the Dean’s Office of the CBPA; credit for internship and practicum in economics may not both be applied to meeting requirements for the major. Supervised internship in economics. Approval for enrollment and allowable credits is determined by the department CAP advisor and the Career Management Center in the semester prior to enrollment. (qualifies as a CAP experience).

ECON 369. Practicum in Economics. 3 Credits.
3 credits. Prerequisites: ECON 304 and ECON 305; BNAL 206 and BNAL 306, and a declared major in the University or permission of the Dean’s Office of the CBPA. Application of economic theory and principles to a practical problem of interest to a sponsoring community organization. (qualifies as a CAP experience).

ECON 395. Topics in Economics. 1-3 Credits.
Lecture and discussion 1-3 hours; 1-3 credits. Prerequisites: ECON 200S, 201S, or 202S, and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of selected topics, the title of which will appear in the course schedule.

ECON 396. Topics in Economics. 1-3 Credits.
Lecture and discussion 1-3 hours; 1-3 credits. Prerequisites: ECON 200S, 201S, or 202S, and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of selected topics, the title of which will appear in the course schedule.

ECON 400. Research Methods in Economics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ECON 201S, ECON 202S, BNAL 206 and BNAL 306, and a declared major in the University or permission of the Dean’s Office of the CBPA. Provides students with a set of practical skills useful in economic research and in the presentation of research results. Includes training in the use of various software packages, the Internet, and regression analysis for conducting economic research.
ECON 402/502. Transportation Economics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ECON 202S (or 200S and permission of the instructor) and a declared major in the University or permission of the Dean’s Office of the CBPA. A survey of the transportation system in the United States including its development, pricing, and regulation. Special attention is given to railroads, highways, pipeline, water and air transportation; and the roles that these modes of transportation play in economic development.

ECON 407W/507. Labor Market Economics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: grade of C or better in ENGL 211C or 221C or 231C; ECON 202S (or 200S and permission of the instructor), and a declared major in the University or permission of the Dean’s Office of the CBPA. Economic analysis of various facets of labor markets. Emphasis is placed on the analysis of labor supply, labor demand, wage determination, earnings differentials and inequality, occupational choice, human capital investment, labor market discrimination, mobility and immigration, impact of unions, and unemployment. (This is a writing intensive course.).

ECON 421/521. Public Economics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ECON 201S, 202S and a declared major in the University or permission of the Dean’s Office of the CBPA. This course examines the interaction between government and the economy, with particular emphasis on the role of the federal government. Topics that address the motivation for government involvement in the economy include market failure, income inequality, and redistribution of income. Specific programs studied include Medicare/Medicaid, welfare programs, and the social security system.

ECON 425/525. Introduction to Mathematical Economics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ECON 201S, 202S, MATH 200 or equivalent and a declared major in the University or permission of the Dean’s Office of the CBPA. The course focus is on the use of differential and integral calculus, matrix algebra, difference equations and classical optimization theory in the presentation and development of economic theory.

ECON 427/527. Industrial Organization and Public Policy. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: MATH 200 or equivalent, ECON 202S (or 200S and permission of the instructor) and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of market structures and the conduct and performance of business firms in different market structures. The emphasis is on the theory and measurement of industrial concentration and public policy responses to industrial concentration.

ECON 431/531. Money and Banking. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ECON 201S, 202S and a declared major in the University or permission of the Dean’s Office of the CBPA. Examines the nature and functions of money and credit, the commercial banking system, the Federal Reserve System, the quantity theory of money, the theory of income determination, the balance of payments and exchange rates, and the history of monetary policy in the United States.

ECON 435/535. Health Economics: A Global Perspective. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ECON 202S and a declared major in the University or permission of the Dean’s Office of the CBPA. This course introduces the student to the economics of health care and the application of health economics to health care problems, the issues surrounding those problems, and the potential solutions to those problems. The course will emphasize institutional features of the health care industry, the market for health care, the political economy of health care, and government involvement in the delivery of health care. Further, the course will survey the delivery of health care in other countries and provide a global perspective on selected health care issues such as AIDS, water and air quality, and the aging of the population.

ECON 436. Sports Economics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ECON 202S or equivalent and a declared major in the University or permission of the Dean’s Office of the CBPA. This course introduces the student to the economics of sports in America. The course will emphasize institutional features of the sport industry. Specific topics included are: sports franchises as profit maximizing firms; monopoly and antitrust rules as applied to the sports industry; public finance of sports; costs and benefits of a sports franchise to a city: the labor economics of professional sports; discrimination in sports; and the economics of college sports. This course may not be applied toward the major in economics as an economics elective or toward the minor in economics or the M.A. in economics. (It could, however, be used as a non-economics elective for the major.).

ECON 444/544. Development of the American Economy. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ECON 201S, 202S and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of the economic development of the United States from colonial times to the present. An analytical course concerned with the application of economic theory in the study of the growth and development of the American economy.

ECON 445W/545. Urban Economics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: grade of C or better in ENGL 211C or 221C or 231C; ECON 202S (or 200S and permission of the instructor), and a declared major in the University or permission of the Dean’s Office of the CBPA. An analysis of the economic factors which give rise to the formation of urban centers and which contribute to the following problems: urban poverty, housing conditions, traffic congestion, and the fiscal crisis faced by modern cities. (This is a writing intensive course.).

ECON 447W/547. Natural Resource and Environmental Economics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in ENGL 211C or 221C or 231C, ECON 202S (or 200S and permission of the instructor), and a declared major in the University or permission of the Dean’s Office of the CBPA. Topics discussed include conservation and scarcity, market failure, fishery management, benefit-cost analysis, water resource development, environmental quality, recreation, energy, and marine resources. (This is a writing intensive course.).

ECON 450. International Economics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ECON 201S, 202S and a declared major in the University or permission of the Dean’s Office of the CBPA. An analysis of the principles of trade theory and policy with an overall exposition of the principles of international finance. The main objective of the course is to provide knowledge of analytical tools used by economists in analyzing contemporary international economic problems.

ECON 451/551. History of Economic Thought. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ECON 201S, 202S and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of the history of economic thought with attention to the economic ideas and philosophy of Adam Smith, David Ricardo, Karl Marx, J.M. Keynes and other major figures in the development of economics.
ECON 454W/554. Economic Development. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: grade of C or better in ENGL 211C or 221C or 231C, ECON 201S and 202S and junior standing or permission of the chief departmental advisor, and a declared major in the university or permission of the Dean’s Office of the CBPA. This course is intended to provide an introduction to the problems of economic development in the Third World, including the problems of economic growth, income distribution, poverty, urbanization, uneven development, agricultural policy, economic planning, industrial policy, trade policy, balance of payments, finance, and currency crises. To illustrate these issues we will examine the problems of certain individual countries, such as Brazil, Korea, Philippines, India, Mexico, Kenya, Indonesia, and Thailand. The course tries to strike a balance between economic theory and institutional economics. (This is a writing intensive course.)

ECON 455/555. Comparative Economic Systems. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ECON 201S, ECON 202S and a declared major in the university or permission of the Dean’s Office of the CBPA. This course examines and compares different economies from around the world, including such economies as the UK, France, Germany, Sweden, Japan, India, Korea, Russia, and China. Students look at the economic growth, GDP per capita, unemployment, inflation, income distribution, economic efficiency, institutions, policies, industrial structure, legal infrastructure, and international trade of these economies. Students study the functioning of markets and the problems of market and government failure. The course addresses the question, what is the best way to organize society?

ECON 456/556. Economics of Information, the Internet and E-Commerce. 3 Credits.
Lecture and laboratory 3 hours; 3 credits. Prerequisites: ECON 201S, ECON 202S and a declared major in the university or permission of the Dean’s Office of the CBPA. Outlines the economic principles of information that underpin the Internet and e-commerce. Considers auctions, economies of scale and scope, data mining, price discrimination, product bundling, versioning, networking, the diffusion of innovations and intellectual property as they are utilized on the Internet and in e-commerce. Taught in a microcomputer laboratory.

ECON 494. Federal Reserve Policy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ECON 305, 431, permission of the instructor and a declared major in the university or permission of the Dean’s Office of the CBPA. The course covers in detail the process of monetary policymaking under varying economic conditions. Students research and analyze current and near-term economic conditions with a focus on forming a prediction regarding the future path of monetary policy. The course culminates with selected students’ participation in the annual Federal Reserve Challenge competition.

ECON 495/595. Selected Topics in Economics. 1-3 Credits.
1-3 credits. Prerequisites for 495: ECON 201S and 202S, permission of the instructor, and a declared major in the university or permission of the Dean’s Office of the CBPA. Prerequisite for 595: permission of the instructor. Taught on an occasional basis. A study of selected topics, the title of which will appear in the course schedule.

ECON 499. Readings in Economics. 3 Credits.
3 credits. Prerequisites: ECON 201S, 202S and 304, 305, senior standing, and a declared major in Economics and permission of the Chief Departmental Advisor. Designed to provide the advanced student in economics an opportunity to do independent study under the guidance of a member of the faculty. Prior approval of the advisor is required.

EET - Electrical Engineering Techno

ELECTRICAL ENGINEERING TECHNO Courses

EET 110. Electrical Circuits I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 162M. Fundamentals of electrical circuits including basic electrical parameters and variables, circuit laws and theorems, mesh analysis, node analysis, Thévenin’s and Norton’s Theorems, capacitance, inductance, magnetism, and elementary RC and RL transients.

EET 120. Logic Circuits and Microprocessors. 3 Credits.
Lecture 3 hours; 3 credits. An introduction to logic circuits, Boolean algebra, digital interface devices, combinational and sequential logic design, and microprocessor fundamentals. (Offered Fall.)

EET 125. Logic And Microprocessor Laboratory. 2 Credits.
Lecture 1 hour; laboratory 2 hours; 2 credits. Pre-or corequisite: EET 120. Team-oriented experiments in basic combinational and sequential logic circuits and an introduction to fundamental microprocessors. (offered fall).

EET 195. Topics. 1-3 Credits.

EET 200. Electrical Circuits II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 163 and a grade of C or better in EET 110. A continuation of EET 110 with emphasis on steady-state ac circuit analysis and applications. Topics include alternating current and voltage, phasors and complex numbers and their applications in circuit analysis, series and parallel resonance, complex power, and polyphase circuits. (offered Fall).

EET 205. Circuits Laboratory. 2 Credits.
Lecture 1 hour; laboratory 3 hours; 2 credits. Pre- or corequisite: EET 200. Electrical laboratory instruction including test equipment, measurements, data analysis, verification of circuit laws, formal report preparation, and circuit construction.

EET 210. Electronic Devices and Circuits I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: EET 110. Semiconductor devices with emphasis on dc circuit models and switching applications. Diodes, bipolar junction transistors, field effect transistors, and special devices. Analysis and design of stable biasing circuits. Frequency response analysis.

EET 220. Electronic Devices and Circuits II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: EET 200 and 210. A continuation of EET 210 with emphasis on ac circuit models and applications using the hybrid-pi model. Common emitter, common base, common collector, common source, common gate, and common drain amplifier configurations. Negative and positive feedback, operational amplifiers, oscillators, and power supplies.

EET 225. Electronics Laboratory. 2 Credits.
Lecture 1 hour; laboratory 3 hours; 2 credits. Prerequisite: EET 205. Pre- or corequisite: EET 220. Practical design, construction, testing and troubleshooting of electronic circuits including single stage and multistage amplifiers, power amplifiers, linear integrated circuits, and control devices.

EET 230. Microcomputer Methods. 4 Credits.
Lecture 2 hours; laboratory 4 hours; 4 credits. Prerequisites: EET 110 and MATH 162M. An introductory course studying computing issues and problem solving for EET (and ComET) majors. Emphasis is placed on modern problem solving and algorithm development applied to engineering computer applications and hardware using the C++ programming language. Topics include: top-down refinement, procedure definition, looping, pointers, hardware I/O, masking and bit manipulation, and extensive program documentation.

EET 295. Topics. 1-3 Credits.
EET 300. Advanced Circuit Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 211 and a grade of C or better in EET 200. General analysis of linear networks using classical methods, Laplace transforms and computer-aided methods. Topics include single element transients, first- and second-order circuits, transfer function analysis, and phasor analysis, Bode plots and waveform analysis. Circuit analysis software is used to support the analytical methods.

EET 305. Advanced Technical Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: at least one course covering both differential and integral calculus. Analytical and computational methods to support upper-division engineering technology courses. Topics include linear algebra, ordinary differential equations of engineering systems, elements of vector analysis, introductory statistical concepts, and software usage/development. MATLAB is used throughout the course to support all the topics.

EET 310. Digital Electronics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: EET 120, 125, 205, and 210. First course in an upper division sequence in digital electronics circuits and systems. Topics include a comprehensive treatment of Boolean algebra, computer arithmetic, and applications of digital integrated circuits.

EET 315. Digital Electronics Laboratory. 2 Credits.
Lecture 1 hour; laboratory 3 hours; 2 credits. Pre- or corequisite: EET 310. Application oriented experiments and design problems in digital electronics. Prototype construction using wire-wrap methods will also be covered. Formal written reports will be required.

EET 320. Microprocessors and Microcontrollers. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: EET 310. Second lecture course in the upper-division digital electronics sequence. Software/hardware design of microprocessors and microcontrollers, interface circuitry, and system designs. Organization, architecture, software programming, simulation, peripheral interface designs, communication protocols, and the application of microprocessor-based systems design.

EET 325. Microprocessor Laboratory. 2 Credits.
Lecture 1 hour; laboratory 3 hours; 2 credits. Pre- or corequisite: EET 320. Hands-on implementation of microprocessor and microcontroller systems and peripheral interfacing experiments. Emphasis is placed on the hardware and software design and firmware construction in embedded system applications.

EET 330. Linear Electronics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: EET 220 and 300. General treatment of linear electronic circuits with emphasis on the operational amplifier and integrated circuits derived from it. Topics include various amplifier circuits and converters, integrators and differentiators, comparators, waveform generators, active filters, A/D and D/A converters, and regulators. Design of circuits to meet specifications. Circuit analysis software is used to validate some of the designs.

EET 335. Linear Electronics Laboratory. 2 Credits.
Lecture 1 hour; laboratory 3 hours; 2 credits. Pre- or corequisite: EET 330. Design testing, and evaluation of “linear” electronic circuits and subsystems with primary emphasis on circuit components and modules. Measurement techniques, instrumentation and error analysis. Simulation of circuit designs using Multisim including transient response and frequency response.

EET 340. Transmission Networks. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: EET 300. Transmission line theory including both transients and steady-state conditions. Smith chart and its application to RF design. Introduction to electric and magnetic fields and plane wave propagation. Circuit analysis software is used to support the analytical methods.

EET 350. Fundamentals of Electrical Technology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: EET 205 and 355. A comprehensive course in electrical engineering technology for nonmajors. Major topics are basic electricity (AC and DC), circuit analysis, linear electronics and digital electronics. Not open to electrical engineering technology majors except as a substitute for EET 110 in special cases.

EET 355. Electrical Laboratory. 1 Credit.
Laboratory 2 hours; 1 credit. Pre- or corequisite: EET 350. Selected electrical laboratory topics for nonmajors including basic measurements, instrumentation, operational amplifiers, digital circuits, and rotating machines. Not open to electrical engineering technology majors.

EET 360. Electrical Power and Machinery. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: EET 200 or EET 350. A study of synchronous and asynchronous AC machinery, DC machinery, power distribution systems, and instrumentation.

EET 365W. Electrical Power and Machinery Laboratory. 2 Credits.
Lecture 1 hour; laboratory 2 hours; 2 credits. Prerequisites: A grade of C or better in ENGL 211C or 221C or 231C; EET 205 or 355; Pre- or corequisite: EET 360. A laboratory course dealing with electrical power and machinery as covered in EET 360. Formal written reports will be required. (This is a writing intensive course.)

EET 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Career Management in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (Qualifies as a CAP experience).

EET 368. Internship. 1-3 Credits.
1-3 credits. Prerequisite: approval by department and Career Management. Available for pass/fail grading only. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. (Qualifies as a CAP experience).

EET 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: approval by department and Career Management. Available for pass/fail grading only. (Qualifies as a CAP experience).

EET 370T. Energy and the Environment. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisites: PHYS 101N or PHYS 111N or PHYS 226N or PHYS 231N. A study of existing and new energy production methods, energy as a purchased/traded commodity, physics of energy, positive and negative implications for the environment, economics of energy alternatives, and resulting human/social impacts.

EET 395. Topics. 1-3 Credits.

EET 396. Topics. 1-3 Credits.

EET 400. CAD Electronics. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: EET 310, 320, 325. An upper-division study of the fundamentals of electronic schematic capture, circuit simulation, and printed circuit board design using microcomputers. Schematic symbols, simulation models, and pcb modules are developed by the students.

EET 405. Introduction to Local Area Networks. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: EET 320 and 325. Design, installation, and management of PC based local area networks. Topics include network topology (Ethernet, token ring, FDDI, etc.), network interface card installation and configuration, client/server hardware, LAN/WAN concepts, bridges and routers, and software controls.
EET 410. Communication Principles. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: EET 300 or 350. Fourier series and transforms, spectral analysis, signal transmission, analog modulation and detection methods, sampling theorem, pulse and digital modulation methods, and time-division and frequency-division multiplexing.

EET 415. Programmable Machine Controls. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: EET 310, or prerequisite: EET 350. Application oriented experiments and design problems in programmable controller setup and programming techniques with emphasis on practical applications. Computer assignments include ladder programs simulation.

EET 420. Advanced Logic Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: EET 310. Advanced digital logic design and circuit reduction. Topics include lattice structure, symmetry recognition and simplification, threshold logic, design-for-testing techniques, shortest path test planning, adaptive testing, and fuzzy logic. Computer assignments include design simulation and testing.

EET 430. Automatic Control Systems. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: EET 305, 330, 360, 365W. A study of modern control devices and applications including electrical, mechanical and pneumatic types.

EET 434. Introduction to Senior Project. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: senior standing. This course must be taken in the semester prior to the Senior Project course. A collection of career-related topics pertaining to engineering technology. Topics include engineering codes and standards, engineering ethics, technical report writing, job search and resume writing techniques, patents and property rights, and professional engineering licensure. The course concludes with the selection of the student’s project topic for the subsequent Senior Project course.

EET 440. High Frequency and Microwave Technology. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: EET 340. Methods for generating, transmitting, and detecting signals in the VHF, UHF, and microwave frequency ranges. Laboratory will emphasize high frequency and microwave measurements including bridges, slotted lines, spectrum analyzers and reflectometers.

EET 450. Digital Control Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: EET 305, 320, 325, 330. A study of modern digital control systems including the sampling process of linear systems, modeling of discrete systems, z-transforms, analysis of discrete systems, signal conversion, the digital computer as controller, feedback and cascade compensation, and hardware and software for digital control systems.

EET 460. Modern Communication Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: EET 410. Overview of the principles of satellite communications, television systems, fiber optics, antennas and other relevant topics.

EET 470. Microprocessor Based Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: EET 310, 320, and 325. High level and low level programming languages that relate to advanced microprocessor/microcontroller embedded system designs. The low level assembly language in embedded systems, and high level C and C++ languages in a PC that are used in real time controls and communications are the focus of this course. Topics include the related hardware/software interfacing built between different devices such as memories, ADCs, and display modules; mathematical utilities routines development; wireless RF modules; communication in serial and parallel formats; and communications protocols.

EET 480W. Senior Project. 3 Credits.
Lecture 1 hour; laboratory 6 hours; 3 credits. Prerequisites: EET 434, senior standing and faculty approval; grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C. Individual projects performed under the direction of a sponsoring faculty member. Projects may involve analytical and/or experimental results. Formal written reports will be required. (qualifies as a CAP experience) (This is a writing intensive course.).

EET 485. Electrical Power Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: EET 360. Fundamentals of electrical power transmission and distribution systems. Transformer operation/application, balanced/unbalanced loads, power factor correction, per-unit system system applications, fault calculations, power quality, over-current protection, relay construction/application, lighting system design, grounding, and introduction to the National Electric Code.

EET 490. Computer-Aided Circuit Simulation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: EET 300, 330, 335, and 340. Advanced treatment of computer-aided analysis software such as Multisim and MATLAB and the applications to electronic circuit analysis and design. Topics include non-linear models, distortion analysis, spectral analysis, and Monte Carlo techniques.

EET 495. Topics in Electrical Engineering Technology. 1-3 Credits.
1-3 credits each semester. Prerequisite: junior standing.

EET 496. Topics in Electrical Engineering Technology. 1-3 Credits.
1-3 credits each semester. Prerequisite: junior standing.

ELS - Educ Leadership Services

EDUC LEADERSHIP SERVICES Courses
ELS 496/596. TOPICS IN EDUCATION. 1-3 Credits.

ELS 497/597. Topics in Education. 1-3 Credits.
1-3 credits each semester. Prerequisite: permission of the instructor. The College of Education offers selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly.

ELS 498/598. Topics in Education. 1-3 Credits.
1-3 credits each semester. Prerequisite: permission of the instructor. The College of Education offers selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly.

ENGL - English

ENGLISH Courses
ENGL 110C. English Composition. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: Students must have passed the Writing Sample Placement Test before registering for ENGL 110C. The principal objective of the course is to prepare students to be effective writers of the kinds of compositions they will be called on to produce during their college careers. By the end of the course, students should be more mature in their understanding and use of language, should develop efficient writing processes, and should know and demonstrate the qualities of effective composition in a given rhetorical situation.
ENGL 112L. Introduction to Literature. 3 Credits.
Lecture 3 hours; 3 credits. This course shows the general student how to understand the distinctive forms and meanings of poems, plays, short stories and fiction, and key notions such as character, plot, and imagery. Through critical reading, analysis, class and small group discussions, formal essays and examinations, students will develop an understanding of the effective use of the English language and its contribution to our cultural heritage. Works include women and minority writers.

ENGL 114L. American Writers, American Experiences. 3 Credits.
Lecture 3 hours, 3 credits. This course introduces the student to the diversity of American culture as depicted in American literature. Works include minority and women writers and provide visions of city, frontier and regional life; ethnic and racial immigrant experiences; religion, democracy, and capitalism. A student with credit for ENGL 144L cannot receive credit for ENGL 114L.

ENGL 126C. Honors: English Composition. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: Students must have passed the Writing Sample Placement Test before registering for ENGL 126C. Special honors sections of ENGL 110C.

ENGL 127L. Honors: Introduction to Literature. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. A special honors section of ENGL 112L.

ENGL 200. Introduction to English Studies. 1 Credit.
Lecture 1 hour; 1 credit. A preview of the subject areas of an English major (literature, linguistics, creative writing, journalism, professional writing, rhetoric, teaching) with attention to the student’s curricular and career planning. Required of English majors. Open to anyone interested in English.

ENGL 211C. English Composition. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: ENGL 110C with a grade of C or higher. This course emphasizes critical reading, thinking, and writing. Students are introduced to principles of analysis and argumentation and taught the requisite skills that will allow them properly to paraphrase, summarize, and synthesize research in the common modes of academic writing. The course culminates in the preparation of a fully-documented research paper. A student with credit for ENGL 111C cannot receive credit for ENGL 211C.

ENGL 221C. Introduction to Writing in Business, Education and Social Sciences. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: ENGL 110C. This course emphasizes critical reading, thinking, and writing as they apply to business, education, and the social sciences. Students are introduced to principles of analysis and argumentation and taught the requisite skills that will allow them properly to paraphrase, summarize, and synthesize research as it applies to and is most commonly found in business, education, and the social sciences. The course culminates in the preparation of a fully-documented research paper.

ENGL 231C. Introduction to Technical Writing. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: ENGL 110C. This course emphasizes critical reading, thinking, and writing as they apply to the technical and scientific disciplines. Students are introduced to principles of analysis and argumentation and taught the requisite skills that will allow them properly to paraphrase, summarize, and synthesize research as it applies to and is most commonly found in the technical and scientific communities. The course culminates in the preparation of a fully-documented research paper. A student with credit for ENGL 131C cannot receive credit for ENGL 231C.

ENGL 300. Introduction to Creative Writing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and ENGL 110C and ENGL 211C. A creative writing workshop course combining individual conferences with the instructor and class discussion of student writing. Students will work in fiction, non-fiction, poetry, and drama.

ENGL 301. Introduction to British Literature I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement and 6-hour General Education composition requirement or permission of the instructor. A survey of British literature from the beginning of textual records until 1780, focusing on the development of different literary forms in their social and cultural contexts.

ENGL 302. Introduction to British Literature II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement and 6-hour General Education composition requirement or permission of the instructor. A survey of British literature after 1780, focusing on the development of different literary forms in their social and cultural contexts.

ENGL 303. Shakespeare's Histories and Comedies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement, 6-hour General Education composition requirement, and three additional hours in literature or permission of instructor. An exploration of Shakespearean comedy and historical drama, through plays such as, A Midsummer Night’s Dream, The Merchant of Venice, As You Like It, Measure for Measure, and The Tempest for the former; Richard II, Henry IV, and Richard III for the latter.

ENGL 304. Shakespeare’s Tragedies and Poetry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement, 6-hour General Education composition requirement, and three additional hours in literature or permission of instructor. A study of Shakespearean poetry and tragedy through the longer poems and the sonnets for the former, and through plays such as Romeo and Juliet, Hamlet, Othello, Macbeth, and Antony and Cleopatra for the latter.

ENGL 307T. Digital Writing. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisites: ENGL 110C and 211C. This course introduces students to issues of writing in various digital environments like web pages, email, blogs, wikis, and discussion boards. It also introduces fundamentals of hypertext authoring, digital and visual rhetoric, and image manipulation.

ENGL 312. The Film. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and three semester hours in English. A multimedia course using slides, video cassettes, and 16mm films to increase appreciation of film as an art form, particularly as a narrative medium. Attention is given to all the elements of filmmaking (including directing, acting, writing, editing, visual composition, and music), especially as they contribute to the way films tell stories. After students become familiar with film techniques, they study eight to ten films for their narrative methods.

ENGL 325. Introduction to Rhetorical Studies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and 6-hour General Education composition requirement. Explores the nature and function of rhetoric and its contribution to the knowledge-making enterprises of English studies and other disciplines. Students will use that ‘Lens’ to assess the effectiveness of their own language practices.

ENGL 327W. Advanced Composition. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in ENGL 110C plus a grade of C or better in one of the following: ENGL 211C, 221C, or 231C. This course emphasizes development of a mature, professional style in expository writing by study of the stylistic and analytical principles underlying effective prose writing. (This is a writing intensive course.).
ENGL 333. Introduction to Critical Theory. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: three hours of literature, or permission of the instructor. This course introduces students to theories about the nature and value of literature and gives them experience in applying such theories to specific literary texts.

ENGL 334W. Technical Writing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and a grade of C or better in ENGL 110C and ENGL 211C or 221C or 231C. This course provides the student with a working knowledge of various types of technical communication, including the writing of proposals, instructions, and reports for both the specialist and the nonspecialist. (This is a writing intensive course.).

ENGL 335. Editing and Document Design. 3 Credits.
Lecture/lab 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and six hours in English to include ENGL 334W or 380. This course provides practical experience in copy editing and includes an analysis of technical formats used in journalism, business, industry, and government. It features hands-on lab work in document presentation, page layout, and design.

ENGL 336. The Short Story. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement and 6-hour General Education composition requirement or permission of the instructor. A genre course on the art of the short story. Students will explore how the writers’ careful selection of detail creates meanings that emerge through the characters, plot, setting, diction, point of view, and other elements of fiction.

ENGL 340. American Drama. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement and 6-hour General Education composition requirement or permission of the instructor. A study of American drama from its beginnings to the present day. The course includes plays from the eighteenth and nineteenth centuries, with a generous selection from the twentieth and twenty-first centuries.

ENGL 342. Southern Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement and 6-hour General Education composition requirement or permission of the instructor. A survey of the literature of the American South from William Byrd to Ernest Gaines. Selected writings are studied not only for their literary value but also as expressions of evolving regional attitudes to be evaluated in terms of the mainstream of American culture.

ENGL 345. American Literature to 1860. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement and 6-hour General Education composition requirement or permission of the instructor. The course presents a survey of American literature from the beginning to the Civil War. Among the authors studied are Franklin, Bryant, Poe, Hawthorne, Emerson, Thoreau, and Melville.

ENGL 346. American Literature Since 1860. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement and 6-hour General Education composition requirement or permission of the instructor. The course focuses upon major movements and writers. Among the authors studied are Whitman, Twain, James, and Frost.

ENGL 349. The Contemporary American Novel. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement and 6-hour General Education composition requirement or permission of the instructor. Reading and analysis of American novels published since 1945. Emphasis on contemporary themes and techniques.

ENGL 350. Aspects of the English Language. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and junior standing or permission of the instructor. An introduction to the grammar of mainstream English. Primary focus is on analyzing English sentences, including study of parts of speech, phrases, clauses, and sentence types.

ENGL 351. Fiction Workshop. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, ENGL 300 and junior standing or permission of the instructor. This course introduces students to theories about the nature and value of literature and gives them experience in applying such theories to specific literary texts.

ENGL 352. Poetry Workshop. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, ENGL 300 and junior standing or permission of the instructor. This course introduces students to theories about the nature and value of literature and gives them experience in applying such theories to specific literary texts.

ENGL 354. Client-Based Research Writing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ENGL 110C and ENGL 211C. This is a client-based research course that aims to provide students with workplace research experience. The primary objective is to teach students the rhetorical nature of conducting and reporting research in professional contexts for multiple audiences. Research methods such as surveys, interviews, and observations will be covered.

ENGL 360. World Masterpieces I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement, 6-hour General Education composition requirement, and three additional hours in literature or permission of instructor. An introduction to selected major works in translation from the beginnings of world literature through the early seventeenth century. Works will be chosen that illustrate the relationship of literature to cultural tradition in different global regions.

ENGL 363. World Masterpieces II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literature way of knowing requirement, 6-hour General Education composition requirement, and three additional hours in literature or permission of instructor. An introduction to selected major works in translation from the seventeenth century to the present day. Works from a variety of world cultures will be used to explore the interaction between literature and society in centuries of expanding global awareness.

ENGL 366. Public Journalism in the Digital Age. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ENGL 110C and ENGL 211C and either ENGL 380 or ENGL 382 or COMM 260 or permission of the instructor. Course exposes students to conventional and alternative approaches to reporting in public journalism. Students use a combination of conventional and alternative approaches as they research, interview, and construct stories to tell the story of a local community issue or concern. (Cross-listed with COMM 366).

ENGL 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: passing score on the Writing Sample Placement Test, approval by the department and Career Management. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and the Cooperative Education program prior to the semester in which the work experience is to take place. (Qualifies as a CAP experience).
ENGL 368. Writing Internship. 1-3 Credits.
3 credits. Prerequisites: passing score on the Writing Sample Placement Test, 15 hours in English, to include ENGL 327W or ENGL 334W, recommended. Permission of department internship coordinator required. Available for pass/fail grading only. May be repeated for a total of six credits. A structured work experience involving writing and/or editing. A paper, a portfolio of work done, and satisfactory evaluations by supervisor and cooperating faculty member are required. No more than two English internships (chosen among 368, 369, 468, or cooperative education courses of similar content) may be counted towards a degree. (qualifies as a CAP experience).

ENGL 369. Research Practicum. 3 Credits.
3 credits. Prerequisites: passing score on the Writing Sample Placement Test, ENGL 327W or 335, plus 15 hours in major (with sufficient coursework in an involved emphasis) and approval by faculty practicum advisor. This course enables students to combine traditional research in scholarship with real world applications. Can be repeated for credit. (qualifies as a CAP experience).

ENGL 370. English Linguistics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, junior standing or permission of the instructor. A survey of topics in English linguistics. Topics include the sound system, the structure of words, the ways in which words and phrases form meaningful utterances, the structure of conversations, differences between spoken and written English, language acquisition by children, language variation, and language in its social context.

ENGL 371W. Communication Across Cultures. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, a grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C or permission of the instructor. An interdisciplinary examination of intercultural communication through film and readings in anthropology, linguistics, and world literature, this course will compare the values, beliefs, social structures and conventions of a number of cultures to those of the U.S. This course is part of the World Cultures interdisciplinary minor. (This is a writing intensive course.).

ENGL 380. Introduction to Journalism and News Writing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and six semester hours in English. Class discussions focus on media literacy and on the role of media in society. Students learn and practice elements of news writing, including writing leads, organizing stories, reporting techniques, and interviewing. Story assignments will come from handouts, press releases, press conferences, speeches, and public meetings. Some assignments will be done under simulated deadline pressure in the computer lab.

ENGL 381. Public Relations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and six semester hours in English. This course is designed to introduce the student to certain disciplines related to the public relations process. The emphasis is equally distributed between the handling of written materials and the dynamics of group relations, i.e., the publicist and the person or persons whom he or she is representing. The course is to be distinguished from advertising by virtue of its emphasis upon public service, particularly the continued need for the free flow of information in the democratic process.

ENGL 382. Reporting News for Television and Digital Media. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ENGL 110C and ENGL 211C. This course focuses on writing for television news and producing online news reports. Students will strengthen their journalistic skills and learn the importance of writing clearly for a viewing audience while working under newsroom deadlines. By the end of the course, students should feel confident in producing accurate, detailed reports for both television news and online news sites.

ENGL 385. Topics in English. 1-3 Credits.
1-3 credits each semester. Prerequisites: passing score on the Writing Sample Placement Test and three semester hours in literature. A study of selected topics designed for nonmajors or for elective credit within a major. These courses will appear in the course schedule and will be more fully described in information distributed to all academic advisors.

ENGL 386. Topics in English. 1-3 Credits.
1-3 credits each semester. Prerequisites: passing score on the Writing Sample Placement Test and three semester hours in literature. A study of selected topics designed for nonmajors or for elective credit within a major. These courses will appear in the course schedule and will be more fully described in information distributed to all academic advisors.

ENGL 403/503. Medieval Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of instructor. An introduction to representative works of English literature (some in translation) from Beowulf through Chaucer’s Canterbury Tales, The Book of Margery Kempe, The Second Shepherd’s Play, and Malory’s Morte d’Arthur. Students will discover how medieval literature has contributed to and continues to compound modern conceptions of reading, writing, and aesthetics.

ENGL 406/506. The Teaching of Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: One 300-level Literature course or permission of the instructor. This course is designed to provide an intensive examination of issues, approaches, and methods utilized in the teaching of literature, particularly literature written for children and young adults.

ENGL 407/507. Chaucer’s Canterbury Tales. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and three semester hours in literature. A study of The Canterbury Tales with an introduction to Middle English language and culture.

ENGL 414/514. Motherhood: Texts and Images. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ENGL 211C or equivalent. This course examines the role of the mother, the experience of mothering and the institution of motherhood through a number of disciplinary and theoretical lenses. It considers how motherhood functions to women’s advantage or disadvantage, in professional and economic areas as well as the mother’s ideological construction in public discourse, imagery, nonfiction, and film.

ENGL 416/516. English Renaissance Drama. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of instructor. An extensive survey of the secular national dramas of Renaissance England that were written and performed by Shakespeare’s contemporaries in London between 1576 and 1642. Students study the literary features, social contexts and ideological underpinning of representative works by Kyd, Marlowe, Jonson, Webster, Ford, and others.

ENGL 418W/518. Jewish Writers. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: one 300-level literature course or permission of instructor and a grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C. This course introduces students to the Jewish literary traditions and the cultural trends shaping these traditions and the Jewish identity. It will examine the impact of such issues as immigration, family, marginality, the Holocaust, assimilation, cultural diversity, feminism, Israel, race and religion. The readings will consist of short stories, poems, essays, novels, and autobiographical writing. (This is a writing intensive course.).
ENGL 421/521. British Literature 1660-1800. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of instructor. British literature from the Restoration of the monarchy after the Civil War and Puritan Commonwealth to the French Revolution, focusing on how cultural changes (legalized female actors, commercialized printing, colonialism, and growing market capitalism) interacted with the flowering of satire and scandalous theatrical comedy, and the emergence of modern literary forms (periodical journalism, 'picturesque' poetry, and the novel).

ENGL 423/523. The Romantic Movement in Britain. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of instructor. A study of the literature written in Britain between 1770-1830, focusing on how the literary experiments and innovations of poets like Blake, Wordsworth, Coleridge, Byron, Percy Shelley, Keats, Burns, and Barbauld, and of novelists like Mary Shelley, Radcliffe, and Scott interacted with cultural changes such as the Industrial Revolution, the French Revolution, and the emergence of feminism and working-class radicalism.

ENGL 424/524. Short Works in Narrative Media. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and ENGL 312 or permission of instructor. This course examines short narrative forms in film, video, literature, and multimedia. Individual works will be considered, both for the specific ways in which they make use of the medium in which they appear and for the qualities they share. Particular emphasis will be placed on the relationship between writing and visualization. Students will engage in both creative and critical exercises, so as to see the process from both sides: creative production and critical analysis.

ENGL 425/525. World Film Directors in Context. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and ENGL 312 or permission of instructor. This course will explore the works of several directors from a variety of world regions. Films will be considered as part of the body of work by each director, as well as in the context of the regions' other arts, traditions, popular culture, and historical events. Students will become familiar, therefore, with aesthetic, literary, sociological, anthropological and historical approaches to the analysis of film.

ENGL 427W/527. Writing in the Disciplines. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: a grade of C or better in ENGL 110C and ENGL 211C or ENGL 221C or ENGL 231C. This is a discussion/workshop course emphasizing contexts and strategies of text production in and across academic disciplines and professional settings. Students will produce a variety of texts designed to meet the needs of specific audiences. (This is a writing intensive course.)

ENGL 432/532. Origins and Early Development of the British Novel to 1800. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of instructor. A study of early novels and how the novel developed from other traditions such as the epic, romance, criminal biography, and travel narrative.

ENGL 433/533. Victorian Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of instructor. A study of the chief writers and the cultural and philosophical backgrounds of the Victorian era, touching on the changes from the early to the later part of the period. Works analyzed include fiction, nonfiction prose, and poetry.

ENGL 435W/535. Management Writing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, a grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C, and six semester hours in English, to include ENGL 334W or permission of the instructor. This course focuses on writing as a means of making and presenting management decisions. (This is a writing intensive course.)

ENGL 438/538. The Twentieth-Century British Novel. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of instructor. Offered in specific sections of 1900-1945, 1945-present, 1900-present. Major British novels are studied.

ENGL 439/539. Writing in Digital Spaces. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ENGL 307T or equivalent or permission of instructor. This course offers composition practice in critical contemporary digital environments. Readings and discussions will provide the history of and context for these digital spaces. Students should expect to participate in, develop, and engage in critical discussions about a range of digital spaces, including websites, wikis, blogs, and various interactive media.

ENGL 440/540. General Linguistics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and three semester hours in English excluding ENGL 110C. A comprehensive view of the study of linguistics and an introduction to the linguist's approach to language.

ENGL 441/541. American Travel Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ENGL 112L or ENGL 114L. This is a survey course that examines the American experience, American identity and American culture through travel "texts" that include prose, poetry, art, and film. The course takes an interdisciplinary American Studies approach, using lenses such as race, gender, and class.

ENGL 442/542. English Grammar. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ENGL 350 or permission of instructor. This course is a descriptive study of English grammar as it relates to the contexts in which it is used, with implications for grammar pedagogy and TESOL classrooms.

ENGL 443/543. Southern and African American English. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on Writing Sample Placement Test and one 300-level linguistics course or permission of instructor. This course focuses on the linguistic diversity of the American South, with emphasis on Southern White and African American varieties of English. It examines variation and change in the phonological, lexical, and syntactic systems, language contact, and dialect discrimination directed towards Southern and African American speakers, both inside and out of the South.

ENGL 444/544. History of the English Language. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level linguistics course or permission of the instructor. A study of the origins and development of the English language. Primary focus is on the internal history, emphasizing the continuity and change in successive stages of the language.

ENGL 446/546. Studies in American Drama. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and 300-level literature course, ENGL 340 preferred. With rotating topics, this course will pursue particular themes or periods in American drama and theater. Potential areas of inquiry might include melodrama, the early transatlantic stage, rise of stage realism, age of O'Neill, or the contemporary drama.
ENGL 447/547. The American Novel to 1920. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course, ENGL 346 preferred. Examination of the American novel from its origins in the late eighteenth century through World War I. The course will emphasize the novel as a genre, cultural trends during the period, and such relevant literary modes as romanticism, realism, and naturalism.

ENGL 448/548. The American Novel 1920 to Present. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course, ENGL 346 preferred. Examination of the American novel from the end of World War I to the present day. The course will emphasize formal issues related to the genre of the novel and relevant literary and cultural trends during the period including modernism and postmodernism.

ENGL 449/549. Craft of Literary Nonfiction. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: six semester hours in literature or three semester hours in literature and ENGL 300 or permission of the instructor. A detailed study of technique in literary nonfiction with an emphasis on the memoir, the essay, reportage, and travel narrative. Especially designed for, but not limited to, creative writing students; supplements the creative writing workshops.

ENGL 450/550. American English. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level linguistics course or permission of the instructor. This course explores the geographic, social, and stylistic diversity of English spoken in the U.S. It also examines how perceptions of dialect diversity affect access to education and other socioeconomic opportunities.

ENGL 451/551. Advanced Fiction Workshop. 3 Credits.
Lecture 3 hours; 3 credits (may be repeated for credit). Prerequisites: passing score on the Writing Sample Placement Test, ENGL 351 and junior standing or permission of the instructor. A detailed study of the principles and techniques learned in ENGL 351, especially on the writing and criticism of the short story, the novella, and the novel.

ENGL 452/552. Advanced Poetry Workshop. 3 Credits.
Lecture 3 hours; 3 credits (may be repeated for credit). Prerequisites: passing score on the Writing Sample Placement Test, ENGL 352 and junior standing or permission of the instructor, based on writing samples submitted. This course, an expansion of the principles and techniques learned in ENGL 352, focuses on the writing and criticism of the short story, the novella, and the novel.

ENGL 453/553. The Teaching of Composition, Grades 6-12. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and twelve semester hours in English to include ENGL 327W. A study of the theory and practice of teaching writing. Special attention will be given to the ways effective teachers allow theories and experiences to inform their pedagogical strategies.

ENGL 454/554. Creative Nonfiction. 3 Credits.
Lecture 3 hours; 3 credits (may be repeated for credit). Prerequisites: passing score on the Writing Sample Placement Test, ENGL 327W or 351 and junior standing or permission of the instructor, based on writing samples submitted. A course in the techniques of writing nonfiction imaginatively within a factual context. Emphasis is placed on regard for reader psychology, selection of significant detail, and the development of a style at once lively and lucid. Assignments are made individually with regard to the student’s field of interest/history, biography, science, politics, informal essay, etc. Advice is given on the marketing of promising manuscripts.

ENGL 455/555. The Craft of Fiction. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, six semester hours in literature or three semester hours in literature and ENGL 300, and junior standing or permission of the instructor. A detailed study of fictional technique in the novel and short story, with emphasis on character development, conflict, point of view, plot, setting, mood, tone, and diction. Especially designed for, but not limited to, creative writing students; supplements the creative writing workshops.

ENGL 457/557. The Craft of Poetry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, six semester hours in literature or three semester hours in literature and ENGL 300, and junior standing or permission of the instructor. A detailed study of technique in poetry, with emphasis on form, imagery, rhythm, and symbolism. Especially designed for, but not limited to, creative writing students; supplements the creative writing workshops.

ENGL 459W/559. New Literatures in English. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in ENGL 211C or 221C or 231C. A study of the diverse “new” literatures in English of the Caribbean and Central America, Africa, India, as well as of Canada and Australia, in their current historical and political contexts. (This is a writing intensive course.)

ENGL 460/560. The Literature of Fact. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of instructor. A detailed study of the literary tradition of nonfiction.

ENGL 461/561. Poetry of the Early Twentieth Century. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of instructor. Works of major British and American poets from 1900 to 1945 are studied.

ENGL 462/562. Sacred Texts as Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, literary way of knowing requirement and six-hour general education composition requirement or permission of instructor. A study of how sacred texts reshape a variety of literary forms (narratives, drama, poetry, biography, history). The course may focus on a particular text or a collection of texts drawn from a variety of faith traditions and/or spiritual experiences.

ENGL 463W/563. Women Writers. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in ENGL 211C or ENGL 221C or 231C and one 300-level literature course or permission of instructor. This course applies concepts developed through women’s studies scholarship and feminist literary criticism to works by women writers of different races and cultures. (This is a writing intensive course.).

ENGL 465W/565. African American Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C, passing score on the Writing Sample Placement Test and one 300-level literature course or permission of instructor. An investigation of the ways in which literary movements, historical events, social transitions, and political upheavals have influenced African-American literature. (This is a writing intensive course.)

ENGL 466W/566. Asian American Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: a grade of C or better in ENGL 110C, ENGL 211C or ENGL 221C or ENGL 231C, and any 300-level literature course. The course introduces students to key texts in Asian American literature, supported by critical studies (and on occasion films) to interrogate the theme of Asian American identities in their multiple forms. The course will examine sociopolitical histories that undercut the literature and the contributions of Asian American writers to the breadth and scope of American as well as global literatures today.
ENGL 468. Advanced Writing Internship. 3 Credits.
3 credits. Prerequisites: passing score on the Writing Sample Placement Test and 15 hours in English, to include ENGL 327W or ENGL 334W recommended. Permission of department internship coordinator required. A structured work experience involving writing and editing in a professional setting.

ENGL 472/572. America in Vietnam: The Government and the Media in Conflict. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, ENGL 110C and junior standing, or permission of the instructor. An examination of America’s role in Vietnam and how the interaction of the media with political and military leaders shaped the subsequent foreign policy decisions and military conduct.

ENGL 473/573. Writing with Video. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ENGL 307T. This course engages students in a comprehensive exploration of video as a rhetorical narrative medium, with emphasis on the actual production of video work. Writing is also integrated into the production process. From brainstorming to storyboarding and critique, writing is positioned as an integral part of the course.

ENGL 474. Teaching Literature with Film. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: ENGL 112L and ENGL 114L. The purpose of this course is to help English teachers effectively use films or movies to teach their literature courses. The course will examine appropriate aspects of film and literary theory as well as provide students practice in teaching literature with film.

ENGL 477/577. Language, Gender and Power. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, junior standing and three upper division hours in English, or permission of the instructor. This interdisciplinary course explores how language reflects and interacts with society, with particular emphasis on gender and race. Topics include definition, framing, stereotypes, language taboos, and powerful and powerless language.

ENGL 480/580. Investigative Reporting Techniques. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and ENGL 380. This course will acquaint students with electronic research skills essential to the practice of print and broadcast journalism. With a focus on both high tech and traditional research skills, the course will provide instruction in the uses of computer-assisted reporting, spreadsheet and database analysis programs, locating databases compiled by government agencies, filing requests through the Freedom of Information Act, and following paper trails to records of courthouse, property, and corporate public filings.

ENGL 481/581. Advanced Public Relations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and ENGL 381 or permission of the instructor. Designed to strengthen the skills of the public relations practitioner with emphasis on the creative aspects of problem solving. Attention is given to crisis public relations, interviewing, speech writing, and graphics.

ENGL 482/582. Sports Journalism. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test, ENGL 110C and ENGL 211C. This is primarily a sportswriting course in which students are introduced to various types and styles of sports stories that are representative of sports journalism as practiced in newspapers and magazines. The course also explores the role of sports in American society.

ENGL 483W/583. Advanced News Reporting. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in ENGL 110C and 211C; ENGL 380 or permission of instructor. Designed to familiarize students with the fundamentals of beat reporting and its practice in the multi-media environment of "converged" newsrooms. The course emphatically focuses on writing but also provides instruction on how the tools and techniques of multimedia platforms are used to enhance storytelling. Emphasis is also placed on accessing information through web-based resources and government documents. (This is a writing intensive course.).

ENGL 484/584. Feature Story Writing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and nine semester hours in English. Course includes discussion and practice of writing a variety of newspaper and magazine feature stories. Students will write and critique stories on people, places, businesses, trends, and issues. Assistance is given in the marketing of manuscripts.

ENGL 485W/585. Editorial and Persuasive Writing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and nine semester hours in English. Course includes practice of crafting a persuasive argument, content analyses of Pulitzer Prize-winning editorials and columns, and guest lectures by newspaper editors. (This is a writing intensive course.).

ENGL 486/586. Media Law and Ethics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and junior standing or permission of the instructor. Designed to introduce students to components of communication law that may affect the professional writer or broadcaster. Topics include defamation, constitutional constraints, freedom of information, privacy, copyright, and telecommunications law. Ethical issues relating to the mass media will also be examined.

ENGL 492/592. Modern World Drama. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of the instructor. A study of selected major dramatic works of the world, including the non-Western world. Works written in languages other than English will be read in translation. The course begins with Ibsen in the late nineteenth century and continues to the present.

ENGL 493/593. Contemporary World Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing score on the Writing Sample Placement Test and one 300-level literature course or permission of the instructor. Fiction, poetry, and plays written during the last fifty years in nations throughout the world. Most texts will have been written originally in languages other than English. Emphasis is on the universality of the human experience as depicted in a variety of cultures.

ENGL 495/595. Topics in English. 1-3 Credits.
1-3 credits each semester. Prerequisites: passing score on the Writing Sample Placement Test and three semester hours in literature. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, because of their specialized nature, may not be offered regularly. These courses will appear in the course schedule and will be more fully described in information distributed to all academic advisors.
ENGL 496/596. Topics in English, 1-3 Credits.
1-3 credits each semester. Prerequisites: passing score on the Writing Sample Placement Test and three semester hours in literature. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, because of their specialized nature, may not be offered regularly. These courses will appear in the course schedule and will be more fully described in information distributed to all academic advisors.

ENGL 497. Tutorial Work in Special Topics in English. 1-3 Credits.
3 credits each semester. Prerequisites: passing score on the Writing Sample Placement Test, senior standing and approval of the chair of the Department of English. Independent study in literature, writing, or linguistics according to a program of reading and/or writing designed under the direction of an instructor.

ENGL 498. Tutorial Work in Special Topics in English. 1-3 Credits.
3 credits each semester. Prerequisites: passing score on the Writing Sample Placement Test, senior standing and approval of the chair of the Department of English. Independent study in literature, writing, or linguistics according to a program of reading and/or writing designed under the direction of an instructor.

ENGN - Engineering

ENGINEERING Courses

ENGN 108. Introduction to Engineering. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: MATH 102M. A one-semester course covering topics in civil, environmental, mechanical, electrical and computer engineering. For non-engineering majors.

ENGN 110. Explore Engineering and Technology. 2 Credits.
Laboratory 3 hours; recitation 1 hour; 2 credits. Corequisite: MATH 162M. A series of projects to introduce a variety of engineering and technology disciplines; hand-on experiences with selected engineering problems and issues; team approach to managing engineering projects; discovering the unknown, formulating solutions, designing, manufacturing, and testing; emphasis on learning modules, communication and presentation skills, creativity and innovation.

ENGN 301. e-Engineering. 3 Credits.
Lecture 1 hour; laboratory 3 hours; 2 credits. Prerequisite: junior standing. A study of the theory and best practices involved in conducting physically-dispersed engineering team collaboration. Student teams will apply e-Engineering concepts using a distributed product engineering scenario. Course module topics include project management, virtual teaming, distributed collaborative tools, and scenario-specific engineering skills.

ENGN 401. Fundamentals of Engineering Review. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: junior standing. This course prepares the engineering and engineering technology students for the Fundamentals of Engineering Examination.

ENGN 454/554. Introduction to Bioelectrics. 3 Credits.
Lecture and design 3 hours; 3 credits. Prerequisites: PHYS 111N or higher; MATH 200 or higher. Covers the electrical properties of cells and tissues as well as the use of electrical and magnetic signals and stimuli in the diagnosis and treatment of disease. Typical topics to be covered include basic cell physiology, endogenous electric fields in the body, electrocardiography, cardiac pacing, defibrillation, electrotherapy, electropolation, electrotherapy in wound healing. In addition, ultrashort electrical pulses for intracellular manipulation and the application of plasmas to biological systems will be covered. (Cross-listed with ECE 454/554).

ENGN 495. Multidisciplinary Topics in Engineering and Technology. 1-3 Credits.
1-3 credits. Special interdisciplinary or multidisciplinary topics of interest with emphasis on emerging areas in engineering.

ENGT - Engineering Technology

ENGINEERING TECHNOLOGY Courses

ENGT 111. Engineering Technology Information Literacy/Research. 2 Credits.
Lecture 2 hours. 2 credits. Prerequisite: ENGN 110. Fundamental information literacy and research as applied to engineering technology. Course includes where and how to efficiently locate and critically evaluate technical information. Proper use of technical information and the associated ethical and legal issues will be examined.

ENMA - Engineering Management

ENGINEERING MANAGEMENT Courses

ENMA 301. Introduction to Engineering Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. An introduction to principles of management and organizational behavior as they apply to the engineering profession. Special emphasis on team building, quality leadership and planning, handling personnel issues, and marketing technology. Group exercises, case studies, and extensive writing and speaking assignments.

ENMA 302. Engineering Economics. 3 Credits.
Lecture 3 hours; 3 credits. Introduction to cost estimation, accounting and financial metrics. Valuation techniques, time value of money, and cash flow analysis. Economic analysis of engineering alternatives including depreciation effects, income taxes, inflation, engineering management capital budgeting of projects, portfolio and public sector projects.

ENMA 401. Project Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Foundations, principles, methods, and tools for effective design and management of projects in technology-based organizations. Project organization, life cycle, planning, scheduling, implementation, control, and evaluation. Special emphasis on project leadership, problem solving in team-based projects, project failure analysis, and advanced methods. Use of case studies and applications to reinforce course concepts. Students design and plan a project from concept through completion including proposal and post-project analysis.

ENMA 415/515. Introduction to Systems Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Introduces the principles, concepts and process of systems engineering. Examination of problem formulation, analysis, and interpretation as they apply to the study of complex systems. Emphasizes the design nature of systems engineering problem solving, and includes case studies stressing realistic problems. Development of system requirements, system objectives, and the evaluation of system alternatives.
ENMA 421. Decision Techniques in Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A systematic approach to the formulation of problems, the generation and evaluation of alternatives, and the selection and implementation of courses of action applied to engineering design, manufacturing, and management decisions. Topics include: goals and objectives; variables and relations; constraints and feasibility; uncertainty and risk; models and optimization; data and information; analysis and simulation. Case studies requiring oral presentations and written reports are used to emphasize concepts and systems analysis.

ENMA 422/522. Global Engineering and Project Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Foundation, principles, methods and tools for effective design and management of projects in global transnational technology-based organizations. Project organization, life cycle, planning, scheduling, implementation, control, and evaluation. Use of case studies and oral and written reports to reinforce course concepts.

ENMA 424. Risk Analysis in Engineering Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. The systematic approach to analysis of risk as applied to engineering, production, and management decisions is covered. The objectives of this course are (1) to gain an appreciation of the strategic importance of risk analysis and its relationship to other business and engineering functions and (2) to develop a working knowledge of the concepts and methods in risk analysis.

ENMA 444. Leading Engineering Organizations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course is designed to expose prospective engineers to leadership theories and practices encountered in the day-to-day activities of an engineering manager. Topics include leadership definitions, in-depth explorations of relevant leadership theories, exposure to concepts and practices that include the definition and exercise of power, leading empowered teams, communicating effectively, appreciating diversity and applying the ethical foundations of leadership. Students will identify, explore and analyze best practices of leaders and are expected to use the knowledge and skills gained in the course to create a service oriented leadership development.

ENMA 480. Ethics and Philosophy in Engineering Applications. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course is designed to expose prospective engineering managers to the theories and practices that are inherent in the ethical environment of modern organizations. Topics include definitions of ethical behavior and leadership, the history of ethical thought, moral decision-making, and the importance of values such as honesty, integrity, and trustworthiness. A full exploration of ethical autonomy, collaboration, communication and moral imagination will be conducted. A variety of methods will be used to facilitate learning, including a textbook, movie and videos, case studies, experiential activities and writing assignments. The successful student should gain a full appreciation for the value and practices of ethical leadership.

ENMA 495. Topics in Engineering Management. 1-6 Credits.

ENVH - Environmental Health

ENVH 402W/502. Environmental Health Administration and Law. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A review of the concepts and practice of administering environmental health control programs within agencies at the federal, state and local levels. The principles of administration and leadership of programs in the private sector are also discussed. The constitutional, statutory and administrative law bases for organizing and conducting such programs and developing environmental policy as well as the legal implications of enforcement will be addressed. A review of all major environmental statutes and their agencies that enforce them will be addressed. (This is a writing intensive course.).

ENVH 403. Environmental Health Internship I, II. 3 Credits.
3 credits. Prerequisites: ENVH 301W and permission of program director. Includes placement in a health-related facility or industrial setting, prearranged with faculty instructor. (qualifies as a CAP experience).

ENVH 404. Environmental Health Internship III, IV. 3 Credits.
3 credits. Prerequisites: ENVH 301W and permission of program director. Includes placement in a health-related facility or industrial setting, prearranged with faculty instructor. (qualifies as a CAP experience).

ENVH 405. Environmental Health Internship III, IV. 6 Credits.
6 credits. Prerequisites: ENVH 301W and permission of program director. Includes placement in a health-related facility or industrial setting, prearranged with faculty instructor. (qualifies as a CAP experience).

ENVH 406/506. Principles of Occupational Safety and Health. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A broad overview of the field of safety. A study of the factors influencing the occurrence of accidents and incidents is set in the context of safety legislation, current issues in the practice of safety and the ethical and professional responsibilities of the safety practitioner. The course also includes discussions of product safety, fire prevention and protection systems safety and human elements in loss prevention.

ENVH 407/507. Occupational Safety Standards, Laws and Regulations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A review of the important Occupational Safety and Health Standards and Codes with particular emphasis on application of these codes to typical work situations. Governmental enforcement methodologies are also discussed.

ENVH 420/520. Communicable Diseases and Their Control. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. An in-depth study of the communicable disease processes as they pertain to environmental sources. A detailed discussion of specific communicable diseases that are manifested by various environmental etiologic agents. Various environmental control measures to prevent the incidence of communicable diseases are presented.
ENVH 421/521. Food Safety. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A comprehensive study of food and milk production, processing and preservation and controls exercised for the prevention of foodborne illnesses and spoilage.

ENVH 422/522. Water and Wastewater Technology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Introduction to water quality management and wastewater treatment technology. Topics include the effect of organic, inorganic and thermal pollutants in water quality streams, waterborne diseases, monitoring concepts, methods of water quality management, regulatory considerations, theory and application of wastewater treatment concepts, wastewater characterization, and treatment methods and disposal methods.

ENVH 423/523. Vector Control. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A study of the vectors of human disease and the methods utilized in their control. (offered spring).

ENVH 424/524. Residential and Institutional Environments. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A study of the physical aspects of housing and institutions as they relate to human health and well-being. Coverage is also given to infection control in health-care facilities.

ENVH 425/525. Occupational Safety and Health Program Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. The establishment, implementation and maintenance of occupational safety and health programs. Paradigms of safety, techniques for safety training and creation of value for safety among business managers and employees are emphasized.

ENVH 426/526. Physical Hazards and Their Control. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. An in-depth examination of the varied types of physical hazards in the work environment and the methods of prevention, recognition and control.

ENVH 440/540. Principles of Ergonomics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. An introduction to the terminology, concepts and applications of physiology, anthropometry, biomechanics and engineering to workplace and work methods design. Emphasis will be given to workplace design and work methods for job safety and health.

ENVH 441/541. Industrial Hygiene. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. An in-depth study of the chemical and physical agents responsible for occupational illness and the methods used for their measurement, evaluation and control.

ENVH 442/542. Sampling and Analysis Laboratory. 2 Credits.
Laboratory 4 hours; 2 credits. Prerequisite: ENVH 441/541 or permission of the instructor. Use and application of sampling and analytical equipment for measurement of chemical agents in the environment. Includes collecting media selection, sampling strategy, sample preparation and analysis.

ENVH 443. Principles of Toxicology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and BIOL 250. An introduction to the fundamentals of toxicology with emphasis on the interaction of environmental and industrial chemicals with humans are studied. Exposure, dose response, kinetics and distribution of toxicants, metabolism of toxic agents, factors that affect toxicity and introductory chemical carcinogenesis are discussed.

ENVH 445/545. Air Pollution and Its Control. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. The study of air pollution in relation to air quality criteria, pollutant production, atmospheric evolution, measurement and control techniques.

ENVH 446/546. Physical Hazards Laboratory. 2 Credits.
Laboratory 4 hours; 2 credits. Prerequisite: ENVH 441/541 or permission of the instructor. Use and application of sampling methods and equipment for measurement of physical hazards in the work environment. Includes aspects such as ergonomics, noise, vibration and radiation.

ENVH 448/548. Epidemiology and Biostatistics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. An introductory course in the principles and practices of epidemiology and the application of statistical and mathematical design and analysis of health research studies for the understanding and control of population health and disease with emphasis on environmental applications.

ENVH 461/561. Hazardous Waste Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Description of the hazardous waste problem, the fundamentals of the chemistry involved with hazardous waste transport, methods of identification, assessment, control, and disposal of toxic and hazardous waste are discussed. In addition the relevant legal statutes, risk assessment emergency response and case studies are presented. Introduction to the toxicological effects of exposure to hazardous waste is discussed.

ENVH 465/565. Hazardous Materials Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. The management of hazardous materials includes a wide array of interlocking regulations addressing use, manufacturing, exposure, storage, shipping and disposal. A life cycle review of hazardous materials highlighting best practices and legislation is presented. Useful in preparation for CHMM examination.

ENVH 466/566. Environmental Risk Assessment and Decision Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. The principles of quantitative health risk assessment of toxicants are presented. Qualitative and quantitative skills necessary to evaluate the probability of injury, disease, or death in the general population from exposure to environmental contaminants are discussed. Hazardous identification, exposure assessment, dose-response evaluation and risk characterization are emphasized. Risk management group projects assessing some real environmental risks is an important segment of the class.

ENVH 470/570. Industrial Environmental Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Course addresses day-to-day technical and management aspects of environmental compliance, as well as regulatory issues faced in industrial applications. Includes audits and inspections, air and water pollution and hazardous waste.

ENVH 495/595. Topics in Environmental Health. 1-3 Credits.
1-3 credits. Prerequisite: junior standing.

ENVH 498/598. Independent Study in Environmental Health. 1-3 Credits.
1-3 credits. Prerequisite: permission of the Program Director. An opportunity is afforded students to undertake independent study under the direction of a faculty member.

ENVH 499. Environmental Health Senior Seminar. 1 Credit.
1 credit. Prerequisites: second semester senior standing and permission of the program director.

ESPR - Exercise Sci, Sport, Pe, Rec

EXERCISE SCI, SPORT, PE, REC Courses

EXSC - Exercise Science
EXERCISE SCIENCE Courses

EXSC 225. Introduction to Exercise Science. 3 Credits.
Lecture 3 hours; 3 credits. Broad overview of exercise science including the history of the discipline and introduction to the following: Healthy People 2010 goals and objectives related to physical activity and nutrition; basic principles of nutrition, body composition, applied physiology, functional anatomy, and exercise prescription/programming for healthy individuals and those who are high risk/diseased; career opportunities in various allied-health fields such as physical therapy, physician assistant, personal training, community/corporate/hospital-based wellness programs, cardiac rehabilitation; and research areas in exercise science.

EXSC 233. Exercise Science Recitation. 0 Credits.
Lecture 1 hour. Corequisite: EXSC 225. Dedicated Monarch Advantage Program (MAP) section for exercise science majors - freshmen only.

EXSC 250. Strength and Conditioning Leadership. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: BIOL 250 with a grade of C or better and MATH 102M with a grade of C or better. This course will provide the student with skills in exercise leadership. The student will learn how to lead resistance training, flexibility training, cardiovascular training involving a variety of exercise modes, and group exercise, such as step aerobics.

EXSC 322. Anatomical Kinesiology. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Prerequisite: BIOL 250 with a grade of C or better and MATH 102M with a grade of C or better. Anatomical and mechanical analysis of human musculoskeletal function including skeletal, muscular, and neuromuscular control aspects necessary for movement.

EXSC 340. Prevention and Care of Injuries Related to Physical Activity. 3 Credits.
Three classes per week; 3 credits. Prerequisite: BIOL 250 with a grade of C or better and MATH 102M with a grade of C or better. Practice in the skills of injury recognition and evaluation and training in cardiopulmonary resuscitation. Principles and uses of therapeutic modalities are also discussed.

EXSC 369. Practicum in Exercise Science. 3-6 Credits.
3-6 credits. Prerequisite: EXSC 225. Field-based experience in a fitness or allied-health setting. Minimum of 200 clock hours. (qualifies as a CAP experience).

EXSC 397. Independent Study. 1-3 Credits.
1-3 credits. Prerequisite: Junior standing and permission of the instructor. Independent study of special topic under supervision of faculty.

EXSC 403. Lifetime Fitness and Wellness. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: BIOL 250 with a grade of C or better and MATH 102M with a grade of C or better. The focus of this course is on a positive healthy lifestyle designed to enhance the current and future quality of life. Topics include: proper exercise programs, healthful nutrition, stress management techniques, and avoidance of high-risk health behaviors in order to reduce disease risk and promote healthy aging. Various laboratory assessments are used to identify health status and recommend remedial approaches.

EXSC 408/508. Nutrition for Fitness and Sport. 3 Credits.
Three classes per week; 3 credits. Prerequisite: BIOL 250 with a grade of C or better and MATH 102M with a grade of C or better. Emphasizes the role of nutrition as a means to enhance health and performance in sport. Topics covered include energy metabolism and nutrients, regulation of metabolism by vitamins and minerals, and weight control.

EXSC 409/509. Physiology of Exercise. 3 Credits.
Three classes per week; 3 credits. Prerequisites: BIOL 250 with a grade of C or better and MATH 102M with a grade of C or better. An investigation into the physiological adjustments of the human organism to exercise including systematic as well as biochemical molecular changes. Major areas of concern include neuromuscular, metabolic, and cardiorespiratory changes during exercise and the influence of such variables as nutrition, drugs, environment, age, sex, training, and body weight.

EXSC 415/515. Exercise Testing for Normal and Special Populations. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Prerequisite: EXSC 409 or EXSC 426. The application of different methodologies in the measurement of physiologic responses to exercise. Emphasis is placed on understanding American College of Sports Medicine guidelines, appropriate experimental techniques, and equipment necessary to evaluate changes in body composition and various metabolic, cardiovascular, and respiratory adjustments during exercise.

EXSC 417W/517. Biomechanics. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Prerequisite: BIOL 250 with a grade of C or better; ENGL 211C or 221C or 231C with a grade of C or better; and PHYS 111N. Application of physical laws and mechanical principles to the human musculoskeletal system. (This is a writing intensive course.).

EXSC 420. Research Methods in Exercise Science. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: STAT 130M or permission of instructor. Introduction to the scientific method applied to exercise science research including bioethics, review of the literature, research design, data collection, appropriate statistical analysis, research writing, and peer review.

EXSC 426/526. Exercise Physiology I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: BIOL 250 with a grade of C or better and MATH 102M with a grade of C or better. An investigation into the metabolic adaptations, neuromuscular, endocrinological, and respiratory responses to acute and chronic exercise endeavors. Implications for enhanced health and physical performance are integrated.

EXSC 427/527. Exercise Physiology II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: EXSC 426/526 and BIOL 250 with a grade of C or better and MATH 102M with a grade of C or better. A continuation of Exercise Physiology I. Focuses on cardiovascular responses to exercise and applied exercise physiology, specifically the effects of different training modes, environmental factors, aging, disease states, nutrition, and ergogenic aids.

EXSC 428/528. Exercise Prescription for Chronic Disease. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: EXSC 409 or EXSC 426. A study of pathophysiology of common diseases with concentration in the design, implementation and administration of exercise prescription for a variety of chronic diseases.

EXSC 431/531. Wellness Programming and Administration. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in BIOL 250 and MATH 102M. An introduction to the principles of administration and implementation of fitness and wellness programs to individuals, groups, centers and corporate settings.

FARS - Farsi
FARSI Courses
FARS 111F. Beginning Farsi. 6 Credits.
Lecture 6 hours; 6 credits. Aural comprehension, oral drill and discussion of grammar principles, written exercises, and reading assignments.

FARS 212. Intermediate Farsi. 6 Credits.
6 credits. Oral drill and discussion of grammar principles, written exercises and reading assignments. Prerequisite: FARS 111F.

FIN - Finance
FIN 210S. Personal Financial Literacy. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: MATH 102M. This is an introductory course dealing with various aspects of individual financial decision making, with an emphasis on short- and long-term personal financial planning. The course uses scenarios, practical cases, and special projects to provide concrete applications of abstract concepts.

FIN 317. Principles of Insurance and Risk Management. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: A declared major in the University or permission of the Dean’s Office of the CBPA. Recommended elective for nonbusiness as well as business majors. The primary focus of this introductory course is on evaluating life, health, retirement, property, liability and personnel exposures to loss and analyzing the methods for managing these risks. Risk management and insurance techniques for dealing with potential losses to individuals and organizations will be emphasized.

FIN 319. Principles of Real Estate. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: A declared major in the University or permission of the Dean’s Office of the CBPA. The fundamentals of real estate productivity and value are developed. Legal elements of real estate transactions, physical aspects of real estate location and production, and economic factors pertinent to real estate.

FIN 331. Legal Environment of Business. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: A declared major in the University or permission of the Dean’s Office of the CBPA. Introduction to the legal environment of business, providing the student with an understanding of the nature of public law and the regulation of business and of the basic principles which control business practices.

FIN 333. The Legal Environment of Electronic Commerce. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: FIN 331, and a declared major in the University or permission of the Dean’s Office of the CBPA. This course will focus on the identification and management of legal issues and problems that confront businesses taking part in the rapidly growing internet economy. Issues will include the establishment and protection of an online identity, electronic contracting, libel, product and firm disparagement, and unfair consumer practices.

FIN 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Career Management in accordance with the policy for granting credit for Cooperative Education programs and a declared major in the University or permission of the Dean’s Office of the CBPA. Available for pass/fail grading only. (qualifies as a CAP experience).

FIN 368. Finance, Real Estate and Insurance Internship. 1-3 Credits.
1-3 credits. Prerequisite: a declared major in the University or permission of the Dean’s Office of the CBPA. A transfer student must have completed one semester at Old Dominion University. Student participation in a professional work experience. Approval for enrollment and allowable credits is determined by the Finance CAP advisor and the Career Management Center in the semester prior to enrollment. (qualifies as a CAP experience).

FIN 369. Finance, Real Estate and Insurance Internship. 1-3 Credits.
1-3 credits. Prerequisites: a declared major in the University or permission of the Dean’s Office of the CBPA. A transfer student must have completed one semester at Old Dominion University. A faculty supervised, professionally oriented project. Approval for enrollment and allowable credits is determined by the Finance CAP advisor. (qualifies as a CAP experience).

FIN 378. Honors: Introductory Financial Management. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ACCT 201 or ACCT 226, ACCT 202 or ACCT 227, and ECON 202S and a declared major in the University or permission of the Dean’s Office of the CBPA. A special honors section of FIN 323. Open only to students in the Honors Program in Business Administration.

FIN 388. Honors: Legal Environment of Business. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: a declared major in the University or permission of the Dean’s Office of the CBPA. A special honors section of FIN 331. Open only to students in the Honors Program in Business Administration.

FIN 410. Life and Health Insurance. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: FIN 317 and a declared major in the University or permission of the Dean’s Office of the CBPA. This course uses a broad-based financial planning approach in considering the nature and importance of individual life and health risks and uses of individual life and health insurance in treating these risks. The implications of various legal, tax, and accounting considerations on businesses and individuals are discussed. The course also provides an overview of the operational aspects of life insurers, including organization, underwriting, actuarial, reassurance, marketing, investment, taxation, and accounting functions. Cases are employed.
FIN 411. Employee Benefit Planning. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: FIN 317 and a declared major in the University or permission of the Dean’s Office of the CBPA. This course considers the ability of group insurance and other private pooling mechanisms to alleviate the financial problems arising from death, disability, medical treatment and retirement. Primary emphasis on design, tax and administrative characteristics as they relate to employer-sponsored benefit programs.

FIN 412. Property & Liability Insurance Company Operations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: FIN 317 and a declared major in the University or permission of the Dean’s Office of the CBPA. The course provides a broad overview of the operational activities and current problems of property and liability insurance companies, including organization, regulation, pricing, underwriting, claims, reinsurance, marketing, investment, and accounting functions. Through course projects, students will also investigate the major commercial property and liability exposures, including emerging exposures, and the risk transfer of these exposures through insurance.

FIN 413. Risk Analysis and Control. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: FIN 317 or equivalent and a declared major in the University or permission of the Dean’s Office of the CBPA. Recommended elective for nonbusiness as well as business majors. This course focuses on the risk analysis and control phases of the risk management process in business and governmental organizations. Particular attention is paid to the recognition, measurement, and treatment of pure risks, risk financing options other than commercial insurance, and decision making under conditions of uncertainty. Cases and computer analyses are employed.

FIN 414. Estate Planning. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: ACCT 421 (or permission of instructor) and a declared major in the University or permission of the Dean’s Office of the College of Business and Public Administration. This course is designed to provide students with a background in the field of estate planning. Topics will include wills and trusts, the probate system, estate and gift taxation, and fiduciary income taxation.

FIN 415. Capstone in Financial Plan Development. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: FIN 210S, FIN 317, FIN 411, FIN 431, and ACCT 421; and a declared major in the University of permission of the Dean’s Office of the College of Business and Public Administration. Corequisite: FIN 414. This course is designed to provide students majoring in personal financial planning with the ability to integrate technical material from previous coursework and prepare a comprehensive financial plan. Emphasis will be on integrating knowledge, preparing a financial plan, and effectively communicating with a client. Case studies will be emphasized.

FIN 431. Investments. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: FIN 323 with a grade of C or better and a declared major in the University or permission of the Dean’s Office of the CBPA. This course develops the financial tools and knowledge needed to select among alternative financial assets. The emphasis is on the individual investor. Real world experience includes stock analysis, portfolio simulations and interactions with professionals in the securities industry. (qualifies as a CAP experience).

FIN 432. Intermediate Financial Management. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: FIN 323 with a grade of C or better and junior standing. Theoretical framework relevant to decision making in financial management; capital budgeting, capital structure, cost of capital, and working capital management.

FIN 433. Introduction to Futures and Options. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: FIN 323 with a grade of C or better and 431 and a declared major in the University or permission of the Dean’s Office of the CBPA. An introduction to the understanding of futures and options. Basic features and trading mechanisms; valuation of financial derivatives; methods of managing financial risk; arbitrage techniques; and speculation strategies.

FIN 434. Management of Financial Institutions. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: FIN 323 with a grade of C or better and a declared major in the University or permission of the Dean’s Office of the CBPA. An examination of the objectives, functions, policies, organizational practices, and government regulations of financial institutions.

FIN 435. International Financial Management. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: FIN 323 with a grade of C or better and a declared major in the University or permission of the Dean’s Office of the CBPA. Financial decision making involving flow and funds across national boundaries.

FIN 439. Financial Decision Making. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: FIN 432 with a grade of C or better and a declared major in the University or permission of the Dean’s Office of the CBPA. Application of financial theory and techniques to the analysis and solution of actual financial problems. Case analysis.

FIN 443. Seminar in Insurance and Risk Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: FIN 317 and at least two courses from FIN 340, 410, 411, 412, and 413, and a declared major in the University or permission of the Dean’s Office of the CBPA. This course is designed as a capstone course for students concentrating in risk management and insurance. The class will read and discuss recent works concerning advanced topics in risk management and insurance. Additionally, students will work individually and in groups on projects and presentations related to current risk management and insurance problems of national and international significance.

FIN 450. Real Estate Finance. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: FIN 319 and 323 or permission of the instructor, and a declared major in the University or permission of the Dean’s Office of the CBPA. Explores the different financing and ownership arrangements used in real estate transactions.

FIN 451. Real Estate Appraisal. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: FIN 319 and FIN 323 or permission of the instructor, and a declared major in the University or permission of the Dean’s Office of the CBPA. Economic theories of value applied to real estate as a guide to business decisions.

FIN 454. Real Estate Investment Analysis. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: FIN 319 and FIN 323 or permission of the instructor, and a declared major in the University or permission of the Dean’s Office of the CBPA. Examination of developments in real estate valuation and investment with use of computer terminal models.

FIN 497. Selected Topics in Finance. 3 Credits.
3 credits. Prerequisite: permission of the department chair. For advanced students in financial management.

FIN 498. Selected Topics in Real Estate. 3 Credits.
3 credits. Prerequisite: permission of the department chair. For advanced students in real estate.

FIN 499. Selected Topics in Insurance. 3 Credits.
3 credits. Prerequisite: permission of the department chair. For advanced students in insurance.
FOREIGN LANGUAGES Courses

FL 195. Topics in Foreign Languages. 1-3 Credits.
1-3 credits. A study of selected topics for elective credit. These courses will appear in the schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

FL 196. Topics in Foreign Languages. 1-3 Credits.
1-3 credits. A study of selected topics for elective credit. These courses will appear in the schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

FL 369. Foreign Language Practicum. 3 Credits.
3 credits. Prerequisites: nine credit hours of upper-level language at ODU, junior standing. Internships in private, public and business organizations that deal with foreign nationals, foreign products or are involved in teaching French, German or Spanish. (qualifies as a CAP experience).

FL 452. Methods for Teaching Foreign Languages in Pre-K through Grade 12. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: admission to the teacher preparation program or licensure only program, a cumulative and major GPA of 2.75 with grades of C or higher, professional education GPA of 2.75 or higher with grades of C- or higher. Passing PRAXIS I scores, qualifying SAT or ACT scores, or passing PRAXIS I math and VCLA scores also required. Corequisite: FL 456. Taken in the fall semester preceding student teaching. A systematic approach to established and experimental methods of foreign language instruction.

FL 456. Seminar in Foreign Language Teacher Education. 1 Credit.
Hours to be arranged; 1 credit. Must be taken concurrently with FL 452. Prerequisite: passing scores on Praxis I and admission to the teacher education program. Students observe teachers in PreK-12 and may practice teaching methods under supervision. Preparation for Praxis II with passing scores required on Praxis II and VCLA and Advanced-low rating or higher on the ACTFL OPI. Available for pass/fail grading only. (qualifies as a CAP experience).

FL 480W. Senior Seminar in International Studies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: grade of C or better in ENGL 211C or 221C or 231C, senior standing in the BAIS degree program or permission of the instructor and the director of the BAIS program. Interdisciplinary research and the preparation of a senior thesis in international studies. (This is a writing intensive course.).

FL 495/595. Topics in Foreign Languages. 1-3 Credits.
1-3 credits each semester. Prerequisite: permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

FL 497. Tutorial Work in Special Topics in Foreign Languages and Literatures. 1-6 Credits.
1-6 credits. Prerequisite: appropriate survey course or permission by the instructor and chair. Independent readings and study on a topic to be selected under direction of professor.

FL 498. Tutorial Work in Special Topics in Foreign Languages and Literatures. 1-6 Credits.
1-6 credits. Prerequisite: appropriate survey course or permission by the instructor and chair. Independent readings and study on a topic to be selected under direction of professor.
FR 295. Topics in French. 1-3 Credits.
1-3 credits each semester. Prerequisite: none. A study of selected topics designed as electives for nonmajors. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

FR 296. Topics in French. 1-3 Credits.
1-3 credits each semester. Prerequisite: none. A study of selected topics designed as electives for nonmajors. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

FR 311. Communicative Competence: Speaking and Listening. 3 Credits.
(oral communication course) Lecture 3 hours; 3 credits. Prerequisite: FR 202 or advanced placement. A study of task-oriented communication strategies enabling students to become full conversational partners.

FR 312W. Communicative Competence: Writing and Reading. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: a grade of C or better in ENGL 211C, ENGL 221C or ENGL 231C, passing score on the Writing Sample Placement Test and FR 202 or advanced placement. A functional approach to reading and writing enabling students to understand content, style, audience and organization. (This is a writing intensive course.).

FR 320. Contemporary France through the Media. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: FR 202 or advanced placement. This course introduces students to social, political, economic, intellectual and artistic manifestations of French culture today, and also provides a day-by-day analysis of contemporary France by reading current newspapers, magazines, watching French news broadcasts and tapping into Internet resources.

FR 331. French Literary Forms: Prose. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: FR 202 or advanced placement. A study of the novel and other prose genres in francophone literature with representative works from various periods and national origins.

FR 332. French Literary Forms: Theatre. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: FR 202 or advanced placement. A study of the theater in francophone literature with representative works from the various periods and national origins.

FR 333. French Literary Forms: Poetry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: FR 202 or advanced placement. This course will introduce students to a wide sampling of different styles and periods from the Middle Ages to today. Students will learn different ways of approaching French poetry (the traditional explication de texte; understanding cultural contexts); rules of versification, and how to write about French poetry critically and creatively.

FR 366. Business French: Language and Culture. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: FR 202 or advanced placement. Presents aspects of French business life: banking, publicity, commerce, insurance, accounting, import-export, taxes, etc.

FR 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: nine credit hours at the 300 or 400 level. Internships in private, public and business organizations that deal with foreign nationals, foreign products or are involved in teaching French. (qualifies as a CAP experience).

FR 395. Topics in French. 1-3 Credits.
1-3 credits each semester. Prerequisite: FR 202 or the equivalent. A study of selected topics designed for non-majors, or for elective credit within a major. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

FR 396. Topics in French. 1-3 Credits.
1-3 credits each semester. Prerequisite: FR 202 or the equivalent. A study of selected topics designed for non-majors, or for elective credit within a major. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.
FR 407/507. Advanced Grammar and Syntax. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: FR 312W or permission of the department chair. An intensive study of French grammar and development of style through activities, including theme, version, composition, and dictation.

FR 410/510. Berlin and Paris: Crucibles of European Ideas. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: German and French students must read and write in the target language. This course explores the cultural movements that have characterized the German-French commonalities and differences from the early 1900s through the 1990s in cross-disciplinary discourses such as film, literature, art, politics, and economics. Cross-listed with FLET 410W/510.

FR 415/515. Applied Phonetics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: FR 311 or 312W or permission of the department chair. Designed to develop the mastery of spoken French. Intensive study of French phonetics with exercises in pronunciation and its application to media comprehension.

FR 420/520. Francophone Civilization. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: FR 311, 312W or 320. A study of the culture and civilization of selected Francophone countries, the Magreb, West Africa, La Republique Malgache, the Caribbean Islands, Canada, Belgium, and Switzerland, through cultural readings, art, music and literature.

FR 427/527. Studies in Seventeenth-Century French Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing or permission of the department chair. Following a preparatory period, the political stability of the French monarchy ushers in the golden age of classicism. Representative works from comic and dramatic theater, philosophy, poetry and the evolving novel.

FR 428/528. Studies in Eighteenth-Century French Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing or permission of the department chair. A study of the two main currents of ideas of the Age of Reason or Enlightenment; the rationalistic drive to question established authority, exemplified by the 'Encyclopedie' and leading to the Revolution of 1789; and the Rousseauistic return to nature and emotivity. Representative readings.

FR 437/537. Studies in Nineteenth-Century French Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing or permission of the department chair. A study of the post-Revolutionary (1789) literary movements: Romanticism, Realism, Naturalism, Symbolism, which opened new horizons of modern science and culture in France. Representative works.

FR 438/538. Studies in Twentieth-Century French Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing or permission of the department chair. A study of the greatness and decadence of modern man trapped in the wild 'belle epoque,' then in two savage World Wars, and finally in the inhuman Nuclear Age. Reflecting great scientific advances, the vast new horizons to be discovered are mainly inward: Dadaism, Surrealism, Existentialism, Literature of the Absurd. Structuralism focus on the anguish, absurdity, and madness of modern life.

FR 469/569. A History of French Cinema. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: FR 311 or 312W or permission of instructor. This course will function as a survey of French film classics from the birth of cinema through contemporary times, and also shed light on various French cultural and literary movements as they are represented in film (Surrealism, WWII, Nouvelle Vague, decolonization).

FR 495/595. Topics in French. 1-3 Credits.
1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of the selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

FR 496/596. Topics in French. 1-3 Credits.
1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of the selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

FR 497. Tutorial Work in Special Topics in French. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of department chair. Independent reading and study on topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

FR 498. Tutorial Work in Special Topics in French. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of department chair. Independent reading and study on topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

GEOG - Geography

GEOGRAPHY Courses

GEOG 100S. Cultural Geography. 3 Credits.
Lecture 3 hours; 3 credits. This course provides a basic topical introduction to human and cultural geography. It focuses on the diversity of human societies, their distribution, characteristics, and cultural impact on the landscape. Topics include the geography of population, migration, language, religion, economic development, urbanization, resources, and the political landscape.

GEOG 101S. Environmental Geography. 3 Credits.
Lecture 3 hours; 3 credits. A geographical study of the diverse characteristics of the Earth’s physical landscape, spatial distribution of environmental characteristics, the impacts of these on human populations and human populations’ impact on the natural environment. Topics include climate and climate change, mass movements and natural hazards, biogeography and environmental problems such as desertification and deforestation, and the use and abuse of water resources.

GEOG 126S. Honors: Cultural Geography. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. A special honors section of GEOG 100S.

GEOG 250. World Regional Geography. 3 Credits.
Lecture 3 hours; 3 credits. A study of the physical and cultural characteristics of the major geographical regions of the world. The course focuses upon significant problems within each of the world’s major regions and examines the relevance of the geographical background to these problems.

GEOG 295. Topics in Geography. 3 Credits.

GEOG 296. Topics in Geography. 3 Credits.
GEOG 300. Maps and Geographic Information. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: GEOG 100S or GEOG 101S. An investigation of different representations of the Earth: physical and cognitive maps, atlases, spatial databases, aerial photographs, and remote sensing imagery, with an emphasis on the use of geographic tools for communicating and analyzing information.

GEOG 305. World Resources. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisite: GEOG 100S or GEOG 101S, or permission of the instructor. A geographical analysis of the distribution and accessibility of the world’s resources including population, agricultural land, biodiversity, water, renewable and nonrenewable materials, and energy sources.

GEOG 306T. Hazards: Natural and Technological. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisites: junior standing and six credits in the social sciences or permission of the instructor. An exploration of human perceptions of and responses to extreme geophysical and technological threats, including nuclear bombs and accidents, hurricanes, tornadoes, earthquakes, and volcanoes.

GEOG 308. Research Design. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: GEOG 100S or GEOG 101S. Covers the design and implementation of quantitative and qualitative methods of inquiry in social sciences.

GEOG 310. Geography of the City. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisite: completion of General Education social science requirement. An analysis of the structure, growth, and development of cities. Topics include the use of urban land, location of public services, structure of the urban economy, social problems of urban populations, and decay and revitalization.

GEOG 320. Political Geography. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisite: completion of General Education social science requirement. A study of the relationship between geographical and political factors; the nation state and its subdivisions; interaction among states; and the political geography of everyday life.

GEOG 321. World Economic Geography. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisite: GEOG 100S or 101S, or permission of the instructor. An analysis of differences in spatial patterns on the economic landscape at national and international levels, and the processes which create such differences. Introduces basic concepts, theories, and models in economic geography at the global scale.

GEOG 325. Ethnic Minorities. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisite: sophomore standing or permission of the instructor. A study of ethnic minorities worldwide with emphasis on geographical dimensions of ethnic identity and relationships between ethnicity and territory, regionalism, politics, and cultural expression.

GEOG 330. Field Methods. 3 Credits. Lecture 2 hours; field project 1 hour; 3 credits. Prerequisite: sophomore standing or permission of the instructor. A review of selected techniques for generating data in a field situation. Lectures deal with the description and evaluation of techniques such as sampling methods, observation, interviewing, questionnaires, human relations skills and ethical considerations. The project component involves the definition of field problems and the application of appropriate techniques.

GEOG 350. Geography of the United States and Canada. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisites: junior standing and six credits in the social sciences, or permission of the instructor. The human and physical geography of the United States and Canada with special emphasis on the distribution of population and natural resources, migration patterns, location of major economic activities, and the variety of regional identities within the U.S. and Canada.

GEOG 355. Topics in Regional Geography. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. A study of selected regions or selected problems within a particular region of the world.

GEOG 367. Cooperative Education. 1-3 Credits. 1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Career Management in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place (qualifies as a CAP experience).

GEOG 368. Internship in Geography. 1-12 Credits. 1-12 credits. Prerequisite: 12 hours in geography. Admission at the discretion of faculty advisor. Available for pass/fail grading only. Individualized practical experience in the area of applied geography. The credits will be commensurate with the level of the student’s involvement (qualifies as a CAP experience).

GEOG 395. Topics in Geography. 1-4 Credits. 1-4 credits each semester. Prerequisite: junior standing or permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule and will be more fully described in information distributed to all academic advisors.

GEOG 396. Topics in Geography. 1-4 Credits. 1-4 credits each semester. Prerequisite: junior standing or permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule and will be more fully described in information distributed to all academic advisors.

GEOG 398. Tutorial Work in Geography. 1-3 Credits. Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. A study of the conceptual basis of GIS as a tool for manipulating spatial information. The course focuses on how geographic information can be input and organized within the framework of a GIS. Students will work on a computer-based GIS to gain a greater understanding of spatial database structures and analytical operations.

GEOG 400W/500. Seminar in Geography. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisite: A grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C; GEOG 100S or GEOG 101S, or permission of the instructor. Advanced study of a specialized topic in geography. The choice of the topic may vary according to the availability of faculty expertise and student interest. (This is a writing intensive course.).

GEOG 402/502. Geographic Information Systems. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. A study of the conceptual basis of GIS as a tool for manipulating spatial information. The course focuses on how geographic information can be input and organized within the framework of a GIS. Students will work on a computer-based GIS to gain a greater understanding of spatial database structures and analytical operations.

GEOG 404/504. Digital Techniques for Remote Sensing. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. Study of the theory and application of remote sensing, emphasizing environmental applications and aerial and satellite imagery. Covers the fundamentals of multispectral digital image processing, including sensors pre-processing, enhancement, classification, accuracy assessment, and GIS data integration.

GEOG 405/505. Seminar in International Resource Management. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisite: GEOG 100S or GEOG 101S, GEOG 305 recommended. Discussion of the ecological and management principles underlying international resource management and the goal of attaining a sustainable, ecologically balanced world.
GEOG 408/508. Cartography. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: GEOG 300 or GEOG 402. Computer-assisted methods and techniques employed in the design, construction, and use of maps and other graphics as tools for data analysis and communication.

GEOG 410/510. Seminar in Urban Geography. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: GEOG 100S or 101S, or permission of the instructor. Discussion of specific urban and metropolitan problems based on outside readings and individually selected research topics.

GEOG 411/511. Urban and Regional Planning. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: GEOG 100S or 101S, or permission of the instructor. A study of planning concepts and powers used to guide contemporary metropolitan growth and development. Emphasis is on the application of social science principles and methods to the planning process.

GEOG 412/512. Cities of the World. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. An examination of cities of the world’s major cultural realms with an emphasis on the urban landscape as it varies between developed and developing countries.

GEOG 418. Quantitative Methods. 3 Credits.
Lecture 3 hours; 3 credits. Pre- or corequisite: STAT 130M with a grade of C- or better. Prerequisites: GEOG 100S or 101S, GEOG 308 with a grade of C- or better. A survey of and practicum in the basic techniques of quantitative research, including the logic of empirical research, the identification of data sources, and the use of appropriate statistical techniques.

GEOG 419/519. Spatial Analysis of Coastal Environments. 3 Credits.
Lecture 1.5 hours; laboratory 3 hours; 3 credits. Prerequisite: GEOG 404 or permission of the instructor. The course integrates remotely sensed and field techniques for scientific investigation and practical management of coastal environmental systems. Spatial modeling of coastal processes and management tools using Geographic Information System (GIS).

GEOG 420/520. Marine Geography. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: junior standing and six credits in the social sciences, or permission of the instructor. An analysis of human-sea relationships with particular emphasis on resource management and political organization from global, regional, and national perspectives.

GEOG 422W/522. Coastal Geography. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: GEOG 100S or 101S, a grade of C- or better in ENGL 211C or 221C or 231C, or permission of the instructor. An examination of the physical and human geography of the coastal zone. Considers problems of managing coastal resources with an emphasis on North America. Lectures focus on coastal patterns, processes, and problems at the global, national, and local scales. Students conduct field investigations and compile reports on the coastal environment, and analyze data using Geographic Information Systems (GIS).

GEOG 425/525. Internet Geographic Information Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: GEOG 402/502. Theoretical and practical exploration of methods, standards, and policies related to the development and utilization of geographic information systems on the Internet. Students will create and utilize distributed geospatial data and analytical systems using the WWW and the Internet to address geographical problems.

GEOG 432/532. Advanced GIS. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: GEOG 402/502. The study of a series of advanced topics in the field of geographic information systems and science. Focus is placed on the development of projects/models and a survey of several advanced techniques. Students will work on a computer based GIS to implement topics from lectures.

GEOG 451/551. Europe. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: junior standing and GEOG 100S or 101S, or permission of the instructor. A geographical analysis of the interrelationships among physical, cultural, economic, and political factors in Europe.

GEOG 452/552. Africa. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: junior standing and GEOG 100S or 101S, or permission of the instructor. A geographical analysis of the interrelationships among physical, cultural, economic, and political factors in Africa.

GEOG 453/553. Asia. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: junior standing and GEOG 100S or 101S, or permission of the instructor. A geographical analysis of the interrelationships among physical, cultural, economic, and political factors in Asia excluding the Middle East and the former USSR.

GEOG 454W/554. Latin America. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing, GEOG 100S or 101S, a grade of C- or better in ENGL 211C or 221C or 231C, or permission of the instructor. A geographical analysis of the interrelationships among physical, cultural, economic, and political factors in Latin America. (This is a writing intensive course.)

GEOG 455/555. The Middle East. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: junior standing and GEOG 100S or 101S, or permission of the instructor. A geographical analysis of the interrelationships among physical, cultural, economic, and political factors in the Middle East.

GEOG 456/556. Geography of Southeast Asia. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: GEOG 100S. Analysis of the physical, historical, cultural, economic, environmental, and political patterns and problems of Southeast Asia. The focus is on the diversity of the region and on the nature and impact of development.

GEOG 458/558. Geography of Virginia. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: GEOG 100S or 101S. An analysis of Virginia’s population, resources, and regional landscapes as they have been influenced by physical, cultural, historical, and economic factors.

GEOG 480W. Senior Seminar in International Studies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: grade of C or better in ENGL 211C or 221C or 231C, senior standing in a major, and permission of the instructor and the director of the BIS program. Interdisciplinary research and the preparation of a senior thesis in international studies. (This is a writing intensive course.)

GEOG 490/590. Applied Cartography/GIS. 1-3 Credits.
1-3 credits. Prerequisite: junior standing or permission of the instructor. Practical experience in applying the principles of cartography and geographic information systems to the design and construction of maps and other graphics.

GEOG 495/595. Topics in Geography. 1-4 Credits.
1-4 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.
GER 496/896. Topics in Geography. 1-4 Credits.
1-4 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

GER 497/897. Independent Research in Geography. 1-3 Credits.
1-3 credits. Prerequisite: senior standing and approval of the director of geography and department chair. Independent reading and study on a topic to be selected under the direction of the instructor. Conferences and papers as appropriate.

GER 498/898. Tutorial Work in Geography. 1-3 Credits.

GER 499. Senior Thesis. 3 Credits.
3 credits. Prerequisites: GEOG 308 and senior standing in Geography. Completion of a research paper supervised by a faculty member from the Geography program. Research topic to be selected in concert with the faculty supervisor and a final written report required.

GER - German

GERMAN Courses

GER 101F. Beginning German I. 3 Credits.
101F is prerequisite to 102F. Lecture 3 hours; 3 credits each semester. Aural comprehension, oral drill and discussion of grammar principles, written exercises, and reading assignments.

GER 102F. Beginning German II. 3 Credits.
101F is prerequisite to 102F. Lecture 3 hours; 3 credits each semester. Aural comprehension, oral drill and discussion of grammar principles, written exercises, and reading assignments.

GER 195. Topics in German. 1-3 Credits.
1-3 credits each semester. Prerequisite: none. A study of selected topics designed as electives for non-majors. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

GER 196. Topics in German. 1-3 Credits.
1-3 credits each semester. Prerequisite: none. A study of selected topics designed as electives for non-majors. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

GER 201. Intermediate German I. 3 Credits.
201 is prerequisite to 202. Lecture 3 hours; 3 credits each semester. Prerequisite: GER 102F or satisfactory score on the placement test. An introduction to German grammar, literature and civilization.

GER 202. Intermediate German II. 3 Credits.
201 is prerequisite to 202. Lecture 3 hours; 3 credits each semester. Prerequisite: GER 102F or satisfactory score on the placement test. An introduction to German grammar, literature and civilization.

GER 295. Topics in German. 1-3 Credits.
1-3 credits each semester. Prerequisite: none. A study of selected topics designed as electives for non-majors. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

GER 296. Topics in German. 1-3 Credits.
1-3 credits each semester. Prerequisite: none. A study of selected topics designed as electives for non-majors. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

GER 311. Communicative Competence: Speaking and Listening. 3 Credits.
(oral communication course) Lecture 3 hours; 3 credits. Prerequisite: GER 202 or or advanced placement. Development of speaking and listening skills using a variety of task-oriented strategies enabling students to become full conversational partners.

GER 312W. Communicative Competence: Writing and Reading. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: a grade of C or better in ENGL 211C, ENGL 221C or ENGL 231C, passing score on the Writing Sample Placement Test and GER 202, advanced placement or permission of the instructor. A functional approach to the development of reading and writing skills targeting a variety of subjects, styles, and audiences. (This is a writing intensive course.).

GER 321. German Civilization from the Middle Ages to World War I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: GER 311 or 312W. A study of the major developments of German culture, highlighting its contributions to the modern culture of Western Civilization. Examples include the 'German-Jewish Symbiosis' of the enlightenment, German Classicism (Goethe, Humboldt and their humanistic ideals), German Romanticism (music, poetry, 'Lieder'), the German Gothic (the 'uncanny' and its influence on the Western imagination from E.A. Poe to Baudelaire and Hollywood cinema), German philosophy, Vienna 1900 ('Art nouveau,' psychoanalysis), and German Expressionism (poetry, painting and the utopian imaginary).

GER 350. Modern Swiss German Literature: A Multicultural Model. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: GER 311 or 312W or permission of the instructor. Readings and discussions of selected master works by Frisch and Durrenmatt, the two literary giants of modern Swiss culture. Topic include the multicultural aspects of modern Switzerland, the dialectics of myth and modernity, provincialism versus globalism, Old World versus New World, the mixed blessing of technology, as well as the discourses of gender ideology.

GER 355. The City as Cultural Focus. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: GER 311 or 312W or permission of the instructor. An advanced language course focusing on practical vocabulary building, grammar, and cultural information for career and business-related situations.

GER 366. Business German: Language and Culture. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: GER 311 or 312W or permission of the instructor. An advanced language course focusing on practical vocabulary building, grammar, and cultural information for career and business-related situations.

GER 378. Extracurricular Studies. 1-3 Credits.

GER 380. German Literature from Sturm und Drang to Jugendstil. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: GER 311 or 312W. The course will cover representative literary works from Weimar Classicism to the literature of 1900, such as Goethe, Eichendorff, Buchner, Heine, Nietzsche, Rilke, et al.
GER 395. Topics in German. 1-3 Credits.
1-3 credits each semester. Prerequisite: GER 202 or the equivalent. A study of selected topics designed for non-majors, or for elective credit within a major. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

GER 396. Topics in German. 1-3 Credits.
1-3 credits each semester. Prerequisite: GER 202 or the equivalent. A study of selected topics designed for non-majors, or for elective credit within a major. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

GER 407/507. Advanced Grammar and Syntax. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: GER 311 and 312W, or permission of the department chair. This course deals with idioms and the fine points of grammar with the aim of helping students to develop a good style in written and spoken German. After a short introduction to pronunciation, special problems of non-native speakers are analyzed and treated individually.

GER 408/508. Conversation and Composition. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: GER 311 and 312W, or permission of the department chair. Designed to develop the mastery of spoken and written German. Recommended for prospective teachers.

GER 410/510. Berlin and Paris: Crucibles of European Ideas. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: German and French students must read and write in the target language. This course explores the cultural movements that have characterized the German-French commonalities and differences from the early 1900s through the 1990s in cross-disciplinary discourses such as film, literature, art, politics, and economics. Cross-listed with FLET 410W/510.

GER 420/520. Masterpieces of German Poetry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: GER 311 and 312W, or permission of instructor. The course will focus on exemplary poems of distinct cultural periods, ranging from the courtly love tradition of the Middle Ages to the political poetry surrounding the fall of the Berlin Wall.

GER 445/545. German Cinema. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: GER 311 or 312W or permission of instructor. This course will focus on the German cinema from perspectives such as fascism and its legacy, film as historical critique, or Weimar cinema. (Cross-listed with FLET 445/545 and COMM 444/544).

GER 450/550. German Satires and Parodies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: GER 311 and 312W, or permission of instructor. The course will analyze satirical features and parodic strategies in exemplary literature and visual texts from late medieval carnival plays to contemporary cabaret. Texts include excerpts from Brant’s Ship of Fools, examples of romantic irony in Bonaventura and Heine, the graphic art of caricature from Reformation broadsheets to today’s political cartoons, as well as literary parodies from Wagnerian opera to Viennese chanson.

GER 455/555. Germany 1900-1945: From High Culture to Holocaust. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: GER 311 and 312W. A study of representative works from the last years of the Austro-Hungarian Empire, the Wilhelmine Empire and the Weimar Republic, including Freud, Hofmannsthal, Kafka, Brecht, Hesse, Thomas Mann et al. The course will also discuss literature illustrating the genesis and ideology of the Third Reich.

GER 470/570. Post World War II Germany. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: GER 311 or 312W. The course will cover representative literary texts and cultural events of divided and united Germany, including Heinrich Boll, Gunter Grass, Max Frisch, Christa Wolf, Doris Dorrée et al, as well as film, painting, popular music, the culture of memory and German Jewish relations after the Shoah.

GER 473/573. The Enlightenment and Its Critics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: GER 311 or 312W. This course focuses on German intellectual history as represented by thinkers such as Lessing, Kant, Hegel, Marx, Nietzsche, and Freud. More recent works by Frankfurt School writers Adorno and Horkheimer represent critical engagements with the tenets of the European Enlightenment.

GER 476/576. German-Jewish Literature and Culture. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A survey of seminal texts by German-Jewish authors from the Enlightenment to the present day, including figures such as Marx, Kafka, Freud, Schnitzler and Arendt. (cross-listed with FLET 476/576).

GER 478/578. German Drama. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: GER 311 and 312W. An exploration of German dramatic works ranging from the Enlightenment period to contemporary drama. Students will read individual works by authors such as Lessing, Goethe, Schiller, Hebbel, Brecht, or Jelinek as well as texts concerned with the function of drama in German culture by these and other authors.

GER 495/595. Topics in German. 1-3 Credits.
1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

GER 496/596. Topics in German. 1-3 Credits.
1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

GER 497. Tutorial Work in Special Topics in German. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

GER 498. Tutorial Work in Special Topics in German. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

HE - Health Education

HEALTH EDUCATION Courses
HE 224. Advanced First Aid and Emergency Care. 3 Credits.
Two-three classes per week; 2-3 credits. This course presents the knowledge and skills essential for proper care in most emergency situations. Aspects of emergency first aid are developed, including CPR instruction. Upon satisfactory completion of the course, each student will have the option of receiving certification in CPR and/or First Aid upon payment of a certificate fee if required by the American Red Cross or National Safety Council.

HE 230. Personal and Community Health. 3 Credits.
Three classes per week; 3 credits. This course is designed to develop knowledge, understanding, attitudes, and desirable practices related to personal and community health.
HE 402/502. Methods and Materials in Health Education. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Instruction in methods of teaching, organization of classes, evaluation of outcomes, and selection of content for health and safety education. Collection, evaluation, and application of health and safety education materials are emphasized. This course is to be completed prior to student teaching. Field experience is required.

HE 410. Practicum in Health Education. 3-6 Credits.

HE 481/581. Teaching Sexuality Education in Schools. 3 Credits.
Three classes per week; 3 credits. Prerequisites: PE 300 and junior standing. This course is concerned with suitable methods and materials for use in teaching sex education in the home, community, and school setting. A family living element is in the program.

HE 497/597. Topics in Health Education. 1-3 Credits.
Three classes per week; variable credit. Prerequisite: junior standing. This course provides an opportunity for in-depth study of selected topics in the variety of areas constituting health education.

HE 498/598. Topics in Health Education. 1-3 Credits.
Three classes per week; variable credit. Prerequisite: junior standing. This course provides an opportunity for in-depth study of selected topics in the variety of areas constituting health education.

HEBR - Hebrew

HEBREW Courses

HEBR 111F. Beginning Hebrew I. 6 Credits.
Lecture 6 hours; 6 credits. Aural comprehension, oral drill and discussion of grammar principles, written exercises and reading assignments.

HEBR 212. Intermediate Hebrew. 6 Credits.
Lecture 6 hours; 6 credits. Prerequisite: HEBR 111F or permission of the instructor. Oral drill and discussion of grammar principles, written exercises and reading assignments.

HIST - History

HISTORY Courses

HIST 100H. Interpreting the World Past Since 1500. 3 Credits.
Lecture 3 hours, 3 credits. This fast-paced survey of World history from 1500 to the present, it focuses on the major intellectual, religious, social, cultural, political, environmental and scientific developments that have influenced the course of World history. It looks at cross-cultural relations in the form of economic exchange, technology transfer, war and conquest, and international organizations.

HIST 101H. Interpreting the Asian Past. 3 Credits.
Lecture 3 hours; 3 credits. A fast-paced survey of Asian civilization in a global context from the emergence of Indian and Chinese civilizations to the events unfolding today. It follows the courses of political, social, cultural, religious, and economic development in East, South, and Southeast Asia.

HIST 102H. Interpreting the European Past. 3 Credits.
Lecture 3 hours; 3 credits. A fast-paced survey of European civilization. It focuses on the major intellectual, religious, social, cultural, political, environmental, and scientific developments that have influenced the course of European history.

HIST 103H. Interpreting the Latin America Past. 3 Credits.
Lecture 3 hours, 3 credits. This fast-paced survey covers the last 600 years in the political, social, economic, and cultural histories of Latin America. Special attention will be paid to the global context of this multi-ethnic and multi-lingual region.

HIST 104H. Interpreting the American Past. 3 Credits.
Lecture 3 hours, 3 credits. This course offers students a critical approach to interpreting the history of the United States. A fast-paced survey of American history from the era of colonization to the present, it focuses on the major intellectual, religious, social, cultural, political, environmental, and scientific developments that have influenced the development of the United States.

HIST 105H. Interpreting the African Past. 3 Credits.
Lecture 3 hours; 3 credits. This course offers students a critical approach to interpreting the history of Africa. A fast-paced survey of African history, it affords students a grounding in the major themes of African history. The course focuses on the major economic, social, and political institutions of Africa, past and present, and explores how historical developments assist comprehension of present-day Africa.

HIST 126H. Honors: Interpreting the American Past. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. Special honors section of HIST 104H.

HIST 127H. Honors: Interpreting the European Past. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. Special honors section of HIST 102H.

HIST 201. Introduction to Historical Methods. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Required of all history and secondary education social studies majors. Recommended prior to upper-division course work. Examines methods of historical research and primary and secondary source analysis, inclusive of internet usage. Explores historiography and historical writing. Introduces students to issues in the philosophy of history.

HIST 300T. The History of Sex and Sexual and Reproductive Technologies. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, HIST 105H, HIST 126H, OR HIST 127H. The course explores the many ways sex, gender, sexuality and sexual identities have been constructed in Western thought from 1250 to the present. The medicalization of sex and sexual practices will be examined. Sexual perversions such as prostitution, pornography, and sexual violence will be explored. The course will also focus on the technology of sexual enhancement and reproductive technologies and the ethics involved in these areas.

HIST 302. Perspectives in Teaching World History to 1500. 3 Credits.
Lecture. 3 hours. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, HIST 105H, HIST 126H, or HIST 127H. The course gives students a critical perspective on world civilizations from prehistory to 1500. It focuses on the major cultural, intellectual, scientific, geographic/environmental and religious developments of the world. The course emphasizes the critical assessment of primary documents and artifacts and the utilization of that material in the classroom.

HIST 303. The City in Western Civilization. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, HIST 105H, HIST 126H or HIST 127H. An examination of the city and humankind’s changing relationship with the urban environment. Special attention will be given to individual cities in various eras from Ancient Greece to the 19th century.
HIST 304T. History of Medicine, Disease, and Health Technology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, HIST 105H, HIST 126H or HIST 127H. Examines the history of medicine and epidemiology from ancient times through the twenty-first century. The course takes a comparative look at medical practices in Europe and around the globe and focuses heavily on the complex relationship between human societies and disease. The development of medical technologies and their impact are examined.

HIST 305. Ancient Greece. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, HIST 105H, HIST 126H or HIST 127H. The history of Greece from the Bronze Age to the Hellenistic era. Special attention will be paid to the Persian and Peloponnesian Wars, the Golden Age of Athens, and the life of Alexander the Great.

HIST 306. Ancient Rome. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, HIST 105H, HIST 126H or HIST 127H. The history of Rome from its foundation in 753 B.C. down to its fall in 476 A.D. Special attention will be placed on constitutional developments in the Republican period, the career of Augustus, and the strengths and failings of the Empire.

HIST 307. The Early Middle Ages. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, HIST 105H, HIST 126H or HIST 127H. Examines late Roman and barbarian Europe from the time of the Hunnic migrations through the Carolingian era. Primary emphasis will be on the social, cultural, economic, and political development of the various continental barbarian states.

HIST 308. The High Middle Ages. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, HIST 105H, HIST 126H or HIST 127H. A study of continental Medieval Europe from the later Carolingians through Dante. Primary emphasis will be placed on the social, cultural, economic, and religious aspects of medieval society.

HIST 310. Renaissance Europe. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, HIST 105H, HIST 126H or HIST 127H. An examination of the Renaissance in both Italy and Northern Europe from the 14th to the 16th centuries emphasizing the new learning, humanism and the place of the individual as well as the political and artistic new achievements of the age.

HIST 311. Early Modern Europe. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, HIST 105H, HIST 126H or HIST 127H. Covers the period between the late Middle Ages and the beginning of the modern era, roughly 1350-1715, exploring the Renaissance, the Reformation, and the Age of Exploration. Emphasis on the culture of the period as contemporaries coped with depression, plague, religious change, and cultural encounters outside Europe.

HIST 316. Cold War in History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Explores changes in the international system which arose in the wake of World War II and focuses on conflict and cooperation in selected regions of the developed and developing world.

HIST 322. History of England Through the Seventeenth Century. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. A survey of English history beginning at the time of Stonehenge, continuing through the Saxons, Normans, and Plantagenets, and concluding with the constitutional and religious developments under the Tudors and the Stuarts.

HIST 323. History of Modern England. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. A survey of English history with emphasis on eighteenth-century political life and culture, the Industrial Revolution, the development of the modern constitutional monarchy, and the vicissitudes of empire.

HIST 324. Europe in the Twentieth Century. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H (HIST 102H recommended). This course will explore the evolution and development of European states, institutions and cultures over the course of the twentieth century. Relations among European states—large and small—and their peoples will be explored.

HIST 327. Russia: The Old Regime. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Survey of Russian history from the ninth to the end of the nineteenth century stressing the distinctiveness of Russian culture and institutions, the influence of the West, the multi-national character of the Empire, and the decline of the old regime.

HIST 328. Russia and the Soviet Union: 20th Century. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Survey of Russian history from the nineteenth to the present stressing the complexity of Russian society and institutions, the influence of the West, the multi-national character of the Empire, and the decline of the old regime.

HIST 331. Colonialism and Nationalism in Southeast Asia. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. A study of Southeast Asia between 1750 and 1950. The focus will be on Indonesia, Vietnam, the Philippines, Burma, Malaysia and Thailand. Topics examined will include major theoretical frameworks used to understand colonialism and nationalism, the differential impact of colonial rule, and the impact of religions and ‘western’ ideologies on nationalist movements.

HIST 332. South Asia Since Independence. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. This is a comparative study of the main political, economic and social developments in the major countries of South Asia. Themes will include democratization, problems of economic development, the role of caste and religion, the causes of intrastate conflict and interstate conflict and the influence of global forces on the region. (cross listed with POLS 336 and ASIA 332).

HIST 333. The Emergence of New China. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. The history of China covering late Imperial China, the impact of Western imperialism, the Republican Period, and the establishment of the People’s Republic. (cross listed with ASIA 336).

HIST 338. Japan’s Era of Transformation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. The history of Japan since 1800. The decline of the Tokugawa Shogunate, modern nation building in the Meiji period, domestic conflicts and war in the twentieth century, and the roots of Japan’s economic prominence today. (Cross listed with ASIA 337).
HIST 345. Native American History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Examines the history and culture of Native American peoples from early contact with Europeans to present day. Particular focus on ways that cultural interactions affected and transformed native peoples - their beliefs, societies, and political structures.

HIST 346. Colonial and Revolutionary America. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Examines social, cultural, economic and political developments in North America from 1492 to the ratification of the Constitution of 1787. Course explores the role of class, gender, and race in the creation of an American culture.

HIST 348. The Early Republic, 1787-1850. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Explores America’s transformation from a republic to a democracy by examining the political, economic, social and intellectual history of the United States’ first half century.

HIST 349. American Naval History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. This course will examine American naval history and American naval theory from the colonial period to the present day. It will analyze the importance of American naval conflicts, developments in naval technology, and the social and political changes that shaped the U.S. Navy.

HIST 350. History of the Old South. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. A study of the Old South civilization from the colonial era to the Civil War, with particular emphasis on the frontier, slavery, the cotton kingdom, and southern cultural contributions.

HIST 351. The Civil War and Reconstruction. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. A study of the origins of the idea of secession and of the war, of the military, political, and economic contest between the Confederate and Federal governments, and finally of the long-range effects of the war as revealed in the failure of Reconstruction.

HIST 353. The Populist and Progressive Eras in United States History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. This course will define the populist and progressive movements and explore how these movements affected American politics, economics, and cultures. Topics to be discussed include commercial agriculture, industrial capitalism, urbanization, labor unions, immigration, reform movements, racial segregation, and other topics relevant to United States history from 1877-1920.

HIST 354. From the Jazz Age to the Atomic Age: US,1920-1945. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. The domestic and international history of the U.S. during the Roaring Twenties, The Great Depression, World War II.

HIST 355. The United States. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. The history of the United States from the end of World War II to the end of the Cold War. The course focuses on domestic politics, social change, economic developments and international relations.

HIST 356. Virginia History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. An examination of Virginia’s past from Jamestown to the present. The course emphasizes the colonial experience, Virginia’s role in the new nation, the post-Civil War era and Virginia in the twentieth century.

HIST 357. The United States in the 1960s. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Examines the political, social and cultural revolutions which occurred in the United States from 1960 to 1974. Topics include the reforms of JFK and LBJ; the rise of conservatism; the impact of the baby boom generation; the civil rights, anti-war, and women’s movements; the war in Indochina; and Watergate and the fall of Richard Nixon.

HIST 359. American Maritime History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Examines experiences of African-Americans' role in the political, economic, and social implications.

HIST 360. American Military History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. A study of American military policy, 1763 to the present, in relation to its political, economic, and social implications.

HIST 361. African-American History to 1865. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Examines African-American history from the African background through the Civil War. Emphasis is placed on an analysis of African-Americans’ role in the political, economic, social and cultural life of the United States.

HIST 362. African-American History Since 1865. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Examines African-American history from Reconstruction to the present. Emphasis is placed on an analysis of African-Americans’ role in the political, economic, social and cultural life of the United States.

HIST 363. Women in U.S. History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Examines experiences of women in U.S. history from 1607 to the present, paying particular attention to influences of race, class, ethnicity and changing conceptions of gender.

HIST 368. Internship. 1-3 Credits.
1-3 credits. Prerequisite: permission of the department. (qualifies as a CAP experience).

HIST 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: permission of the department. (qualifies as a CAP experience).

HIST 370. Africa in Global Commerce and Culture, from 800-1960. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H or HIST 101H or HIST 102H or HIST 103H or HIST 104H or HIST 105H. This course examines commercial and cultural developments in Africa in a world historical context, starting with the arrival of Islam towards the end of the first millennium and ending with European colonial rule.
HIST 371. Modern Mexico. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. This survey of Mexico’s history since independence highlights the social, cultural and economic changes that accompanied four turning points in the political history of Mexico: the independence movement, the wars of the reform, the Revolution of 1910, and the trend toward democratization that began in the 1980s. Attention will be paid to the changing scope of Mexico’s relations with the United States, and to comparisons of Mexico’s experience with that of other Latin American countries.

HIST 372. Central America and the Caribbean Since 1800. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. This course surveys socio-economic and political change after about 1800 in the Caribbean Basin (Central America and the insular Caribbean), a region whose diverse colonial, ethnic, labor and migratory experiences will provide rich opportunities for comparative study. Plantation slavery and its legacies, independence movements, export-led economic growth, nationalism, social movements, revolution and great-power rivalries will be the major themes.

HIST 373. U.S.-Latin American Relations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. This survey of Latin America’s relations with the United States since the early nineteenth century will seek to identify and account for changing patterns in what has been a highly asymmetrical power relationship. The emphasis will be on the outcomes of U.S. policy in the region, combining the study of broad trends (especially in economic and security policy since the 1890s) with a close analysis of three cases: Mexico, Cuba and Central America. The influence of the larger international environment on those relations will be considered.

HIST 375. African Urban History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Exploration of the historical and social dynamics of city life in Africa from ancient Egypt to the present. Case studies will examine the forms and functions of pre-colonial urban centers and the dynamic transformations of colonial and post-colonial cities.

HIST 376. Conflict and Violence in Modern Africa. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Exploration of the reasons behind both the level of warfare in Africa since the mid-20th century and our representations of that violence as well as themes of conflict resolution and prevention.

HIST 379. The Ottoman Empire. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: HIST 100H or HIST 101H or HIST 102H or HIST 103H or HIST 104H or HIST 105H. The course examines topically and chronologically the state, society and culture of the Ottoman Empire, which spread over Asia, Europe, and Africa from the 14th through the early 20th Century and ruled over religiously, ethnically, and linguistically diverse populations.

HIST 380. Women and Gender in the Middle East. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: HIST 100H or HIST 101H or HIST 102H or HIST 103H or HIST 104H or HIST 105H. The course examines the history of women and gender relations in the early modern and modern Middle East. The course traces how changing conceptions of the family and gender roles have shaped women’s lives. The course also deals with the impact of colonialism and nation-building on women as well as on ideas of femininity and masculinity in the modern Middle East.

HIST 386T. The Evolution of Modern Science. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Traces the development of modern science from the ancient Greeks to the 21st Century. (Cross-listed with SCI 302T).

HIST 389T. Technology and Civilization. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 3 hours of history. This course will examine the role of technology and relevant science. Students will examine the interaction between society and technology and investigate why technology is both a reflection of, and a shaping influence upon, "modern" culture and beyond.

HIST 393. Studies in Jewish History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Studies in Jewish History will examine specific topics, eras, and themes of Jewish history. Specific titles will be listed in the on-line course schedule.

HIST 396. Topics in History. 1-3 Credits.
1-3 credits each semester. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. A study of selected topics. These courses are open to both majors and nonmajors. History majors may take these courses to satisfy history concentration requirements. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

HIST 402W. Senior Seminar in History. 3 Credits.
Seminar 3 hours; 3 credits. Prerequisite: HIST 201 and a grade of C or better in ENGL 211C or 221C or 231C. Advanced study of selected topics leading to production of a research paper. Required of all history and secondary education social studies majors. (This is a writing intensive course.)

HIST 405/505. History of International Relations: Nineteenth Century Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Focuses on the evolution of international politics, diplomacy, and social, cultural, and economic structures between 1792 and 1914. Explores the relationship among the European powers and their relations with smaller states in Europe and the influence of war as it affected people at home and in battle, and on considering the relationships between warmaking and social development at particular times.

HIST 408/508. War and American Society in the Twentieth Century. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. An exploration of the content and meaning of wartime experiences within American society between 1898 and 1975. Emphasis is on comparing the levels of national, institutional and personal experiences of war as they affected people at home and in battle, and on considering the relationships between warmaking and social development at particular times.

HIST 409/509. History of US-Mexico Borderlands. 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisites: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. The course examines the history of the region straddling the U.S. - Mexico border from the Spanish Conquest to the present day, focusing on issues of immigration, economic and political integration and the complicated nature of state-building in a transnational environment.

HIST 411. Muslims, Christians, and Jews in the Ottoman Empire. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H or HIST 101H or HIST 102H or HIST 103H or HIST 104H or HIST 105H. The course examines the history of the region straddling the U.S. - Mexico border from the Spanish Conquest to the present day, focusing on issues of immigration, economic and political integration and the complicated nature of state-building in a transnational environment.

HIST 402W. Senior Seminar in History. 3 Credits.
Seminar 3 hours; 3 credits. Prerequisite: HIST 201 and a grade of C or better in ENGL 211C or 221C or 231C. Advanced study of selected topics leading to production of a research paper. Required of all history and secondary education social studies majors. (This is a writing intensive course.)

HIST 405/505. History of International Relations: Nineteenth Century Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H or HIST 105H. Focuses on the evolution of international politics, diplomacy, and social, cultural, and economic structures between 1792 and 1914. Explores the relationship among the European powers and their relations with smaller states in Europe and the influence of war as it affected people at home and in battle, and on considering the relationships between warmaking and social development at particular times.

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HIST 411. Muslims, Christians, and Jews in the Ottoman Empire. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H or HIST 101H or HIST 102H or HIST 103H or HIST 104H or HIST 105H. The course examines the status and relations of the three major religious communities in the Islamic Ottoman Empire in the early modern and modern periods. The course addresses questions such as: Did coexistence or conflict mark the encounters between Muslims, Christians, and Jews? What was the legal status of non-Muslims? How did the Ottoman Empire deal with nationalism?
HIST 412. From Empire to Nation: Nation-Building in the Balkans and
the Middle East. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: HIST 100H or HIST 101H or HIST
102H or HIST 103H or HIST 104H or HIST 105H. The course traces
the last turbulent century of the Ottoman Empire and its disintegration into
nation-states in the Middle East and the Balkans up until the mid-20th
Century. The course examines how the new politics employed nationalism
and modernization to build state, society and national culture.

HIST 414. Freedom, Rights and Revolution: Evolution of the State
System 1648-1815. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: HIST 100H, HIST 101H, HIST
102H, HIST 103H, HIST 104H or HIST 105H. Social, cultural, political,
legal and diplomatic history of Old Regime Europe, the rise of the territorial
state, and challenges to its authority. In addition to events and sources
contemporary to that age, students will be introduced to the most important
interpretive theories that have emerged in the past generation on the
Continent as well as in Britain and America.

HIST 415. Empire, Nations, and Industrialization: Evolution of the
State System, 1815-1914. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: HIST 100H, HIST 101H, HIST
102H, HIST 103H, HIST 104H or HIST 105H. Focuses on the evolution
of international politics, diplomacy, and social, cultural and economic
structures in the development of empires, nations and industrialization in
the evolution of the modern state system from 1815 to 1914. Explores the
relationship among European powers and their relations with smaller states
in Europe and spheres of influence throughout the world.

HIST 416. States, Territories and International Organization: Evolution
of the State System Since 1914. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: HIST 100H, HIST 101H, HIST
102H, HIST 103H, HIST 104H or HIST 105H. Focuses on the evolution
of international politics, diplomacy and social, cultural and economic
structures in states territories, and international organizations since 1914.
Emphasis on shifting European alignments since 1914, the two World Wars, the
development of the bi-polar world and the development and evolution of
international organizations.

HIST 420/520. Fascism in Europe. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST
102H, HIST 103H, HIST 104H or HIST 105H. Focuses on the evolution
of international politics, diplomacy and social, cultural and economic
structures in states territories, and international organizations since 1914.
Emphasis on shifting European alignments since 1914, the two World Wars, the
development of the bi-polar world and the development and evolution of
international organizations.

HIST 424/524. Africa in Modern Times. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: grade of C or better in ENGL 211C
or 221C or 231C, senior standing in the BAIS degree program or permission
of the instructor. This course analyzes, from a historical perspective, two core problems in Latin America’s modern (since c. 1880) history: political authoritarianism and economic underdevelopment. The temporal and spatial dimensions of change will be highlighted in discussions of patron-client political systems, military autonomy and impunity, social movements and revolution, export-oriented economic
growth, industrialization, and the roles of national, ethnic and gender
identities.

HIST 425/525. History of Modern Africa. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST
102H, HIST 103H, HIST 104H or HIST 105H. This course analyzes, from a
historical perspective, two core problems in Latin America’s modern (since c. 1880) history: political authoritarianism and economic underdevelopment. The temporal and spatial dimensions of change will be highlighted in discussions of patron-client political systems, military autonomy and impunity, social movements and revolution, export-oriented economic
growth, industrialization, and the roles of national, ethnic and gender
identities.

HIST 447. U.S. Foreign Relations, 1776-1914. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST
102H, HIST 103H, HIST 104H or HIST 105H. Explores the foreign
relations of the United States from the revolutionary period to 1914 with
particular emphasis on the ideological and domestic roots of American
foreign policy.

HIST 448. U.S. Foreign Relations Since 1914. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST
102H, HIST 103H, HIST 104H or HIST 105H. Explores the foreign
relations of the United States from the First World War to the present, with
particular emphasis on the ideological and domestic roots of American
foreign policy.

HIST 455/555. African-American Historiography. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST
102H, HIST 103H, HIST 104H or HIST 105H. Examination of the ways
historians have addressed specific issues in African-American history.

HIST 456/556. Research in Local History. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 101H, 102H, 103H, 104H
or 105H. Explores the history of Hampton Roads through student use of
research materials.
**HLTH - Health**

**HEALTH Courses**

**HLTH 101. Introduction to the Health Professions. 1 Credit.**
Lecture 1 hour; 1 credit. Explores careers in the health professions. Assists students in making informed choices regarding careers and programs of study and prepares students to apply for acceptance into health-related majors. Activities are included to help freshmen transition to college work.

**HLTH 102. Health Professions in the United States. 1 Credit.**
Lecture 1 hour; 1 credit. Prerequisite: HLTH 101 or permission of instructor. This course examines the health care system in the U.S. and identifies the role played by selected health professions in the delivery of care. Designed for students preparing themselves for entry into health-related majors.

**HLTH 120G. Information Literacy for Health Professions. 3 Credits.**
3 hours lecture, 3 credits. This course focuses on building basic skills for conducting health research and includes guidance on locating, utilizing, and evaluating sources. The course examines the methods and tools of health analysis and explores the mechanics of research presentation and writing to help health-related majors prepare for successful completion of upper-division requirements. The class also provides a brief introduction to ethical issues related to health research and writing.

**HLTH 397. Independent Study. 3 Credits.**

**HLTH 425. Leadership and Management for Health Professionals. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A review of the administration, management, policies, and practices governed by scopes of practice in a variety of health care settings. Topics covered include communication, planning and decision making, leadership and conflict management, and legal and ethical issues of concern to specific health professions.

**HLTH 490. Undergraduate Research Seminar. 1-3 Credits.**
Seminar. 1-3 credits. Prerequisite: admission to a health science major, pre-approval by the program director, cumulative GPA of 3.00 or higher, and an approved research course. Supervised research experience in a clinical health science discipline resulting in a research paper and oral presentation. Students and faculty supervisor develop and approve a contract of required research activities for the semester, such as attending research lab meetings, data collection, coding and/or analysis, and information search.

**HLTH 491. Undergraduate Research Seminar. 1-3 Credits.**
Seminar. 1-3 credits. Prerequisite: admission to a health science major, pre-approval by the program director, cumulative GPA of 3.00 or higher, and an approved research course. Supervised research experience in a clinical health science discipline resulting in a research paper and oral presentation. Students and faculty supervisor develop and approve a contract of required research activities for the semester, such as attending research lab meetings, data collection, coding and/or analysis, and information search.

**HLTH 495/595. Topics in Health. 1-3 Credits.**

**HMSV - Human Services**

**HUMAN SERVICES Courses**

**HMSV 339. Interpersonal Relations. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisite: ENGL 211C or ENGL 221C or ENGL 231C. Students will learn concepts and theories of interpersonal relationships. Development of skills necessary for effective communication will be stressed. A grade of C or better is required.

**HMSV 341. Introduction to Human Services. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisites: ENGL 110C or ENGL 211C or ENGL 221C or ENGL 231C. Students will learn about human services, the helping process, and the role and function of the human service worker. Students will be exposed to local and state human services facilities. A grade of C or better is required.

**HMSV 343W. Human Services Methods. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisite: HMSV 341 or HMSV 341W. Corequisite: A grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C. Presents theories and techniques used by human services workers in a variety of settings. A grade of C or better is required. (This is a writing intensive course.).

**HMSV 344. Career Development and Appraisal. 3 Credits.**
Lecture 3 hours; 3 credits. Corequisite: HMSV 341. Prerequisite: ENGL 211C or ENGL 221C or ENGL 231C. Focuses on career development throughout the life span with emphasis on vocational theories, interventions, assessments, and socio-economic factors.

**HMSV 346. Diversity Issues in Human Services. 3 Credits.**
Lecture 3 hours, 3 credits. Prerequisites: ENGL 211C, 221C, or 231C. Corequisite: HMSV 341. This course serves as an introduction to multicultural helping. The influence of socio-identities (e.g., race, ethnicity, religion, gender, socioeconomic status, sexual orientation) on individuals’ functioning, concerns, and the helping process will be explored. A grade of C or better is required.

**HMSV 368. Field Observation in Human Services. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisites: HMSV 339, HMSV 341, HMSV 343W and HMSV 346. Students will visit and examine human services systems such as mental health, substance abuse, criminal justice, education, rehabilitation, and professional associations to facilitate decision-making in selecting an internship and to gain a complex understanding of the roles of the human services professional. A grade of C or better is required.

**HMSV 440W/540. Program Development, Implementation, and Funding. 3 Credits.**
Lecture 3 hours, 3 credits. Prerequisites: A grade of C or better in ENGL 211C or 221C or 231C; HMSV 339, 341, 343W, 344, and 346. This course represents models and practices of developing, implementing, and evaluating human services programs. The course includes an overview of funding human services programs, including grant writing and fundraising.

**HMSV 441/541. Non-Profit Fund-Raising in Human Services. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisites: HMSV 341 and HMSV 440W. This course is designed to expose human service students to the art of ethical fund-raising in human services, including annual and capital campaigns, telemarketing, special events, direct mail marketing, face-to-face solicitation, e-fund-raising, and grant writing.

**HMSV 444/544. Psycho-educational Groups. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisite: HMSV 343W. This course combines lectures and experiential learning about psycho-educational groups. Principles and practices for developing and leading psycho-educational groups are emphasized.

**HMSV 447/547. Addictions: Theory and Intervention. 3 Credits.**
Lecture and discussion 3 hours; 3 credits. Prerequisites: HMSV 339 with a grade of C or better and HMSV 341 with a grade of C or higher and HMSV 343W with a grade of C or better. This course examines the etiology, risk factors and treatment of alcoholism and other addictions.

**HMSV 448. Interventions and Advocacy with Children. 3 Credits.**
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or higher in HMSV 339 and HMSV 341, and HMSV 343W. This course provides an overview of how human service workers assist children in a variety of settings. Emphasis will be placed upon advocacy, supportive work, and short term crisis intervention.
HMSV 449. Theory and Practice of Prevention in Human Services. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HMSV 339, HMSV 341 and HMSV 343W with a grade of C or higher. Students will learn theories and strategies for the practice of prevention services aimed at promoting the health and well-being of children, adolescents, and adults. Existing prevention programs, policies, and necessary resources will be examined. Students will develop beginning skills in the use of prevention strategies with individuals and groups.

HMSV 456/556. Diversity Experience in Ireland. 3 Credits.
3 credits. Prerequisite: HMSV 341 or permission of instructor. This course is an in-depth, cross-disciplinary study of cultural similarities and differences in approaches to social conflict and other social problems in the United States and in Ireland. A two-week study abroad period will bring students into intensive contact with educators, scholars, and community activists in Ireland. This course will also serve as an introduction to multicultural helping. The influence of socio-identities (e.g. race, ethnicity, religion, gender, socioeconomic status, sexual orientation) on individuals’ functioning, concerns, and the helping process will be explored.

HMSV 468. Internship in Human Services. 12 Credits.
12 credits. Prerequisites: a minimum cumulative grade point average of 2.00 overall and in the major and minor; completion of all General Education courses, core courses, major courses, and minor courses; a grade of C (2.00) or better in HMSV 339, HMSV 341, HMSV 343W, HMSV 346 and HMSV 368. This course involves field placement in a human services setting. Approximately 400 hours are devoted to field placement, group seminars and individual supervision. A grade of “C” or better must be earned in HMSV 468 to complete the human services major. (qualifies as a CAP experience).

HMSV 491. Family Guidance. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: HMSV 341 and ENGL 211C. This course provides a study of the family as a system and an introduction to a variety of issues confronting the family, including child abuse, spouse abuse, and others that produce more than usual stress in the family. Available community resources for helping families will be examined.

HMSV 495/595. Topics in Human Services. 1-7 Credits.
1-6 credits. Prerequisite: senior standing or permission of the instructor. The study of selected topics in human services.

HNRS - Honors

HONORS Courses

HNRS 200. Peer Education and Leadership. 3 Credits.
Lecture, 3 hours; 3 credits. This course prepares students for work as peer mentors and tutors. Students will develop skills in information literacy and research as they learn how to create and implement individualized student success/academic plans for themselves and others.

HNRS 226. Undergraduate Research Apprenticeship. 1-3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: approval of Honors College Dean. The Research Apprenticeship offers students the opportunity to develop and acquire skills in research and information literacy through active involvement in ongoing research programs or in research projects under the supervision of a faculty mentor. Experiences may include but are not limited to gathering and analyzing information to develop proposals, survey construction, stakeholder identification, stimulus development, quantitative and qualitative data collection, statistical analysis, writing reports, and presenting results. Available research projects/programs will vary each semester. Interested students should consult with the Honors College Dean and visit the Honors College website for more information about research apprenticeship opportunities: http://www.odu.edu/aio/honors.

HNRS 387. Honors Civic Learning Project. 1 Credit.
1 credit. Prerequisite: junior standing in the Honors College. Students volunteer for 45 hours of work, keep a work experience journal reflecting on their day-to-day experiences as a volunteer, and write a short paper detailing how the experience helped them to identify, revise and accomplish future learning and career goals.

HNRS 487. Senior Honors Colloquium. 3 Credits.
3 credits. Prerequisite: senior standing in the Honors College or permission of the dean. Fulfills the Honors College capstone requirement. The purpose of the course is to give students experience in working as a group of “consultants” who collaboratively undertake secondary and primary research and report preparation on behalf of a “client”.

HNRS 497. Honors Independent Study. 1-3 Credits.
1-3 credits. Offered upon request each semester. Prerequisite: open to juniors and seniors in the Honors College. This course is an opportunity for students to engage in directed readings and/or research in a topic with which they are familiar.

HNRS 498. Honors Independent Study. 1-3 Credits.
1-3 credits. Offered upon request each semester. Prerequisite: open to juniors and seniors in the Honors College. This course is an opportunity for students to engage in directed readings and/or research in a topic with which they are familiar.

HNRS 499. Senior Honors Thesis. 3 Credits.
3 credits. Prerequisites: permission of the Honors College Dean, 3.25 cumulative GPA. Each student will undertake a research experience under the supervision of a faculty member. A research proposal and research report are required.

HPE - Health Physical Education

HEALTH PHYSICAL EDUCATION Courses

HPE 230. Field Experience in Physical Education and Health. 2 Credits.
2 credits. Teacher candidates gain insight into the techniques, methodology, and philosophy of field-based health and physical education teachers. Teacher candidates will be expected to observe and participate in the teaching of simple lessons.

HPE 327. Teaching of Health and Physical Education, Pre-K-8. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course is designed to prepare classroom teachers in PreK-8 licensure programs for the teaching of health and physical education. Appropriate content, instructional strategies, effective classroom management, and safety issues and requirements will be presented.

HPE 369. Practicum in Physical Education and Health. 3 Credits.
3 credits. Prerequisites: HPE 230, passing scores on PRAXIS I or State Board of Education-approved SAT or ACT scores and admission into teacher education. A clinical experience that allows the teaching candidate to teach and observe professionals in a field-based setting. Portfolio development, reflective assessment of teaching, and student assessment techniques will be emphasized.

HPE 406/506. Tests and Measurement in Physical Education and Health. 3 Credits.
Three classes per week; 3 credits. Prerequisite: junior standing. This course is designed to acquaint the student with tests and measurement in the fields of health and physical education, test construction, scoring, and methods of using results.
HPE 430/530. Teaching Wellness and Health-Related Fitness, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PE 300. The study of techniques for
the teaching of wellness and health-related fitness. Content to be covered
includes drug education, nutrition, wellness, mental health, and various
aspects of fitness training appropriate for the teaching of PreK-12 physical
education and health.

HPE 485. Teacher Candidate Internship. 12 Credits.
Five days per week; full semester: 12 credits. Prerequisites: acceptance into
teacher education, completion of approved program, passing scores on the
appropriate PRAXIS II content examination, and an approved application
for Teacher Candidate Internship. A culminating experience that provides
a field-based application of effective techniques in behavior, management,
instructional strategies, and the development of professional attributes in
K-12 school setting. (Qualifies as a CAP experience).

HPE 487/587. Teacher Candidate Seminar. 1 Credit.
One hour; 1 credit. Prerequisites: acceptance into teacher education
and approval of the program advisor. Study and group discussion of
problems growing out of the student teaching (teacher candidate internship)
experience.

HPE 497/597. Topics in Health and Physical Education. 1-3 Credits.
Prerequisite: permission of the instructor.

HPE 498/598. Topics in Health and Physical Education. 1-3 Credits.
Prerequisite: permission of the instructor.

IDS - Interdisciplinary Studies

INTERDISCIPLINARY STUDIES Courses

IDS 300W. Interdisciplinary Theory and Concepts. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: a grade of C or better
in ENGL 211C, ENGL 221C or ENGL 231C. An examination of the history,
concepts and application of interdisciplinary study. This course includes
an analysis of similarities and differences in academic disciplines and the
application of interdisciplinary approaches to a specific topic of study. (This
is a writing intensive course).

IDS 368. Internship in Interdisciplinary Studies. 1-6 Credits.
1-3 credits. Prerequisite: junior standing and permission of Individualized
interdisciplinary studies program coordinator. An opportunity to integrate
service and applied learning experience with interdisciplinary perspectives.

IDS 397. Independent Study. 1-6 Credits.

IDS 398. Independent Study. 1-6 Credits.

IDS 400/500. Study Abroad. 0 Credits.

IDS 493. IDS Electronic Portfolio Project. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: IDS 300W and senior standing.
The preparation of an electronic portfolio integrating the student’s academic
study, work experiences, skill identification and work products. Alternative
formats are used for varying uses of the portfolio.

IDS 495. Topics in Integrative Studies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: IDS 300W. Focused study of
selected topics linking perspectives, research and applications from a variety
of disciplines. Emphasis is on disciplinary synthesis.

IDS 497. IDS Individualized Senior Project. 3 Credits.
3 hours; 3 credits. This course is a vehicle for the execution of the senior
project requirement of the Interdisciplinary Studies Program. The project
will be negotiated between the student, faculty sponsors, and the program.

IDT - Instructional Design/Technol

INSTRUCTIONAL DESIGN/TECHNOL Courses

IDT 475/575. Web Development for Educators. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing/graduate standing.
Provides a conceptual framework and hands-on experience in the
design and development of online web resources for educators. The course
introduces the student to the various uses and features of online tools
and technologies, investigates online learning strategies, and explores
best practices in the use of the web to enhance learning. Topics include
fundamentals of web authoring; screen design, use of web page creation
tools, and functional use of HTML and derivatives.

INBU - International Business

INTERNATIONAL BUSINESS Courses

INBU 367. Cooperative Education. 1-3 Credits.
1-3 credits. May be repeated for credit. Prerequisites: Permission of IB
coordinator and Career Management Center, and a declared major in the
University or permission of the Dean’s Office of the CBPA. Supervised
experience in the international business work place requiring written
statement of objectives and evaluation of experience. Pass/fail grading only.
(Qualifies as a CAP experience).

INBU 368. Internship in International Business. 1-3 Credits.
1-3 credits. Prerequisites: Permission of IB coordinator and Career
Management Center, and a declared major in the University or permission
of the Dean’s Office of the CBPA. Supervised experience in the
international business work place requiring written statement of objectives
and evaluation of experience. Pass/fail grading only. (Qualifies as a CAP
experience).

INBU 431. Doing Business in Europe. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MGMT 325, FIN 323, and MKTG
311 or permission of the instructor, and a declared major in the University or
permission of the Dean’s Office of the CBPA. Supervised experience in the
international business work place requiring written statement of objectives
and evaluation of experience. Pass/fail grading only. (Qualifies as a CAP
experience).

INBU 432. Doing Business in Latin America. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MGMT 325, FIN 323, and MKTG
311 or permission of the instructor, and a declared major in the University or
permission of the Dean’s Office of the CBPA. Supervised experience in the
international business work place requiring written statement of objectives
and evaluation of experience. Pass/fail grading only. (Qualifies as a CAP
experience).

INBU 433. Doing Business in Asia. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MGMT 325, FIN 323, and MKTG
311 or permission of the instructor, and a declared major in the University or
permission of the Dean’s Office of the CBPA. Supervised experience in the
international business work place requiring written statement of objectives
and evaluation of experience. Pass/fail grading only. (Qualifies as a CAP
experience).
INBU 434. International Trade Field Study. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ECON 450, MKTG 411, FIN 435 or MGMT 361, or permission of the instructor, and a declared major in the University or permission of the Dean’s Office of the CBPA. An applied field research study to develop an export trade plan which involves market analysis, risk analysis, financing and distribution decisions in overseas markets. (qualifies as a CAP experience).

INBU 450. International Business Operations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ECON 450, MKTG 411, FIN 435, or permission of the instructor, and a declared major in the University or permission of the Dean’s Office of the CBPA. Lecture, discussion and case studies. A capstone course to integrate and apply the theories and concepts learned in required international business courses to the operations of international business organizations.

INBU 463. International Business Seminar Abroad. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: a declared major in the University or permission of the Dean’s Office of the CBPA. A study tour abroad arranged in cooperation with a foreign university, including lectures on international business topics and visits to international firms and economic/business organizations. Written work required.

INBU 495. Topics in International Business. 1-3 Credits.
Lecture and discussion 3 hours; 1-3 credits. Prerequisite: permission of the IB coordinator, and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of selected topics, the title of which will appear in the course schedule.

INBU 496. Topics in International Business. 1-3 Credits.
Lecture and discussion 3 hours; 1-3 credits. Prerequisite: permission of the IB coordinator, and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of selected topics, the title of which will appear in the course schedule.

INBU 497. Independent Study in International Business. 1-3 Credits.
1-3 credit hours. Prerequisite: permission of the department. Affords students the opportunity to undertake independent study under the direction of a faculty member.

IT - Information Technology

INFORMATION TECHNOLOGY Courses

IT 150G. Basic Information Literacy and Research. 3 Credits.
Lecture 3 hours; 3 credits. This course is designed to provide students with the basic skills necessary to identify, to access and to utilize task appropriate information. Students will learn to evaluate information sources and to apply good research strategies. The course will address qualitative, quantitative, visual and auditory data sources along with the ethical use of data and respect for intellectual property. Focus will be given to research topics in various fields including business, humanities, social science and technology.

IT 201. Introduction to Information Systems. 3 Credits.
Lecture and discussion 3 hours; 3 credits. An introduction to the major hardware/software components of computer-based information systems. Additional topics include databases, networks, and telecommunications. Intended as an introductory course for Information Systems majors.

IT 210. Business Applications with C++. 3 Credits.
Lecture and discussion 3 hours; 3 credits. An Introductory course on programming using C++ that emphasizes top down design and documentation representative of business needs and requirements. Topics include simple data types, input/output streams, control structures and logical expressions, functions, arrays, records, and pointers.

IT 310. GUI Programming with C++, 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: IT 210 or CS 150 with a C or better (grade requirement may be waived by the department) and a declared major in the university or permission of the Dean’s Office of the CBPA. An advanced C++ programming course focusing on object-oriented design/methodologies and the development of Graphic User Interfaces (GUI) for business applications. Special topics include: dynamic variables, linked lists, abstract data types, classes, inheritance, composition, exception handling, templates, and overloading.

IT 317. Principles of Technology Architecture. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: IT 201 with a C or better (grade requirement may be waived by the department) and MATH 162M, and a declared major in the university or permission of the Dean’s Office of the CBPA. A comprehensive treatment of information theory, computer architecture, processor implementation and data communications.

IT 325. Web Site and Web Page Design. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: completion of general education information literacy requirement, and a declared major in the university or permission of the Dean’s Office of the CBPA. Advanced design and implementation strategies are utilized to create dynamic e-commerce applications. Key concepts include: web page design, graphic composition, scripting languages, animation and Internet security.

IT 360T. Principles of Information Technology. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: completion of general education computer literacy and research requirement and junior standing; and a declared major in the University of permission of the Dean’s Office of the CBPA. A survey of computer hardware, software, procedures, applications, and management information concepts. Provides an understanding of the application of the computer to the support of managerial decision making. Information Systems majors may not use this course for credit toward the B.S.B.A. degree.

IT 361. Systems Analysis. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: ACCT 201, IT 201 and IT 210, each with a C or better (grade requirement may be waived by the department), and a declared major in the university or permission of the Dean’s Office of the CBPA. Introduction to the Systems Development Life Cycle (SCLC) from an information systems project perspective. Emphasis is placed on the planning and analysis functions performed during information systems project work. The student will be introduced to tools and techniques utilized in development of system models representing modern business activities. Computer-Aided Systems Engineering (CASE) tools will be employed to create process and data-driven versions of these models.

IT 367. Cooperative Education. 1-3 Credits.
1-3 credits. Prerequisite: junior standing and a declared major in the university or permission of the Dean’s Office of the CBPA. Approval for enrollment and allowable credits are determined by the department and Career Management in the semester prior to enrollment. Available for pass/fail grading only. (qualifies as a CAP experience).

IT 368. Student Internship. 1-3 Credits.
1-3 credits. Prerequisite: junior standing and a declared major in the university or permission of the Dean’s Office of the CBPA. Approval for enrollment and allowable credits are determined by the department and Career Management in the semester prior to enrollment. Available for pass/fail grading only. (qualifies as a CAP experience).

IT 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: junior standing and a declared major in the university or permission of the Dean’s Office of the CBPA. Approval for enrollment and allowable credits are determined by the department and Career Management in the semester prior to enrollment. Available for pass/fail grading only. (qualifies as a CAP experience).
IT 372. COBOL and Applications. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: IT 310 and a declared major in the university or permission of the Dean’s Office of the CBPA. Introduction to the COBOL programming language and its application in industry and government.

IT 410. Business Intelligence. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BNAL 306 and IT 450. Business intelligence, data warehouse, data mining, and OLAP. The course will use state-of-the-art business intelligence software tools including SAS products to provide hands-on experience in designing and using data warehouses.

IT 415. Business Telecommunications and Networks. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: IT 317 with a C or better; IT 310 and IT 361, and a declared major in the university or permission of the Dean’s Office of the CBPA. Telecommunications, hardware, software, transmission facilities and methods, industry general structure of network design, implementation, and management. Emphasis on state-of-art technology and current business environments.

IT 416. Network Server Configuration and Administration. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: IT 415, and a declared major in the university or permission of the Dean’s Office of the CBPA. Advanced course on configuration and management of network servers. Topics include: user and storage management, ACLs, group policy, configuring security, backups and disaster recovery, and server management.

IT 417. Management of Information Security. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: IT 415, and a declared major in the university or permission of the Dean’s Office of the CBPA. This course emphasizes the need for management and technology to successfully implement an information security program in an organization. Threats, attacks, legal and ethical issues, risk assessment and control strategies; planning, development, and maintenance of security policies; contingency planning; firewalls, intrusion detection systems and security tools; and management of information security are some of the topics covered in this course.

IT 420. Object-Oriented Application Development Using Visual Basic. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: CS 250 or IT 310, and a declared major in the university or permission of the Dean’s Office of the CBPA. Advanced design and implementation strategies are utilized to create dynamic client/server applications. Key concepts include: abstractions, encapsulation, inheritance, polymorphism, persistence, and dynamic binding.

IT 425. Information Systems for International Business. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: The general education impact of technology requirement, a declared major in the university or permission of the department. The international business organization and its relationship to information systems architecture with emphasis on the role of connectivity technology as a driver of globalization. An introduction to the economics and structure of the international information technology marketplace.

IT 430/530. Object-Oriented Programming with JAVA. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: IT 310 or CS 250, and a declared major in the university or permission of the Dean’s Office of the CBPA. An introduction to JAVA as an object-oriented language used to write JAVA applets and applications. Business examples incorporating multimedia, multithreading, networking, and advanced graphical interfaces are used to reinforce the object-oriented concepts of abstraction, encapsulation, inheritance, polymorphism, persistence, and dynamic binding.

IT 450. Database Concepts. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: IT 317 with a C or better; IT 310 and 361, and a declared major in the university or permission of the Dean’s Office of the CBPA. Introduction to database concepts. Historical development, data models, database analysis, design and implementation, query languages, data security, and introduction to business transaction systems.

IT 451. Database Administration. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: IT 450, and a declared major in the university or permission of the Dean’s Office of the CBPA. Provides the conceptual framework for database architecture and database administration. Topics include: physical database structure, object management, and control of user access.

IT 453. Database Deployment and Performance Tuning. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: IT 451, and a declared major in the university or permission of the Dean’s Office of the CBPA. Examines techniques and methodologies that are used to insure the deployment of efficient, secure, and high-performance database applications.

IT 461. Implementing Internet Applications. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: IT 372. Examines the deployment of efficient, secure, and high-performance database applications.

IT 464. Project Management in Information Systems. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: IT 317 with a C or better; IT 310 and 361, and a declared major in the university or permission of the Dean’s Office of the CBPA. This course focuses on project management techniques and methodologies that can be adopted to Information Technology software and systems projects.

IT 473. Systems Design and Implementation. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: IT 317 with a C or better; IT 310 and 361, and a declared major in the university or permission of the Dean’s Office of the CBPA. A case-study-based presentation of system life cycle phases subsequent to systems analysis. The student will utilize Computer-Aided Systems Engineering (CASE) tools to design logical and physical models to define business requirements. Factors relevant to the creation of business information systems through development and implementation will be examined in detail. Topical issues examined include: CASE-based methodologies, project management, feasibility analysis, database design, on-line system design, prototyping, development/testing strategies, and implementation/training strategies. Students, potentially working in teams, are expected to apply these design strategies to industry case studies, resulting in new and comprehensive system designs, the results of which will be delivered in formal presentation fashion in a classroom setting. (qualifies as a CAP experience).

IT 474. Strategic IT Administration. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: IT 361 and a declared major in the university or permission of the Dean’s Office of the CBPA. Focuses on improving business use of existing IT and achieving competitive advantage. All students gain a strategic perspective on an important organizational resource—information. Plus, it will prepare IT students for managerial positions and effective communication with executives.

IT 495/595. Selected Topics in Information Systems. 1-3 Credits.
3 credits. Prerequisite: permission of the department. Taught on an occasional basis. See the course schedule for the particular topic being taught each semester.
ITAL - Italian

ITALIAN Courses

ITAL 101F. Beginning Italian I. 3 Credits.
Lecture 3 hours; 3 credits each semester. 101F is prerequisite to 102F. Aural comprehension, oral drill and discussion of grammar principles; written exercises, and reading assignments.

ITAL 102F. Beginning Italian II. 3 Credits.
Lecture 3 hours; 3 credits each semester. 101F is prerequisite to 102F. Aural comprehension, oral drill and discussion of grammar principles; written exercises, and reading assignments.

ITAL 201. Intermediate Italian I. 3 Credits.
Lecture 3 hours; 3 credits each semester. Prerequisite: ITAL 102F or satisfactory score on the placement test. Graded readings with grammar review followed in the second semester by an introduction to Italian literature.

ITAL 202. Intermediate Italian II. 3 Credits.
Lecture 3 hours; 3 credits each semester. Prerequisite: ITAL 201. Graded readings with grammar review followed in the second semester by an introduction to Italian literature.

ITAL 295. Topics. 1-3 Credits.

ITAL 296. Topics. 1-3 Credits.

ITAL 395. Topics in Italian. 1-3 Credits.
1-3 credits each semester. Prerequisite: ITAL 202 or equivalent. A study of selected topics for elective credit. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

ITAL 396. Topics in Italian. 1-3 Credits.
1-3 credits each semester. Prerequisite: ITAL 202 or equivalent. A study of selected topics for elective credit. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

JAPN - Japanese

JAPANESE Courses

JAPN 111F. Beginning Japanese. 6 Credits.
Lecture 3 hours; drill 3 hours; 6 credits. Oral drill and discussion of grammar principles, written exercises, and reading assignments. This course requires extensive work in the language laboratory. All four skills, listening, speaking, reading and writing, are implemented from the beginning of the course.

JAPN 195. Topics in Japanese. 1-3 Credits.

JAPN 196. Topics in Japanese. 1-3 Credits.

JAPN 212. Intermediate Japanese. 6 Credits.
Lecture 3 hours; drill 3 hours; 6 credits. Prerequisite: JAPN 111F or satisfactory score on the placement test. More grammar principles are discussed; written exercises with more kanji. Introduction to culture with graded readings of essays.

JAPN 295. Topics in Japanese. 1-3 Credits.
1-3 credits each semester. Prerequisite: 6 hours at the 100 level. A study of selected topics designed as electives for non-majors. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

JAPN 296. Topics in Japanese. 1-3 Credits.
1-3 credits each semester. Prerequisite: 6 hours at the 100 level. A study of selected topics designed as electives for non-majors. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

JAPN 309. Kanji I. 3 Credits.
3 hours lecture; 3 credits. Prerequisite: JAPN 212. This course is designed for students who have completed 12 credits of Beginning and Intermediate Japanese. The main focus is on training students how to use a kanji directory efficiently and guiding them to become an independent scholar of the Japanese language.

JAPN 310. The Faces of Japan. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. Lectures in English, films and slides provide an introduction to the literature, culture, contemporary life style and geography of Japan. Cross-listed with FLET 310.

JAPN 311. Advanced Japanese Language and Culture I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: JAPN 212 and 250. Emphasis on the development of aural-oral skills. An intensive study of the principles of the Japanese grammar and syntax accompanied by oral and written exercises.

JAPN 312. Advanced Japanese Language and Culture II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: JAPN 311 or satisfactory score on the placement test. Emphasis placed on the development of writing skills. Analysis of linguistic structure and their application to personal expression.

JAPN 395. Topics in Japanese. 1-3 Credits.
1-3 credits each semester. Prerequisite: JAPN 212 or the equivalent. A study of selected topics in Japanese. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

JAPN 396. Topics in Japanese. 1-3 Credits.
1-3 credits each semester. Prerequisite: JAPN 212 or the equivalent. A study of selected topics in Japanese. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

JAPN 495/595. Topics in Japanese. 1-3 Credits.
1-3 credits each semester. Prerequisite: third-year Japanese or permission of the instructor. A study of selected topics in Japanese. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

JAPN 496/596. Topics in Japanese. 1-3 Credits.
1-3 credits each semester. Prerequisite: third-year Japanese or permission of the instructor. A study of selected topics in Japanese. These courses will appear in the course schedule booklet and will be more fully described in a booklet distributed to all academic advisors.

JST - Jewish Studies
COURSE DESCRIPTIONS

MAE 195. Topics. 1-3 Credits.
The fields of mechanical and aerospace engineering. Information, and to the application of information literacy and research in to the needs, access, evaluation, use, impact and ethical/legal aspects of research project are required. 2 credits. Prerequisite: ENGN 110. This course will introduce students to the needs, access, evaluation, use, impact and ethical/legal aspects of information literacy and research in to the needs, access, evaluation, use, impact and ethical/legal aspects of research project are required.

MAE 201. Materials Science. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 211. Principles of materials science with emphasis on the relationship between structure and properties and their control through composition and processing. Metals, polymers, ceramics, and composite materials are considered. Laboratory 2 hours; 1 credit. Corequisites: MAE 201 and CS 150. This laboratory involves experiments demonstrating lecture material covered in the MAE 201 course.

MAE 203. Mechanical Engineering Laboratory I - Materials Science. 1 Credit.
Lecture 3 hours; 1 credit. Corequisites: MAE 201 and CS 150. This laboratory involves experiments demonstrating lecture material covered in the MAE 201 course.

MAE 204. Engineering Mechanics I - Statics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PHYS 231N. Prerequisite: MATH 211 with a grade of C or better. Introduction to mechanical engineering problems and their solutions through the study of statics of particles and rigid bodies. Emphasis will be placed on the relationship of the static loads with the mechanical properties of the materials being considered. Laboratory 2 hours; 1 credit. Corequisites: MAE 201 and CS 150. This laboratory involves experiments demonstrating lecture material covered in the MAE 201 course.

MAE 205. Dynamics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in MAE 204 or CEE 204. Corequisite: MATH 212. Introduction to engineering problems and their solutions through a study of the dynamics of particles and rigid bodies. General force systems are studied including friction. Laboratory 2 hours; 1 credit. Corequisites: MAE 201 and CS 150. This laboratory involves experiments demonstrating lecture material covered in the MAE 201 course.

MAE 220. Engineering Mechanics II - Solid Mechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in MAE 204 or CEE 204. Introduction to concepts of stress, strain and their relation to each other. Stress and strain in axially loaded members and circular rods and tubes subjected to torsion. Normal and shear stress in beams under bending loads. Additional topics include bending deflection, transformation of stress and strain, Mohr’s circles, statically indeterminate problems, combined stress and thin walled pressure vessels. Laboratory 2 hours; 1 credit. Corequisites: MAE 201 and CS 150. This laboratory involves experiments demonstrating lecture material covered in the MAE 201 course.

MAE 225. Mechanical Engineering Laboratory II - Solid Mechanics. 1 Credit.

MAE 303. Mechanics of Fluids. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 307, 312, a grade of C or better in MAE 205. Corequisites: MAE 305 and 311. Fundamental concepts, fluid statics, basic equations in integral form, open-channel flow, Bernoulli’s equation, dimensional analysis and similitude, incompressible viscous flow, pipe friction, boundary layers, introduction to differential analysis. Laboratory 2 hours; 1 credit. Corequisites: MAE 303 and 311. An introduction to thermo-fluid experimentation and measurement; basic flow phenomena demonstrated; measurement techniques for flow temperature, pressure and properties; report writing and data reduction methods, including statistical treatment of data; formal oral reports.

MAE 305. Mechanical Engineering Laboratory III - Thermo/Fluids. 1 Credit.
Lecture 3 hours; 3 credits. Prerequisites: MATH 312. Corequisites: MAE 303, 305. Essential definitions of thermodynamics, first law, physical properties, ideal and real gases, second law, reversibility, irreversibility and consequences of thermodynamic cycles.
MAE 312. Thermodynamics II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 307, and a grade of C or better in MAE 303, and a grade of C or better in MAE 311. Concepts and principles dealing with thermodynamic cycles, relations and generalized charts, mixtures of fluids, chemical reactions, chemical and phase equilibrium, thermodynamic aspects of fluid flow; introduction to compressible flow, isentropic and normal shock wave relations.

MAE 315. Heat and Mass Transfer. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MAE 303, and a grade of C or better in MAE 311. Fundamental laws of heat transfer by conduction, convection, and radiation; boundary-layer concepts; simultaneous heat, mass, and momentum transfer.

MAE 332. Mechanical Engineering Design I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MAE 201, a grade of C or better in 205, a grade of C or better in MAE 220; and MET 120. Corequisite: MAE 225. Introduction to machine design including review of stress and deflection analysis. Statistical considerations in design, strength of mechanical elements with emphasis on theories of failure and fatigue design, design of mechanical elements such as screws, fasteners, connections, welded joints, and flexible mechanical elements.

MAE 340. Computational Methods in Mechanical Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CS 150, MATH 307 and 312. A survey of modern computing techniques for mechanical engineers. Numerical algorithms are presented to solve practical problems in mechanical engineering as found in solid mechanics, fluid mechanics, dynamics, and heat transfer. Emphasis is on providing computational experience in applied numerical methods using computers. Topics include roots of equations, simultaneous equations, differentiation, integration, regression analysis, interpolation and differential equations. Analysis, understanding, and quantification of computational errors are included in all topics and applications.

MAE 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by department and Career Management in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (qualifies as a CAP experience).

MAE 368. Internship. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by department and Career Management. Available for pass/fail grading only. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. (qualifies as a CAP experience).

MAE 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: approval by department and Career Management. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students an opportunity to gain short duration career-related experience. (qualifies as a CAP experience).

MAE 403/503. Flight Mechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MAE 406, 436. Aircraft concepts including performance prediction and optimization, flight and maneuver envelopes, and steady flight performance. Additional topics: longitudinal static stability and trim; aircraft dynamics; development, separation and solution of aircraft equations of motion; natural modes; dynamic stability; sensors and actuators; and design of stability augmentation and autopilot systems.

MAE 404/504. Vibrations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MAE 205, a grade of C or better in MAE 220; MAE 340 and MATH 312. Free and forced vibrations of undamped and damped, single-degree of freedom, multi-degree of freedom, and continuous systems. Exact and approximate methods to find natural frequencies.

MAE 406/506. Flight Vehicle Aerodynamics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MAE 303; MAE 312 and MAE 340. Inviscid flow concepts including: Euler equations, stream function, velocity potential, singularities, vorticity and circulation laws. Viscous flow topics including boundary layers, separation, and turbulent flow. In addition, external flows, lift and drag, thin airfoil theory, finite wing theory and airfoil design will be discussed.

MAE 407/507. Ground Vehicle Aerodynamics. 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisite: a grade of C or better in MAE 303 or MET 330 or CEE 330. Review of basic fluid mechanics of the incompressible flow of air. Introduction to bluff body aerodynamics, production and performance (race car) automotive aerodynamics, as well as truck and bus aerodynamics. Discussion of experimental and computational methods for evaluating vehicle aerodynamic performance. Optimization of high performance vehicle design for low drag and/or high downforce and the facilities and techniques required. Introduction to the aerodynamics of other surface vehicles such as sailboats and trains. Lecture and wind tunnel experiments.

MAE 411/511. Mechanical Engineering Power Systems Theory and Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MAE 312 and 315. Thermodynamic properties of gases and vapors relating to power generating devices, work-energy relations, combustion, and heat exchangers. Performance analyses and design concepts of gas turbines, internal combustion engines, steam power plants and heat exchanger equipment from theoretical and applied viewpoints.

MAE 412/512. Environmental Control. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MAE 312 and 315. Engineering principles as applied to the analysis and design of systems for automatically controlling man or machine environments. Course encompasses fundamentals of heating, ventilating, air conditioning, refrigeration, cryogenics, and design of building energy systems.

MAE 413/513. Energy Conversion. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MAE 312. Introduction of relevant kinetic theory, solid state, and thermodynamic principles; operation and analysis of thermoelectric, photovoltaic, thermionic, magnetohydrodynamic devices, fuel cell, isotopic, and solar power generators. Course seeks to define engineering limits of converter efficiency and other performance criteria.

MAE 414/514. Introduction to Gas Dynamics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MAE 303 and a grade of C or better in MAE 311. One-dimensional compressible flow considering isentropic flow, normal shocks, flow in constant area ducts with friction, flow in ducts with heating and cooling, oblique shocks, Prandtl-Meyer expansions, shock-expansion theory, flow around diamond shaped airfoils, and wind tunnel mechanics.

MAE 416/516. Introduction to Solar Energy Engineering. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: MAE 315. Basic solar radiation processes, engineering analysis of solar collectors, energy storage methods, system design and simulation, applications to heating, cooling, and power generation.

MAE 417/517. Propulsion Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MAE 312 or 414. Basic principles of design, operation and performance of propulsion systems - including turbojet, turboprop, turbofan, and ramjet engines. Introduction to chemical rockets, ion and plasma thrusters.
MAE 420/520. Aerospace Structures. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MAE 332. Analysis of aircraft and space vehicle structural components. Effects of bending, torsion and shear on typical aerospace structural components, statically indeterminate beams, shear center and shear flow. Introduction to typical aerospace structures. Introduction to composite structures.

MAE 422/522. Modern Engineering Materials. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MAE 201, 203, and a grade of C or better in MAE 220; MAE 332. Limitations of conventional materials; inter-relationship among materials, design and processing, material selection criteria and procedures; strengthening mechanisms in metals; superelasticity; shape memory effect, amorphous metals; structure-property relationship in polymers; polymers crystallinity; thermoplastic and thermostets; high-temperature restraint polymers; ceramics; toughening mechanisms in ceramics.

MAE 430. Solar Thermal Engineering. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: MAE 312 and 315. Basic solar radiation processes on earth are followed by engineering analysis of collectors, energy storage methods, space heating and cooling application, systems design and dynamic simulation.

MAE 431/531. Mechanisms Analysis and Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MAE 205; MAE 332 and MATH 312. Basic relations necessary for analysis of plane motion mechanisms, numerical and analytical solutions for some of the basic mechanisms, methods of calculating rolling and sliding velocities and accelerations of contacting bodies, cams, and gears.

MAE 433. Mechanical Engineering Design II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MAE 332 and senior standing. Kinematic analysis, force analysis, and design of spur, helical, worm, and bevel gears. Antifriction bearings, lubrication and journal bearings, shaft design, mechanical spring design, design of clutches, brakes and couplings.

MAE 434W. Project Design and Management I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MAE 332 and a grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C. This course prepares students to complete their design projects in MAE 435. Lecture topics include engineering economics; project planning; costing and risk analysis; and product realization techniques. Course involves written and oral presentations for students to improve communication and teamwork skills. (qualifies as a CAP experience) (This is a writing intensive course).

MAE 435. Project Design and Management II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MAE 434W. Conceptual design ideas are expanded into detailed design ideas. Product realization is applied to complete hardware. Course covers Gantt charts, preliminary design, evaluation and trading matrices, detailed design and analysis, oral and technical reporting including cost analysis. Ethics and patent issues are also included. (qualifies as a CAP experience).

MAE 436. Dynamic Systems and Control. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MAE 205; MATH 307 and 312. Analysis and synthesis of feedback systems; functional description of dynamic systems; basic controllers; sensitivity, stability and error analysis; transient and steady-state response using computational techniques, root locus and frequency response methods; state-space analysis of control systems.

MAE 438/538. Applied Analog and Digital Control. 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisite: MAE 436. Computer-aided analysis and design of practical control systems. Introduction to state-space, digital signal processing and digital control. Laboratory sessions on aliasing, analog, system identification, and real-time control.

MAE 440/540. Introduction to Finite Element Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MAE 340. Basic concepts of finite-element method, method of weighted residuals, interpolation functions, numerical implementation of finite-element method, applications to engineering problems such as beam deflection, heat conduction, and plane elastic problems.

MAE 441. Computer-Aided Design of Mechanical Systems. 3 Credits.
Lecture 1.5 hours; laboratory 3 hours; 3 credits. Corequisite: MAE 332. Prerequisites: CS 150, and a grade of C or better in MAE 220; MATH 312. Case studies are used to introduce students to CAD software; design processes involving modeling, analysis and design, and verification. Typical case studies are beam and plate designs, turbine blade design, and pipe networks. Advanced topics include: thermal stress analysis and plates and shells.

MAE 450/550. Principles of Naval Architecture. 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisite: MATH 212. This course covers the basic principles of naval architecture related to ship geometry, stability, strength, resistance, propulsion, vibration and motions in waves and controllability.

MAE 457/557. Motorsports Vehicle Dynamics. 3 Credits.
Lecture, 2 hours; Lab, 3 hours. 3 credits. Prerequisites: A grade of C or better in MAE 205; MATH 307. Basic mechanics governing vehicle dynamic performance. Analytical methods in vehicle dynamics. Laboratory consists of various vehicle dynamics tests on model vehicles and full-size racecars.

MAE 460/560. Introduction to Space Systems Engineering. 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisites: MATH 307 and PHYS 232N. Introduction to spacecraft systems starting from mission design and space environment considerations and proceeding through propulsion, altitude control, spacecraft structural design, thermal control, power and communications for spacecraft.

MAE 467/567. Racecar Performance. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: MAE 407/507 and 457/557. On-track performance of typical racecars (Legends and Baby Grand) to demonstrate and evaluate the interplay between vehicle aerodynamics, suspension system geometry adjustments, tire selection and operating pressure on overall racecar performance and handling. Laboratory testing via on-board instrumentation during skid pad and road course evaluation; computer simulation to investigate various car set-ups.

MAE 472/572. Statistical Foundations for Experimenters. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 311. Introduction to applied statistics for engineers and experimenters. Descriptive statistics for data analysis, introduction to probability, frequency distributions and sampling. Hypothesis testing and confidence intervals of one and two sample problems. ANOVA, one-factor experimental designs, fixed and random effects, multiple comparisons, correlation and regression analysis, control charts. Application to aerospace testing.

MAE 477/577. High Performance Piston Engines. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites MAE 312, 315 or MET 300, 350. A study of the fundamental principles and performance characteristics of spark ignition and diesel internal combustion engines. Overview of engine types and their operation, engine design and operating parameters; ideal and semi-empirical models of engine cycles; combustion, fluid flow and thermal considerations in engine design and performance. Laboratory evaluation of engine performance using flow and dynamometer systems.
MAE 483. Bio-micro/Nanofluidics. 4 Credits.
Lecture 2 hours, lab 4 hours, 4 credits. This course is intended for biology and engineering students interested in learning the basics of micro/nanofluidic technology and its application to problems in biology research. Students will learn fundamentals of DNA manipulation, including polymerase chain reaction, and will then learn how to fabricate "lab-on-a-chip" devices to perform these techniques. (cross-listed with BIOL 483).

MAE 495/595. Topics in Mechanical and Aerospace Engineering. 1-3 Credits.
Lectures variable; 1-3 credits each semester. Prerequisite: senior standing; permission of the chair is required. Special topics of interest with emphasis placed on recent developments in mechanical and aerospace engineering or engineering mechanics. (offered fall, spring, summer).

MAE 496. Topics in Mechanical and Aerospace Engineering. 3 Credits.
Lectures variable; 1-3 credits each semester. Prerequisite: senior standing; permission of the chair is required. Special topics of interest with emphasis placed on recent developments in mechanical engineering or engineering mechanics. (offered fall, spring, summer).

MAE 497/597. Independent Study in Mechanical and Aerospace Engineering. 1-3 Credits.
1-3 credits. Prerequisite: senior standing; permission of the chair is required. Individual analytical, computational, and/or experimental study in an area selected by student. Supervised and approved by the advisor.

MATH - Mathematical Sciences

MATHEMATICAL SCIENCES Courses

MATH 101M. An Introduction to Mathematics for Critical Thinking. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: This course fulfills the math general education requirement for some majors in the College of Arts and Letters and the College of Education. It can also be used as a preparation for STAT 130M. An introduction to the ways in which modern mathematics can be used to analyze the modern world and make logical decisions. Topics include problem solving, sets, logic, consumer mathematics (loans, mortgages, annuities), and elementary statistics.

MATH 102M. College Algebra. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: This course fulfills the math general education requirement and can be used as a preparation for MATH 162M. MATH 101M is not a prerequisite for MATH 102M. Not open to students with credit for MATH 162M. A basic course in algebra which emphasizes applications and problem-solving skills. Topics include properties of the real numbers, graphing of equations and inequalities, the algebra of rational expressions, and properties of exponents and logarithms.

MATH 162M. Precalculus I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: qualifying score on SAT or ACT, or qualifying score on a placement test administered by the University Testing Center or a grade of C or better in MATH 102M. The first course in a two-course sequence designed to provide a strong preparation for calculus. Topics include algebraic operations, equations and inequalities, graphing and functions, polynomial functions, theory of equations, systems of equations, exponential functions, and logarithmic functions.

MATH 163. Precalculus II. 3 Credits.
Lecture 3 hours; recitation 1 hour; 3 credits. Prerequisite: A grade of C or better in MATH 162M. The second course in a two-course sequence designed to provide strong preparation for calculus. Topics include exponential and logarithmic functions/equations, trigonometric functions/equations, trigonometric identities, laws of sines and cosines, vectors, polar representation of complex numbers, binomial theorem, and conic sections.

MATH 166. Precalculus I and II. 4 Credits.
Lecture 4 hours; 4 credits. Prerequisites: A grade of C or better in MATH 102M. A one-semester precalculus course covering the topics of MATH 162M and MATH 163 at an accelerated pace. Not available to students with credit in MATH 163.

MATH 200. Calculus for Business and Economics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 162M. The derivative and optimization, exponential functions and growth, and integration with applications to future value and consumer’s and producer’s surplus.

MATH 211. Calculus I. 4 Credits.
Lecture 4 hours; laboratory 1 hour; 4 credits. Prerequisites: A grade of C or better in MATH 163 or MATH 166. A first course in calculus and analytic geometry. Topics include differentiation and integration of algebraic and transcendental functions of one variable and applications.

MATH 212. Calculus II. 4 Credits.
Lecture 4 hours; laboratory 1 hour; 4 credits. Prerequisite: A grade of C or better in MATH 211. A second course in calculus and analytic geometry. Topics include techniques of integration, polar coordinates, infinite series, solid geometry, vectors, lines and planes.

MATH 280. Transfer Credit for Ordinary Differential Equations. 3 Credits.
This course is a VCCS transfer credit vehicle. Students who have earned transferable credit in MATH 279 or 291 at any member institution of the VCCS will be granted credit for MATH 280. The course will not be offered for credit by Old Dominion University. Cannot be used to substitute for MATH 307 for MATH majors or minors.

MATH 285. Transfer Credit for Calculus III. 4 Credits.
4 credits. This course is a VCCS transfer credit vehicle. Students who have earned transferable credit for MATH 275 or 277 at any member institution of the VCCS will be granted credit for MATH 285. The course will not be offered for credit by Old Dominion University. Cannot be used to substitute for MATH 312 for MATH majors or minors.

MATH 295. Topics in Mathematics. 1-5 Credits.
1-5 credits. Prerequisite: departmental permission.

MATH 300. Number Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 102M or 162M. Sets and systems of numbers, prime, integer, rational, irrational, real, complex and their properties. Representation of numbers. Divisibility, congruence, modular arithmetic, elementary number theory and symbolic logic. (May not be used to satisfy the upper-division elective requirement of the math majors program).

MATH 302. Geometry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 102M or 162M. Elementary plane and solid Euclidean geometry with proofs and applications. Topics include angles, triangles, congruence, quadrilaterals, circles, similarity, perimeter, area, volume, polygons, plane and solid constructions. Geometer’s Sketchpad software used to discover geometric properties. (May not be used to satisfy the upper-division elective requirement of the math majors program).

MATH 305. Discrete Math. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 102M or 162M. Topics: Vectors and matrices, linear programming, operations on sets, combinatorics, permutations, combinations, elementary probability, logic, relations and functions, induction, graphs and trees, applications. (May not be used to satisfy the upper-division elective requirement of the math majors program).
MATH 307. Ordinary Differential Equations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 212. Topics include first order differential equations and systems, second and higher order linear equations, solution by series and Laplace transform, and applications.

MATH 311W. Abstract Algebra. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in ENGL 211C or 221C or 231C; MATH 212 or departmental permission. Topics include introduction to logic and methods of proof; sets, relations, and functions; elementary group and ring theory. (This is a writing intensive course).

MATH 312. Calculus III. 4 Credits.
Lecture 4 hours; laboratory 1 hour; 4 credits. Prerequisite: A grade of C or better in MATH 212. A third course in calculus and analytic geometry. Topics include vector functions, partial derivatives, multiple integrals and an introduction to vector calculus.

MATH 316. Introductory Linear Algebra. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 212. An introduction to linear algebra. Topics include matrices, vectors, vector spaces, linear transformations, eigenvalues and eigenvectors.

MATH 317. Calculus IV: Introductory Analysis. 3 Credits.
Lecture 3 hours; recitation 1 hour; 3 credits. Prerequisite: A grade of C or better in MATH 212. An introduction to real analysis. Topics covered include completeness and topological properties of real line, theory of sequences, limits of functions, continuity, Fundamental Theorem of calculus, Leibniz’s rule.

MATH 335. Number Systems and Discrete Mathematics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 102M or 162M. Estimation and other applications to real world problems, using elementary principles of algebra, geometry, number theory, number systems, and discrete mathematics. (May not be used to satisfy the upper-division elective requirement of the math majors program.).

MATH 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Career Management in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (Qualifies as a CAP experience).

MATH 395. Topics in Mathematics. 1-3 Credits.
1-3 credits. Prerequisite: departmental permission.

MATH 399. Putnam Exam Problems and Related Topics. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: A grade of C or better in MATH 212. This course is designed to help students prepare for the Putnam Exam - an annual national mathematical competition. Problems from previous Putnam Exams and materials related to the solution of such problems will be considered.

MATH 400/500. History of Mathematics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 311W or 316 or 317. This course considers some of the major events in the development of mathematics from ancient times through the seventeenth century, including the discovery of incommensurability, the origins of the axiomatic method, trigonometry, solution of equations, calculation of areas and volumes, analytic geometry, probability, and calculus. Students will be graded on tests which consist mostly of problems typical of the periods considered.

MATH 401/501. Partial Differential Equations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MATH 307 and 312. Not available to students with credit in MATH 691. Separation of variable techniques, Sturm-Liouville systems, generalized Fourier series, orthogonal functions of the trigonometric, Legendre and Bessel type boundary value problems associated with the wave equation and the heat conduction equation in various coordinate systems, applications to physics and engineering.

MATH 404/504. Fundamental Concepts of Geometry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 311W. The fundamentals of projective, Euclidean and non-Euclidean geometry are explored by the synthetic method and the algebraic method.

MATH 406/506. Number Theory and Discrete Mathematics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 311W and 316. A survey course. Topics include the prime number theorem, congruences, Diophantine equations, continued fractions, quadratic reciprocity, combinatorics, logic, graphics, trees, algorithms, coding and linear programming.

MATH 408/508. Applied Numerical Methods I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MATH 316. CS 150 or equivalent programming ability also required. An introduction to the numerical methods commonly used by scientists and engineers. Topics include solutions of equations of one variable, direct methods for solving linear systems, matrix factorization, stability analysis, iterative techniques, polynomial interpolation, numerical differentiation and integration, approximation theory, and initial and boundary value problems for ordinary differential equations.

MATH 409/509. Applied Numerical Methods II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MATH 408/508. Topics include least squares problems, the QR factorization, the conjugate gradient method, Householder transformation and the QR method for approximating eigenvalues and singular values of a matrix. For applications, the finite difference method and the finite element method for solving partial differential equations, trigonometric interpolation and FFT as well as introductory study of optimization are discussed.

MATH 417/517. Intermediate Real Analysis I. 3 Credits.
Lecture 3 hours; 3 credits each semester. Prerequisite: A grade of C or better in MATH 317. 417/517 is prerequisite to 418/518. A rigorous course in classical real analysis. Topics include the topology of Euclidean n-space, properties of vector valued functions of several variables such as limits, continuity, differentiability and integrability, pointwise and uniform convergence of sequences and series of functions; Fourier series.

MATH 418/518. Intermediate Real Analysis II. 3 Credits.
Lecture 3 hours; 3 credits each semester. Prerequisite: A grade of C or better in MATH 317. 417/517 is prerequisite to 418/518. A rigorous course in classical real analysis. Topics include the topology of Euclidean n-space, properties of vector valued functions of several variables such as limits, continuity, differentiability and integrability, pointwise and uniform convergence of sequences and series of functions; Fourier series.

MATH 420/520. Applied Mathematics I: Biomathematics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 307. An introduction to current developments in the mathematical investigation of biological problems. Topics include scaling systems of differential equations, stability, perturbation methods, bifurcation phenomena and wave propagation. Applications are chosen from interacting populations, transport and reaction diffusion kinetics, transmission of nerve impulses, and cardiovascular modeling.
MATH 421/521. Applied Mathematics II: Mathematical Modeling. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MATH 307, 312, 316, and 317. A one semester course in formulating, evaluating and validating mathematical models of physical phenomena. Models of traffic flow, mechanical vibrations, combustion, quantum mechanics, wave propagation or other fields of applied mathematics will be examined. Techniques learned in previous courses are used to simplify, analyze and solve these models. New methods introduced include phase-plane analysis, characteristics, calculus of variations and perturbation methods.

MATH 422/522. Applied Complex Variables. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 312. Not available to students with credit in MATH 692. Topics include complex numbers, analytical functions and their properties, derivatives, integrals, series representations, residues and conformal mappings. Applications of the calculus of residues and mapping techniques to the solution of boundary value problems in physics and engineering.

MATH 427/527. Applied Mathematics III: Elasticity. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in MATH 307 and 312. An introduction to the mathematical theory of linear and non-linear elastic continua. Topics include vectors, tensors, deformation, stress, nonlinear constitutive theory, exact solutions, infinitesimal theory, antiplane strain, plane strain, plane stress, extension, torsion, bending and elastic wave propagation.

MATH 428/528. Applied Mathematics IV: Fluid Mechanics. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: MATH 401/501. Prerequisites: A grade of C or better in MATH 307 and 312. A mathematical investigation of the differential equations governing fluid flow with an emphasis on steady state incompressible flows. The Navier-Stokes equations are derived and some exact solutions are presented including the potential flow solutions. Topics therefore include classical ideal fluid flow and its complex variable representation, various approximations to the Navier-Stokes equations, boundary layer theory, and also surface and internal gravity wave motion, aspects of hydrodynamic stability theory and convection. Other topics may be introduced by the instructor.

MATH 457/557. Mathematics in Nature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 307. A calculus and differential equations based description of many patterns observable in the natural world including wave motion in the air, oceans, rivers, and puddles; rainbows, halos and other meteorological phenomena; arrangement of leaves, petals and branches; height of trees; river meanders; animal and insect markings; mudcracks; spider webs; and others. Partial differential equations will be discussed as needed but a knowledge of ordinary differential equations will be assumed.

MEDT - Medical Technology

MEDT 210. Orientation to Medical Technology. 1 Credit.
Lecture 1 hour; 1 credit. An introduction to the profession of medical technology. Professional, ethical and operational issues will be discussed.

MEDT 307. Clinical Methods in Microbiology. 2 Credits.
Laboratory 4 hours; 2 credits. Corequisite: MEDT 308. Laboratory techniques in the diagnosis of clinically relevant microorganisms.

MEDT 308. Clinical Microbiology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N, 116N; CHEM 211 is recommended or permission of the instructor. A fundamental course in microbiology which includes bacterial growth, synthesis, differentiation, microbial nutrition and metabolism.

MEDT 309. Medical Bacteriology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MEDT 307, 308. A comprehensive survey of bacteria, including colonial morphology, cultural characteristics, biochemical identification, pathogenicity, epidemiology, and treatment.

MEDT 310. Urology and Body Fluids. 1 Credit.
Laboratory 3 hours; 1 credit. Prerequisites: BIOL 250, 251 or permission of the instructor. Corequisite: MEDT 313. A study of the chemical, physical and microscopic analysis of human urine and other body fluids, with abnormal results interpreted and correlated to disease processes.

MEDT 311. Hematology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 250, 251 or permission of the instructor. The study of the principles of the formation and development of blood, including the interpretation of normal and abnormal blood morphology and diagnostic procedures in the investigation of hematological disorders.

MEDT 312. Hematology Laboratory. 1 Credit.
Laboratory 3 hours; 1 credit. Corequisite: MEDT 311. Laboratory methods utilizing procedures in the diagnosis and investigation of hematological disorders.

MEDT 313. Diagnostic Methods in Urinalysis. 1 Credit.
Laboratory 3 hours; 1 credit. Prerequisite: BIOL 250 or equivalent. Corequisite: MEDT 310. Laboratory experience in the chemical, physical, and microscopic examination of the urine with emphasis on quality control, osmometry, and disease correlates.

MEDT 315. Clinical Laboratory Diagnosis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: students must be graduates of a clinical laboratory training program. An introduction to clinical diagnostic principles utilized in immunology, serology, and hemostasis.

MEDT 319. Medical Bacteriology Methods. 2 Credits.
Laboratory 4 hours; 2 credits. Corequisite: MEDT 309. Laboratory methods emphasizing isolation, identification and media requirements for pathogenic microorganisms.

MEDT 320. Blood Collection Techniques. 2 Credits.
Laboratory 1 hour; laboratory 3 hours; 2 credits. Prerequisite: BIOL 250 or equivalent or permission of the instructor. Laboratory methods in the procurement of blood by capillary, venipuncture and arterial draws, analytical variables, special phlebotomy tests, isolation techniques, safety, forensic, molecular, legal and ethical implications, pediatric, geriatric, and compromised patient concerns. All students must submit to venipuncture by fellow students.

MEDT 322. Phlebotomy Internship. 2 Credits.
2 credits. Prerequisite: MEDT 320. A 120-hour clinical internship for non-majors desiring to qualify for the ASCP certification exam.
MEDT 324. Clinical Instrumentation and Electronics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CHEM 211 or 321, MATH 102M or permission of the instructor. Corequisite: MEDT 325. A course covering the theory, operation, selection, maintenance and quality control of instruments in the clinical laboratory. Some instruments discussed include spectrophotometers, flame photometry, atomic absorption, fluorometry, gas and liquid chromatography, mass spectroscopy, chemiluminescence, immunochromatographic and nephelometric methods, electrophoresis, radiation detection and dosimetry, osmometry, electrochemistry and applications to molecular diagnostic testing. Statistical applications to data analysis of both instrument and method comparisons, trouble shooting and quality control in the clinical lab.

MEDT 325. Clinical Instrumentation Methods. 1 Credit.
Laboratory 3 hours; 1 credit. Prerequisites: MATH 102M, CHEM 121N, 122N, 123N, 124N, 211. Corequisite: MEDT 324. A laboratory course designed for students entering the clinical laboratory field. The course includes the instrumental and data processing techniques required for the clinical analysis of body fluids as well as applied statistical techniques to the interpretation of laboratory data. Lab to include molecular diagnostic testing, comparison studies, quality control, calibration, maintenance, and trouble shooting of clinical chemistry analytics.

MEDT 326. Immunohematology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MEDT 311, 330, 331, BIOL 250, 251 or permission of the instructor. The study of the identification of blood group antigens and antibodies, standard testing procedures, decision criteria for component selection, and regulations of blood banks and transfusion services.

MEDT 327. Hemostasis. 1 Credit.
Lecture 1 hour; laboratory 2 hours; 1 credit. Prerequisites: MEDT 311, 312 or permission of the instructor. The study of the fundamentals of hemostasis, emphasizing principles, evaluation techniques, and diagnostic applications. Class meets the first 7 weeks of the semester.

MEDT 328. Medical Parasitology, Mycology, and Virology. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisites: MEDT 307, 308 or permission of the instructor. A study of the medically important parasites, fungi and viruses and their medical significance.

MEDT 330. Clinical Immunology/Serology. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisites: BIOL 115N and 250-251 or permission of the instructor. The study of the body’s immune response, its cellular and non-cellular components, in-vitro manifestations, diagnostic techniques and interpretations related to the investigation and diagnosis of disease states.

MEDT 331. Clinical Immunology/Serology Laboratory. 1 Credit.
Laboratory 2 hours; 1 credit. Corequisite: MEDT 330. Laboratory methods emphasizing in-vitro antigen and antibody reactions used to identify infectious and non-infectious disorders.

MEDT 336. Immunohematology Laboratory. 1 Credit.
Laboratory 3 hours; 1 credit. Corequisite: MEDT 326. Laboratory methods emphasizing procedures identifying blood group antigens and antibodies needed in making transfusion-related decisions.

MEDT 337. Advanced Hematology. 1 Credit.
Lecture 1 hours; laboratory 2 hours; 1 credit. Prerequisites: MEDT 311, 312 or permission of the instructor. The study of blood cells in blood and body fluids, morphologic identification and correlation of laboratory data in order to identify specific disease states. Class meets the second 7 weeks of the semester.

MEDT 339. Parasitology, Micology Laboratory, and Industrialization. 1 Credit.
Laboratory 2 hours; 1 credit. Corequisite: MEDT 328 or 340. Laboratory methods emphasizing the identification of medically relevant parasites and fungi.

MEDT 340. Medical Parasitology, Mycology, and Virology. 1 Credit.
1 credit. Prerequisites: MEDT 307, 308 or permission of the instructor. A study of the medically important parasites, fungi, and viruses, and their medical significance.

MEDT 350. Urinalysis. 1 Credit.
1 credit. Prerequisites: BIOL 250, 251 or permission of the instructor. A study of the chemical, physical and microscopic analysis of human urine, with abnormal results interpreted and correlated to disease processes. Restricted to distance education students.

MEDT 351. Clinical Biochemistry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 250, 251, CHEM 211-212, or permission of the instructor. An introduction to the applications of biochemistry and clinical testing in the diagnosis of human disease. Practice given in the interpretation of laboratory data in the areas of carbohydrate, protein, lipid, genetic disorders, liver, renal, pancreatic, G.I., enzymatic, and cardiac testing, also enzyme kinetics, electrolytes, acid base physiology, tumor markers, endocrinology, pharmacokinetics, therapeutic drug monitoring, and molecular diagnostics. Special emphasis on specimen collecting pre- and post-analytical variables and case studies.

MEDT 401. General Pathology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 250 and 251 or equivalent. This course is an overview of general disease processes and causes in the human. All body systems will be covered including respiratory, gastrointestinal, circulatory, nervous, reproductive, and urinary. Aging, dietary, and stress factors will be discussed in the disease process. Bacteria, fungi, and viruses will be discussed in general and for each body system. Neoplasms will be covered for each body site. This course will be of benefit to anyone interested in diseases of the human body or entering the medical field. (cross listed with CYTO 404).

MEDT 404W/503. Management in the Clinical Setting. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and a grade of C or better in ENGL 211C or 221C or 231C. A course concerned with organization and management in the clinical setting including personnel supervision, planning, equipment justification, quality assurance, data processing, budgeting, fiscal techniques, marketing, regulatory agencies, educational methodologies, current issues, as well as legal and ethical considerations. (This is a writing intensive course.).

MEDT 404. Clinical Hematology Practicum. 4 Credits.
4 credits. Prerequisites: MEDT 311, 312, 327, 337, and permission of the program director. Direct clinical experience offered in automated and manual hematology procedures used in distinguishing blood dyscrasias and coagulation abnormalities. (qualifies as a CAP experience).

MEDT 406. Clinical Microbiology Practicum. 5 Credits.
5 credits. Prerequisites: MEDT 308, 309, and permission of the program director. Direct clinical experience offered in isolating and identifying human pathogens such as bacteria, fungi, and parasites from various clinical specimens. (qualifies as a CAP experience).

MEDT 440/540. Statistical Applications and Data Analysis in the Clinical Laboratory. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: STAT 130M. Topics include review of basic statistics used in the laboratory; use of statistics for quality control, reference range determination, method comparisons, test utility assessment, techniques for searching the literature and assessing quality and applicability of published studies; and data organization and retrieval via queries. Students will perform projects, preferably using actual laboratory data, that relate to lecture topics.

MEDT 441. Clinical Hematology Competencies. 1 Credit.
1 credit. Prerequisites: MEDT 311, 315. Demonstration of stated clinical laboratory competencies in an approved laboratory setting within the discipline of hematology.
MECHANICAL ENGINEERING TECHNO Courses

MET 120. Computer Aided Drafting. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Computer based drafting methods are taught with a major emphasis on 'Hands On' practice using 2-D AutoCAD software in the computer lab, along with the various methods of editing, manipulation, visualization and presentation of technical drawings. This course includes the basic principles of engineering drawing/hand sketching, dimensioning and tolerancing.

MET 200. Manufacturing Processes and Methods. 3 Credits.
Lecture 3 hours; 3 credits. Application and characteristics, both physical and chemical, of the materials most commonly used in industry as well as procedures and processes used in converting raw materials into a finished product.

MET 225. Material Science Laboratory. 1 Credit.
Lecture, 2 hours; 1 credit. Corequisite: CET 220. A laboratory course dealing with the standard methods of inspecting and testing materials used in engineering applications with emphasis on laboratory reports, including presentation and interpretation of experimental data.

MET 240. Computer Solid Modeling. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MET 120. A treatment of modern 3-D parametric solid modeling techniques including introduction of the software utilized sketching, parts and assembly creation techniques, orthographic views extraction and manufacturing drawing generation. Presentations include exploded views and animation.

MET 295. Topics. 1-3 Credits.

MET 300. Thermodynamics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: CHEM 121N, MATH 211 and a grade of C or better in PHYS 111N or PHYS 231N. The basic laws of thermodynamics, properties of fluids, heat, and work and their applications in processes and cycles and an introduction to conduction heat transfer.

MET 305. Fundamentals of Mechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PHYS 111N and MATH 211. Selected topics in statics and strength of materials are applied to mechanical engineering technology. Coverage includes force systems, equilibrium, friction, and stress-strain relationships and their application to the mechanical behavior of materials.

MET 310. Dynamics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 211, and a grade of C or better in CET 220, and a grade of C or better in PHYS 111N or PHYS 231N. A fundamental treatment of coplanar and three-dimensional kinematics and kinetics of particles and rigid bodies, including relative motion, mass moments of inertia, Newton’s laws, work and energy, impulse and momentum, and simple vibrations.

MET 320. Design of Machine Elements. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 211, a grade of C or better in CET 220 and PHYS 111N or PHYS 231N. A rapid review of the fundamental principles of strength of materials and working stresses followed by practical analyses of fundamental machine elements such as shafts, springs, and screws.

MET 330. Fluid Mechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MET 310. The study of fluid statics and dynamics, including momentum, energy, Bernoulli’s equation, laminar and turbulent fluid flow and friction in pipes, fluid machinery, and open-channel flow.
MET 335W, Fluid Mechanics Laboratory. 1 Credit.  
Laboratory 2 hours; 1 credit. Prerequisite: A grade of C or better in ENGL 211C or 221C or 231C. Pre- or corequisite: MET 330. A laboratory course dealing with the verification of fluid equations and principles and the characteristics of fluid machinery with emphasis on laboratory report writing, including presentation and interpretation of experimental data.

MET 350. Thermal Applications. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: MET 300. A study of basic applications of thermodynamics. Topics include the basic steam and gas turbine power plant, introduction to refrigeration systems, psychrometrics, basic conduction and convection heat transfer including heat exchangers and surveys of other energy conversion systems.

MET 367. Cooperative Education. 1-3 Credits.  
1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Career Management in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and the Career Management program prior to the semester in which the work experience is to take place. (offered fall, spring, summer) (qualifies as a CAP experience).

MET 368. Internship. 1-3 Credits.  
1-3 credits. Prerequisite: approval by department and Career Management. Available for pass/fail grading only. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. (qualifies as a CAP experience).

MET 369. Practicum. 1-3 Credits.  
1-3 credits. Prerequisite: approval by department and Career Management. Available for pass/fail grading only. (qualifies as a CAP experience).

MET 370. Automation and Controls. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisites: MATH 211 and EET 350 and 355. A study of the design and analysis of feedback control system. Includes the fundamentals of programmable controllers as well as practical applications of interfacing mechanical, electrical, pneumatic and hydraulic feedback control circuits. Computer simulation software is used to model system responses.

MET 386. Automation and Controls Laboratory. 1 Credit.  
Laboratory 2 hours; 1 credit. Pre- or corequisite: MET 370. Laboratory and computer simulation of control systems including programmable controllers as well as practical applications of interfacing mechanical, electrical and pneumatic control systems.

MET 387. Power and Energy Laboratory. 2 Credits.  
Lecture 1 hour; laboratory 2 hours; 2 credits. Prerequisites: MET 335W and MET 350. Experiments dealing with applied thermodynamics, mechanical power and energy systems with emphasis on laboratory report writing, including presentation and interpretation of experimental data.

MET 395. Topics. 1-3 Credits.  
Prerequisite: permission of the instructor.

MET 396. Topics. 1-3 Credits.  
Prerequisite: permission of the instructor.

MET 400. Computer Numerical Control in Production. 3 Credits.  
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: Senior standing. Principles of computer numerical control consistent with most recently developed standards, industry practices, and CAD/CAM systems including such topics as types of CNC machines, CNC milling, CNC turning and CNC electro-discharge machinery. A significant portion of the course includes programming in multiple axes.

MET 410. Advanced Manufacturing Processes. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: MET 300. A course in nontraditional manufacturing processes including ultrasonic machining, abrasive jet machining, waterjet cutting, electromechanical machining, electrical discharge machining, plasma arc machining and chemical milling. Semester project is required. (qualifies as a CAP experience).

MET 415. Introduction to Robotics. 3 Credits.  
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: MET 310, and EET 350. An introductory course in robotics dealing with the history and development of robots, mechanical components and control systems, actuators, robot programming and utilization. Included are laboratory experiments in robot motion and programming.

MET 426. Introduction to Mechatronics. 3 Credits.  
Lecture, 3 hours; 3 credits. Prerequisite: MET 426. A study of the integrated modeling and optimal design of a physical system, which includes sensors, actuators, electronic components, and its embedded digital control system. Includes simultaneous optimal design practice with respect to the realization of the design specifications related to different engineering domains.

MET 427. Mechatronic System Design. 3 Credits.  
Lecture, 3 hours; 3 credits. Prerequisite: MET 426. A study of the integrated modeling and optimal design of a physical system, which includes sensors, actuators, electronic components, and its embedded digital control system. Includes simultaneous optimal design practice with respect to the realization of the design specifications related to different engineering domains.

MET 430. Mechanical Subsystem Design. 3 Credits.  
Lecture 1 hour; 1 credit. Prerequisite: senior standing. This course must be taken in the semester prior to the Senior Project course. A collection of career-related topics pertaining to engineering technology. Topics include engineering codes and standards, engineering ethics, technical report writing, job search and resume writing techniques, patents and property rights, and professional engineering licensure. The course concludes with the selection of the student’s project topic for the subsequent Senior Project course.

MET 435W. Senior Design Project. 3 Credits.  
Lecture 1 hour; laboratory 6 hours; 3 credits. Prerequisites: A grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C; MET 434 and senior standing. A capstone course exercising upper level course work involving independent or group design projects. Students are required to collect data and synthesize a mechanical design. Submission of written reports and a final oral presentation are required. (qualifies as a CAP experience) (This is a writing intensive course.).

MET 440. Heat Transfer. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: MET 300. A study of conduction, convection and radiation heat transfer and heat exchangers. Emphasis is on applications and problem solving using current techniques, and modern correlations.

MET 445. Computer Integrated Manufacturing. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: senior standing. Principles of computer integrated manufacturing, system integration, architecture and data base development. Topics include part design specifications, process engineering, fixed automation and process planning.
MET 450. Energy Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MET 350. A study of the application of thermodynamics to power plants, engines, compressors, turbines, and associated systems. A detailed study is made of fossil fuel power plants with an introductory study of nuclear power and other energy conversion systems.

MET 455. Lean Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: Senior standing. This course looks at the history of lean and six sigma philosophies, their principles and implementation methodologies for creating a world class enterprise. Topics in Lean include five s, value stream mapping, cellular manufacturing, pull system, performance metrics, Lean supplier network, Lean product development and Lean implementation models. Semester research report is a course requirement. Class activities may involve physical simulation of production environment.

MET 460. Refrigeration and Air Conditioning. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MET 330 and 350. The design and application of refrigeration and air conditioning systems. Studies are made of compressors, condensers, evaporators, psychrometric processes, load calculations and air distribution systems. High performance vapor compression systems, absorption systems and other cycles are analyzed.

MET 465. Geometric Dimensioning and Tolerancing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: Senior Standing. Methods and rules of dimensioning and tolerancing, calculation of fits, and geometrical tolerances using ANSI-Y14.5M, tolerances of form, orientation, and profile, including flatness, straightness, circularity, cylindricity, angularity, etc. Student work consists of designing and detailing various product drawings.

MET 471. Nuclear Systems I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 211 and PHYS 111N. Reactor physics principles as applied to the design and operation of various types of commercial nuclear power reactors. Topics include sources of radiation and interaction with matter, neutron interactions, diffusion theory, and reactor kinetics.

MET 472. Nuclear Systems II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MET 471, CHEM 1212N and CHEM 122N or equivalent. Complete study of the nuclear fuel cycle, from mining through fabrication, fuel management in an operating commercial power reactor, spent fuel management, and fuel reprocessing, with emphasis on chemical engineering considerations.

MET 475. Marine Engineering I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MET 330 and 350. This course includes: fundamental principles of naval architecture including nomenclature, geometry, stability, hydrostatics, structures, and motions; ship design processes; and a basic introduction to shipboard systems such as HVAC, refrigeration, power generation, propulsion, hydraulics, electronics, cargo handling systems, seawater systems, freshwater systems, and fuel, lube and other oil systems.

MET 476. Marine Engineering II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MET 475. This course builds upon MET 475 and provides a more in-depth look at shipboard systems and introduces topics such as basic shipboard operations and ship specifications.

MET 480. High Performance Piston Engines. 3 Credits.
Lecture 2 hours; laboratory 3 hours; 3 credits. Prerequisite: MET 300 or MAE 311. Corequisite: MET 350 or MAE 312. A study of the fundamental principles and performance characteristics of spark ignition and diesel internal combustion engines. Overview of engine types and their operation, engine design and operating parameters; ideal and semi-empirical models of engine cycles; combustion, fluid flow and thermal considerations in engine design and performance. Laboratory evaluation of engine performance using flow and dynamometer systems. (cross-listed with MAE 477/577).

MET 485. Maintenance Engineering. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: EET 305 and MET 200. This course looks at maintenance systems: predictive, preventative and corrective; large scale maintenance systems, principles of reliability engineering, maritime logistics; planning for maintenance and repair, using and ordering spare parts, technical manuals, system specifications, and shipyard operations.

MET 490. Lean Enterprise. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MET 200. The history of lean philosophy, founding principles, and the extension of these principles to above-shop-floor activities to create a lean enterprise. Topics include five s, value stream mapping, cellular manufacturing, pull system, performance metrics, point of use storage, built-in-quality, mistake proofing at a lean implementation models. Research report on one of the lean principles is a course requirement.

MET 495. Topics in Mechanical Engineering Technology. 1-3 Credits.
1-3 credits each semester. Prerequisite: permission of the instructor.

MET 496. Topics in Mechanical Engineering Technology. 1-3 Credits.
1-3 credits each semester. Prerequisite: permission of the instructor.

MGMT - Management

MANAGEMENT Courses

MGMT 325. Contemporary Organizations and Management. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing, and a declared major in the University or permission of the Dean’s Office of the CBPA. Examines topics such as absenteeism, substance abuse, theft, gambling and counseling problem employees. Policies and practices used by organizations to anticipate and resolve these problems are explored and evaluated.

MGMT 340. Human Resources Management. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing, and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of the functional duties associated with personnel/human resource administration. Topics include human resource planning, selection, performance appraisal, training, discipline, wage and salary, occupational safety and health, equal employment opportunity, and labor relations.

MGMT 350. Employee Relations Problems and Practices. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing, and a declared major in the University or permission of the Dean’s Office of the CBPA. A contextual study of the trade union movement and its role in the development and Lean implementation models. Semester research report is a course requirement.

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MGMT 361. International Business Operations. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: FIN 323, MKTG 311 and MGMT 325, and a declared major in the University or permission of the Dean’s Office of the CBPA. An examination of the environment of multinational business, foreign trade, and the operation of multinational enterprises. Management, marketing, accounting, and financial problems unique to enterprises operating in varying economic, cultural, and political legal environments are investigated. This course includes a CAP experience. International business majors may not take MGMT 361 for credit. (qualifies as a CAP experience).

MGMT 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisites: MGMT 325 and approval by the department and Career Management, in accordance with the policy for granting credit for cooperative education programs, and a declared major in the University or permission of the Dean’s Office of the CBPA. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (qualifies as a CAP experience).

MGMT 368. Management Internship. 1-3 Credits.
1-3 credits. Prerequisite: MGMT 325, and a declared major in the University or permission of the Dean’s Office of the CBPA; transfer students must have completed one semester at Old Dominion University. Approval for enrollment and allowable credits is determined by the department and the Career Management Center in the semester prior to enrollment. Available for pass/fail grading only. (qualifies as a CAP experience).

MGMT 369. Management Practicum. 1-3 Credits.
1-3 credits. Prerequisite: MGMT 325, and a declared major in the University or permission of the Dean’s Office of the CBPA; transfer students must have completed one semester at Old Dominion University. Approval for enrollment is determined by the Management CAP advisor and the Career Management Center in the semester prior to enrollment. Student will participate in a relevant work setting. (qualifies as a CAP experience).

MGMT 413/513. Compensation Management. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: MGMT 325 and MGMT 340 or MGMT 602, and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of wage theory, practice and problems. Topics include compensation theory, job analysis, job evaluation, wage surveys, incentive plans, benefit programs and special features of compensation for sales, managerial, professional, and public employees.

MGMT 417/517. Employment Law. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing and MGMT 325 or 602, and a declared major in the University or permission of the Dean’s Office of the CBPA. Analysis of how the federal and state governments may regulate the employer-employee relationship. Topics include labor relations law, equal employment opportunity law, other current statutory employment law and common law employment issues.

MGMT 418. Advanced Human Resources Management: Contemporary Issues. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: junior standing and MGMT 325 and 340, and a declared major in the University or permission of the Dean’s Office of the CBPA. An in-depth analysis of current issues and concerns within human resources management. The course will focus on specific issues and problems associated with the law and equal employment opportunity, employee selection, training and development, performance management/appraisal, and compensation. Methods of instruction include cases, exercises and PC applications.

MGMT 426. Entrepreneurship: New Ventures Creation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MGMT 325, MKTG 311, and ACCT 201, and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of the essential elements leading to entrepreneurial and intrapreneurial success with emphasis on the creation, structure and management of new ventures. A recommended elective for business students.

MGMT 427. Business and Society. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MGMT 325, 3 hours of ACCT and 3 hours of ECON, and a declared major in the University or permission of the Dean’s Office of the CBPA. An examination of the relationship between business (usually the individual firm, but occasionally a group of firms in an industry or a set of headline-makers in different industries) and society (an individual, group of people, the general public, or government entity representing the interests of this individual or group or the public). Emphasizes stakeholders and ethics. The course material is both philosophical and practical for executives and informative and practical for citizens.

MGMT 451. Organizational Behavior. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing and MGMT 325, and a declared major in the University or permission of the Dean’s Office of the CBPA. An interdisciplinary approach to the study of interpersonal relationships and problems encountered in managing employees. Topics include motivation, conflict, group behavior, and leadership.

MGMT 452/552. Organization Development. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: MGMT 325 and 451 or 602, senior standing, and a declared major in the University or permission of the Dean’s Office of the CBPA. Applications of organizational development theory and processes. Topics include OD Theory, role of change agent, intervention processes, the consulting process, and design and implementation of OD change programs.

MGMT 462. Comparative International Management. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: senior standing and MGMT 325, and a declared major in the University or permission of the Dean’s Office of the CBPA. The course examines organizational structure and functioning from cross-cultural and cross-national perspectives. Compares how management practices differ from one society to another. Comparisons are made between the U.S., Western Europe, Japan, the USSR, China, and the Third World nations.

MGMT 463/563. Management Seminar Abroad. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: permission of the chief departmental advisor, and a declared major in the University or permission of the Dean’s Office of the CBPA. A study tour abroad under the direction of a faculty member including on-site visits and management lectures designed to provide insight into differences in management practices in foreign countries. Offered summers only and when available.

MGMT 485W. Business Policy and Strategy. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Corequisite: OPM 303. Prerequisites: A grade of C or better in ENGL 211C or 221C or 231C; senior standing, FIN 323, MGMT 325, MKTG 311, and a declared major in the University or permission of the Dean’s Office of the CBPA. Strategic management addresses the concerns of the high level executive or general manager, who must use a perspective that is qualitatively different from that of the lower-level functional manager or operations manager. Strategic decisions cut across functional lines. Whereas other courses focus on competency at a functional level (Are we doing things right?), this course deals with the overall effectiveness of the total organization (Are we doing the right things?). (This is a writing intensive course.).
MGMT 497. Independent Study in Management. 3 Credits.
3 credits. Prerequisite: permission of the chief departmental advisor/graduate program director. Designed to provide advanced students in management an opportunity to study administration in highly specialized areas under the guidance of a faculty member.

MKTG 368. Marketing Internship. 3 Credits.
3 credits. Prerequisite: C or better in MKTG 311 (or equivalent) and approval of instructor. Student completes a relevant marketing experience in the marketplace after submitting a job description, learning objectives, and task accomplishments. (qualifies as a CAP experience).

MKTG 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisites: C or better in MKTG 311 (or equivalent) and approval of instructor. (qualifies as a CAP experience).

MKTG 402. Consumer Behavior. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: C or better in MKTG 311 (or equivalent), and a declared major in the University or permission of the Dean’s Office of the CBPA. The effects of personality, motivation, perception, learning, attitudes, cultural and social influence and lifestyle on buying situations and how knowledge of these factors enables the marketer to better meet the needs of the marketplace.

MKTG 403. Advertising Strategy. 3 Credits.
Lecture, discussion, cases, individual and group projects 3 hours; 3 credits. Prerequisite: C or better in MKTG 311 (or equivalent), and a declared major in the University or permission of the Dean’s Office of the CBPA. An examination of those advertising and promotional strategies directed toward the consumers of goods and services with emphasis on planning and executing an effective campaign to achieve meaningful goals.

MKTG 404. Sales Management. 3 Credits.
Lecture, discussion, individual and group projects 3 hours; 3 credits. Prerequisite: C or better in MKTG 311 (or equivalent), and a declared major in the University or permission of the Dean’s Office of the CBPA. Material focuses on quantitative and qualitative goal setting; management, control and evaluation of the sales program; selecting, training, motivating, and evaluating the sales force.

MKTG 406. Public Relations. 3 Credits.
Lecture and discussion 3 hours; 3 credits. For nonbusiness as well as business majors. Prerequisite: C or better in MKTG 311 (or equivalent), and a declared major in the University or permission of the Dean’s Office of the CBPA. Development and application of a philosophy of business expressed in governmental, corporate, social or educational institutions in furthering their public image.

MKTG 407. Marketing Research. 3 Credits.
Lecture, discussion, and projects 3 hours; 3 credits. Prerequisites: BNAL 306 and MKTG 402 , a grade of C or better in MKTG 311 and a declared major in the University or permission of the Dean’s Office of the CBPA. Emphasis is given to the development of a strong theoretical base in the systematic selection, collection, and interpretation of marketing information leading to sound policies and strategies. Students are required to carry out a group project involving a marketing problem (or opportunity) for a company or involving a real market situation. The project will satisfy the practicum experience requirement of the College (CAP). (qualifies as a CAP experience).

MKTG 411. Multi-National Marketing. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: C or better in MKTG 311 (or equivalent), and a declared major in the University or permission of the Dean’s Office of the CBPA. An examination of the operational and cross-cultural aspects of international marketing, including the nature of competition, developmental marketing structures and channels, price and credit policies, promotional methods, trade barriers, and international arrangements.

MKTG - Marketing

MARKETING Courses

MKTG 311. Marketing Principles and Problems. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing, and a declared major in the University or permission of the Dean’s Office of the CBPA. The design, distribution, pricing, and promotion of goods, services, people, places, and causes. Course examines both national and international markets and includes an introduction to the legal and ethical constraints on marketing.

MKTG 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisites: C or better in MKTG 311 (or equivalent) and approval by the instructor and Career Management Center in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (qualifies as a CAP experience).

MIDE - Middle Eastern Studies

MIDE EASTERN STUDIES Courses

MIDE 300. Perspectives on the Middle East. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. This course explores the Middle East from interdisciplinary perspectives.

MIDE 395. Topics in Middle Eastern Studies. 3 Credits.
3 credits. Prerequisite: junior standing or permission of instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on topics of mutual interest which, due to their specialized nature, may not be offered regularly.

MIDE 405. Communication and Culture in the Middle East. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: three hours of lower level social science. The course examines the tensions between modernity and tradition in the context of Middle East culture. Cultural variables to be studied include myths, religion, family structures, and the use of science and technology.

MIDE 495. Topics in Middle Eastern Studies. 3 Credits.
3 credits. Prerequisite: junior standing or permission of instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on topics of mutual interest which, due to their specialized nature, may not be offered regularly.

MIDE - Middle Eastern Studies

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MKTG 412. Retail Marketing. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: C or better in MKTG 311 (or equivalent), and a declared major in the University or permission of the Dean’s Office of the CBPA. This course will introduce students to a broad range of topics within the field of retailing: retailing strategy, targeting of customers, gathering of information, identifying and understanding customers, choosing a store location, managing a retail business, merchandise management and planning, and communication with the customer. The approach will combine both theory and practical application.

MKTG 414. Ethics and Social Issues in Administration. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: C or better in MKTG 311 (or equivalent), and a declared major in the University or permission of the Dean’s Office of the CBPA. An examination of the ethical and social problems confronting administrators and personnel in dealing with discrimination in employment practices, credit and financing, advertising, warranties and guarantees, packaging and labeling, and environmental problems.

MKTG 416. Professional Selling and Negotiations. 3 Credits.
Lecture and discussion, and cases 3 hours; 3 credits. Prerequisite: C or better in MKTG 311 (or equivalent), and a declared major in the University or permission of the Dean’s Office of the CBPA. This course examines the role of the professional salesperson in a market-oriented organization. Presentation skills are studied in the context of interpersonal negotiations.

MKTG 428. Marketing of Services. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: C or better in MKTG 311 (or equivalent), and a declared major in the University or permission of the Dean’s Office of the CBPA. This course examines the applications of the conceptual framework of marketing within the service business context. The course will focus on the characteristics of the service environment as well as important considerations in the service marketing mix.

MKTG 450. Marketing on the Internet. 3 Credits.
Lecture, discussion, and cases 3 hours; 3 credits. Prerequisite: C or better in MKTG 311 (or equivalent), and a declared major in the University or permission of the Dean’s Office of the CBPA. This course examines the use of the Internet as a unique channel for marketing to consumers and businesses. It focuses on Internet marketing strategies, online strategic implementation, and the integration between companies’ online and offline marketing efforts.

MKTG 490. Marketing Policy and Strategy. 3 Credits.
Lecture, discussion, and cases 3 hours; 3 credits. Prerequisite: marketing major; senior standing. MKTG 402, 407, plus two additional marketing courses or permission of instructor. A capstone course covering the marketing function and its relationship to the total business organization and its environment. Emphasis is placed upon the design of total marketing systems, strategies, and the design and production of new products and services.

MKTG 496. Selected Topics in Marketing. 3 Credits.
3 credits. Prerequisites: senior standing and permission of instructor. Designed to provide advanced students in marketing an opportunity to study, independently or in small groups, selected areas of marketing under the guidance of a faculty member.

MLRS 400/500. Principles of Molecular Pathology and Clinical Diagnostics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 250, 251; CHEM 211, 212 or permission of instructor. Basic concepts of molecular pathology & clinical diagnostics including nucleic acids, DNA replication, transcription, proteins, mutations & chromosome changes that underlie inherited & acquired/ infectious disease, inheritance patterns & genetics as applied to oncology, cardiac disease & organ transplants. Covers emerging molecular/cytologic/histologic methods (amplification, hybridization & microarrays) to detect disease markers, monitor therapy & assess identity; pharmacogenomics & legal/ethical issues of genetic testing.

MLRS 401/501. Molecular Diagnostics Laboratory. 3 Credits.
Lecture, 1 hour; Lab, 4 hours; 3 credits. Corequisite: MLRS 400 or permission of instructor. Course includes hands-on experience with discussion of diagnostics instrumentation and assays using nucleic acid and protein extraction, gel electrophoresis, hybridization techniques, standard and real time polymerase chain reaction (PCR), reverse transcription, DNA sequencing, autoradiography, flow cytometry, microarrays and proteomics-based methods.

MSCM - Maritime Supply Chain Mgmt

MSCM 368. Maritime and Supply Chain Internship. 1-3 Credits.
1-3 credits. Prerequisites: MSCM 370 and 441, and a declared major in the University or permission of the Dean’s Office of the CBPA. Approval for enrollment and allowable credit is determined by the Decision Sciences CAP advisor and the Career Management Center in the semester prior to enrollment. (qualifies as a CAP experience).

MSCM 370. International Shipping. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing of permission of the instructor. This course examines international freight transportation and terms for movement of international trade. It discusses processes and concepts involved in international ocean and intermodal transportation. It shows how shipping companies enter into foreign markets and participate in international trade. It also covers operational issues such as payment, commercial documents, insurance; customs and clearance; shipping organizations and societies, and shipping law.

MSCM 415. Maritime Security and Risk Analysis. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: MSCM 370. An overview of international and U.S. initiatives to ensure the security of vessels, cargo, people, and infrastructure within the maritime domain. In addition to the impacts of regulatory requirements on maritime commerce, the course also addresses maritime threats to the international economy (including maritime piracy and maritime terrorism), maritime coalitions, and state-of-the-art techniques and tools for safeguarding ocean-borne commerce.

MSCM 430/530. Strategic Sourcing and Purchasing Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ACCT 202, BNAL 206, OPMT 303, and a declared major in the University or permission of the Dean’s Office of the CBPA for 430 and ACCT 601 and OPMT 611 for 530. An overview of the strategic sourcing of materials and services in the organization and its role in the supply chain. Topics include sourcing decisions, price/cost analysis, quality issues, purchasing, supplier selection, legal and ethical issues, third party logistics, freight forwarding, and acquisition of services and capital assets.
MSCM 439. Quality Management. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: OPMT 303 and a declared major in the University or permission of the College of Business and Public Administration Dean’s Office. This course examines the application of quality principles to the management of manufacturing and service organizations. Topics include fundamentals of quality management, Six Sigma, statistical process control, process capability and reliability.

MSCM 441. Supply Chain Management and Logistics, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BNAL 306 and OPMT 303, and a declared major in the University or permission of the Dean’s Office of the CBPA. Supply chain management integrates all activities associated with the flow of materials and information from product start to customers. Examples include order processing, warehousing, inventory management, transportation and logistics, and the costs and information systems supporting these activities. Particular application is made to global logistics systems supporting port and maritime activities. Supply chain relationships can be improved through effective integration of management and via such technologies as the World Wide Web, electronic data exchange, and enterprise resource planning (ERP). (cross-listed with BNAL 441).

MSCM 468. Distribution Center and Material Handling Management, 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: MSCM/BNAL 441 or permission of the instructor. This course is designed to investigate the strategic role of distribution center and material management in the supply chain. Course content includes the analysis of distribution center operations through the study of design, system selection, and layout configuration as well as the evaluation of material handling and inventory management options. Discussion of ways to exploit the benefits of information technology and e-commerce in distribution center and material handling management is also included.

MSCM 471. Shipping Management, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MSCM 370, and a declared major in the University or permission of the Dean’s Office of the CBPA. Examines the management of freight shipping organizations involved in the transport of cargo by ship. Key topics are managing ships and ship space; shipping markets, operations, costs, investment, insurance, claims, and regulation; and ship types, cargoes, safety, flagging, pollution, and chartering and purchase.

MSCM 472. Port Management, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MSCM 370, and a declared major in the University or permission of the Dean’s Office of the CBPA. Examines the management of seaports in the movement of cargo throughput. It presents concepts related to design, organization, administration, and operation of ports. It discusses issues involved in planning, investment, communication systems, congestion, pollution, safety, security; intermodal transportation; water and land accessibility; and port competition and cooperation to improve customer service.

MSCM 473. Inland Waterway and Intermodal Transportation, 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: MSCM 370. This course is designed to explore and analyze the current condition of inland waterways both throughout the United States and around the globe with an emphasis on the creation of intermodal transportation networks. It will include an overview of existing infrastructure as well as financing mechanisms, national and international competitive strategies, risk management (public safety and emergency preparedness), and the environmental benefits as well as consider current legislation.

MSCM 495/595. Topics in Maritime and Supply Chain Management, 3 Credits.
3 credits. Prerequisite: permission of the instructor, and a declared major in the University or permission of the Dean’s Office of the CBPA. A study of selected topics within Maritime and Supply Chain Management designed to provide an in-depth exploration of current issues.

MSCM 497. Independent Study, 3 Credits.
3 credits. Prerequisite: permission of the department, and a declared major in the University or permission of the Dean’s Office of the CBPA. Affords students the opportunity to undertake independent study under the direction of a faculty member.

MSIM - Modeling And Simulation

MODELING AND SIMULATION Courses

MSIM 111. Information Literacy and Research for Modeling and Simulation Engineers, 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: ENGN 110. An introduction to methods and standards for locating and using information in the discipline of modeling and simulation engineering. Topics include: assessing information requirements; searching for, locating and evaluating information sources related to modeling and simulation; tools for managing, sharing, and presenting information; and ethical issues in the use of information. Students will complete exercises and research on topics involving information of interest to modeling and simulation engineers.

MSIM 201. Introduction to Modeling and Simulation, 3 Credits.
Lecture 3 hours, 3 credits. Pre- or Corequisites: CS 150 and MATH 211. This is the first course for Modeling and Simulation Engineering (M&SE) students. M&SE discipline is surveyed at an overview level of detail. Topics include basic definitions, M&S paradigms and methodologies, applications, design processes, and human factors. Information literacy and research methods are addressed. Papers and oral presentations are required and allow the student to investigate different aspects of the discipline. The course provides a general conceptual framework for further M&SE studies.

MSIM 205. Discrete Event Simulation, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MSIM 201. Corequisites: STAT 330 and MSIM 281. An introduction to the fundamentals of modeling and simulating discrete-state, event-driven systems. Topics include basic simulation concepts and terms, queuing theory models for discrete event systems, structure of discrete event simulations, problem formulation and specification, input data representation, output data analysis, verification and validation, and the design of simulation experiments.

MSIM 281. Discrete Event Simulation Laboratory, 1 Credit.
Laboratory 2 hours; 1 credit. Corequisite: MSIM 205. A laboratory course designed to provide a hands-on introduction to the development and application of discrete event simulation. Topics include an introduction to one or more discrete event simulation tools, common modeling constructs, data gathering and input data modeling, design of simulation experiments, output data analysis, and verification and validation. The design and implementation of a series of increasingly complex simulations of various discrete event systems are conducted. The laboratory is designed to accompany MSIM 205. Student written reports are required.

MSIM 310. Systems Modeling, 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: MSIM 205 and CS 330; Pre- or Corequisite: MSIM 320. Students learn the skills necessary to develop models of systems in preparation for simulation. They are introduced to different modeling perspectives and how they affect the ability to simulate and to observe system behavior. Numerous modeling techniques and formalisms are introduced supporting both discrete and continuous systems. Modeling is also discussed as a language to communicate with subject matter experts to capture a system’s behavior prior to simulation development.
MSIM 320. Continuous Simulation. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: PHYS 232N or 227N (honors version). Corequisites: MSIM 382. Prerequisites: MATH 307 (or MATH 280) and MSIM 201. An introduction to the fundamentals of modeling and simulating continuous-state, time-driven systems. Topics include differential equation representation of systems, formulation of state variable equations, numerical integration, and techniques for numerical solution of differential equations including the Taylor algorithm and the methods of Runge-Kutta. Application domains considered include physical and biological systems.

MSIM 331. Simulation Software Design. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: MSIM 205, CS 330 and CS 381. Corequisite: MSIM 383. Introduction to data structures, algorithms, and programming methodologies in support of computer simulation. Topics include lists, queues, sets, trees, searching, sorting, reusable code, and order of complexity. Simulation structures developed include event lists, time management, and queuing models. Software models are implemented and tested.

MSIM 351. Analysis for Modeling and Simulation. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: MSIM 205 and STAT 330. An introduction to analysis techniques appropriate to the conduct of modeling and simulation studies. Topics include input modeling, random number generation, measures of effectiveness, output analysis, variance reduction techniques, and experimental design. In addition, techniques for verification, validation, and accreditation are introduced. Course concepts are applied to real systems and data.

MSIM 357. Cooperative Education. 1-3 Credits.
1-3 credits. Prerequisite: approval by department and Career Management. Student participation for credit based on the academic relevance of work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work is to take place. (Qualifies as a CAP experience).

MSIM 368. Internship. 1-3 Credits.
1-3 credits. Prerequisite: approval by department and Career Management. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. (Qualifies as a CAP experience).

MSIM 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: approval by department and Career Management. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. (Qualifies as a CAP experience).

MSIM 382. Continuous Simulation Laboratory. 1 Credit.
Laboratory, 2 hours; 1 credit. Corequisite: MSIM 320. A laboratory course designed to provide a hands-on introduction to the development and application of continuous simulation. Topics include an introduction to one or more continuous simulation tools, modeling of various physics-based systems, and numerical solution of differential equations. The design and implementation of a series of increasingly complex simulations of various continuous systems are conducted. Written communication skills are stressed; weekly writing assignments are required. The laboratory is designed to accompany MSIM 320. Student written reports are required.

MSIM 383. Simulation Software Design Laboratory. 1 Credit.
Laboratory, 2 hours; 1 credit. Corequisite: MSIM 331. A laboratory course designed to provide a hands-on introduction to the development of simulation software. Topics include data structures, algorithms, and simulation executives. The students will conclude with the development of a basic simulation executive capable of managing discrete event simulations. Written communication skills are stressed; weekly writing assignments are required. The laboratory is designed to accompany MSIM 331. Student written reports are required.

MSIM 395. Topics in Modeling and Simulation Engineering. 1-3 Credits.
1-3 hours lecture; 1-3 credits. Prerequisite: permission of the instructor. Special topics of interest with emphasis placed on the recent developments in modeling and simulation engineering.

MSIM 396. Topics in Modeling and Simulation Engineering. 1-3 Credits.
1-3 hours lecture; 1-3 credits. Prerequisite: permission of the instructor. Special topics of interest with emphasis placed on the recent developments in modeling and simulation engineering.

MSIM 406/506. Introduction to Distributed Simulation. 3 Credits.
Lecture, 3 hours. 3 credits. Prerequisite: MSIM 331. An introduction to distributed simulation. Topics include motivation for using distributed simulation, distributed simulation architectures, time management issues, and distributed simulation approaches. Current standards for distributed simulation are presented.

MSIM 408. Introduction to Game Development. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: CS 361 or MSIM 331. An introductory course focused on game development theory and modern practices with emphasis on educational game development. Topics covered include game architecture, computer graphics theory, user interaction, audio, high level shading language, animation, physics, and artificial intelligence. Students will develop games related to science, technology, engineering, and mathematics (STEM) education. The developed games can run on a variety of computer, mobile, and gaming platforms.

MSIM 441. Computer Graphics and Visualization. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisites: CS 250. An introduction to graphical systems and methods. Topics include surfaces, solids, and realism techniques such as visible surface, lighting, shadows, and surface detail. Applications to modeling and simulation including 2-D and 3-D solid models, data visualization, and animation.

MSIM 487W. Capstone Design I. 4 Credits.
4 credits; 2 lecture, 4 laboratory. Prerequisites: A grade of C or better in ENGL 211C or 221C or 231C; MSIM 310, 331, and 351. Part one of the senior capstone design experience for modeling and simulation engineering majors. Lectures focus on providing professional orientation and exploration of the M&S design process. Written communication, oral communication and information literacy skills are stressed. Individual and group design projects focus on the conduct of a complete M&S project. Industry-sponsored projects are an option. Individual and team reports and oral presentations are required. (This is a writing intensive course.).

MSIM 488. Capstone Design II. 3 Credits.
Lecture, 1 hour; laboratory 3 hours. 3 credits. Prerequisite: MSIM 441 and MSIM 487W. Part two of the senior capstone design experience for modeling and simulation engineering majors. Lectures focus on providing professional orientation and exploration of the M&S design process. Written communication, oral communication and information literacy skills are stressed. Individual and group design projects focus on the conduct of a complete M&S project. Industry-sponsored projects are an option. Individual and team reports and oral presentations are required.

MSIM 495/595. Topics in Modeling and Simulation. 3 Credits.
1-3 hours lecture; 1-3 credits. Prerequisite: permission of the instructor. Special topics of interest with emphasis placed on recent developments in modeling and simulation engineering.

MSIM 496. Topics in Modeling and Simulation Engineering. 1-3 Credits.
1-3 hours lecture; 1-3 credits. Prerequisite: permission of the instructor. Special topics of interest with emphasis placed on the recent developments in modeling and simulation engineering.
MILITARY SCIENCE/LEADERSHIP Courses

MSL 101+. Introduction to ROTC. 1 Credit.
Lecture/Lab 3 hours; 1 credit. Learn fundamental concepts of leadership in a profession in both classroom and outdoor laboratory environments. Examine organization, customs and courtesies of the Army and ROTC with emphasis on career opportunities for ROTC graduates. Studies the military profession, lifestyle, and historical growth development of the Army. Increase self-confidence through team study and activities in basic drill, physical fitness, rappelling, leadership reaction course, first aid, making presentations and basic marksmanship. Participation in physical fitness program highly encouraged. Participation in one overnight adventure training exercise is highly encouraged.

MSL 102+. Introduction to Leadership. 1 Credit.
Lecture/Lab 3 hours; 1 credit. Prerequisite: MSL 101+ or 195, or departmental approval. Learn/apply principles of effective leadership. 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 the effectiveness of a leader. Introduction to development of military tactical knowledge and technical skills. Students will gain a basic knowledge of land navigation, military geography and the use of maps and aerial photographs. Participation in physical fitness program highly encouraged. Participation in one overnight adventure training exercise is highly encouraged.

MSL 195. Independent Study of Selected Military Topics. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: departmental approval. A study of selected topics within military science designed to accommodate special cadet’s educational and commissioning requirements. Participation in physical fitness program highly encouraged. Participation in one overnight adventure training exercise is highly encouraged.

MSL 196. Independent Study of Selected Military Topics. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: departmental approval. A study of selected topics within military science designed to accommodate special cadet’s educational and commissioning requirements. Participation in physical fitness program highly encouraged. Participation in one overnight adventure training exercise is highly encouraged.

MSL 201+. Leadership Skills II. 1 Credit.
Lecture/Lab 3 hours; 1 credit. Prerequisite: MSL 101+/102+ or 195/196, or departmental approval. Course is designed to refine and continue to develop knowledge of basic military skills. Learn/apply ethics-based leadership skills that develop individual abilities and contribute to the building of effective teams of people. Develop skills in oral presentations, writing concisely, planning of events, coordination of group efforts, advanced first aid, land navigation and basic military tactics. Learn fundamentals of ROTC’s Leadership Development Program. Participation in physical fitness program highly encouraged. Participation in one overnight adventure training exercise is highly encouraged.

MSL 202+. Foundations of the Military Profession. 1 Credit.
Lecture/Lab 3 hours; 1 credit. Prerequisite: MSL 201+ or 295, or departmental approval. Continued development of leadership ability through active participation as junior leaders at the small unit level. Students are given increased leadership opportunities, which sharpen interpersonal communication skills and expand capabilities for future advancement in a military career. Introduction to individual and team aspects of military tactics in small unit operations. Practical exercises with upper division ROTC students. Instruction will build on fundamentals of land navigation, individual soldier skill and rifle marksmanship. Participation in physical fitness program highly encouraged. Participation in one overnight adventure training exercise is highly encouraged.

MSL 250+. Alternate Summer Training Program: Leaders Training Course (LTC). 6 Credits.
6 credits. Prerequisite: departmental approval. Course consists of five weeks of intensive and challenging military training at Fort Knox, Kentucky. Permits students to satisfy all requirements for entry into Advanced Course. Students are paid approximately $650 (food, lodging, transportation provided).

MSL 251+. Optional Summer Training Program: Airborne School. 2 Credits.
2 credits. Prerequisite: departmental approval. A three-week course conducted at Fort Benning, Georgia, which focuses on parachute operations, individual and group parachute jumps, equipment orientation, and physical training. Award of the Army Airborne Badge upon course completion. Travel, lodging and most meal costs are defrayed by the U.S. Army.

MSL 252+. Optional Summer Training Program: Air Assault School. 2 Credits.
2 credits. Prerequisite: departmental approval. A two-week course conducted at various locations. Training in the techniques, skills and procedures used in air assault operations, including basic and advanced rappelling, helicopter rappelling, troop leader procedures, pathfinder techniques, and rigging and slingloading skills. Award of the Army Assault Badge upon course completion. Travel, lodging and most meal costs are defrayed by the U.S. Army.

MSL 295. Independent Study of Selected Military Topics. 1 Credit.
Lecture/Lab 2 hours; 1 credit. Prerequisite: departmental approval. A study of selected topics within military science designed to accommodate special successful progression through military cadet educational and commissioning requirements. Participation in physical fitness program required. Participation in one overnight adventure training exercise is required.

MSL 296. Independent Study of Selected Military Topics. 1 Credit.
Lecture/Lab 2 hours; 1 credit. Prerequisite: departmental approval. A study of selected topics within military science designed to accommodate special successful progression through military cadet educational and commissioning requirements. Participation in physical fitness program required. Participation in one overnight adventure training exercise is required.

MSL 301. Advanced Leadership Skills. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MSL 201+/202+, or 295/296, or 250+ or departmental approval. Corequisite: MSL 311+. Course teaches decision making and problem solving skills. Students learn to plan, direct and coordinate individual and group efforts toward task accomplishment. Field exercises afford practical opportunities for the students to apply instruction. Cadets are evaluated against 16 leadership dimensions, including decisiveness, delegation, influence, problem analysis, planning, technical competence, and communication.

MSL 302. Applied Leadership. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MSL 301 or 395. Corequisite: MSL 312+. Course presents increasingly intense and complex situations in which students apply military skills and leadership to solve tactical problems. Students develop leadership proficiencies in all basic military technical and tactical skills, including basic rifle marksmanship, day and night land navigation, physical training, and small/large unit tactics. Field training exercises afford opportunities to apply military leadership and management skills. Cadets are evaluated using 16 leadership dimensions.
MSL 311+. Advanced Leadership Skills III Lab. 1 Credit.
1 credit. Corequisite: MSL 301. Practical application of individual and leadership skills in simulated tactical environments of increasing complexity and intensity. Includes weekend training in basic rifle marksmanship, day and night land navigation, and small unit tactics. Affords students opportunities to apply leadership skills to plan, direct, and coordinate the activities of others to accomplish a mission. Mandatory physical fitness training 3 times a week to build stamina and physical condition to lead from the front. Participation in one overnight adventure training exercise per semester is required.

MSL 312+. Applied Leadership Lab. 1 Credit.
1 credit. Corequisite: MSL 302. Practical application of individual and leadership skills in simulated tactical environments of increasing complexity and intensity. Includes weekend training in basic rifle marksmanship, day and night land navigation, and small unit tactics. Affords students opportunities to apply leadership skills to plan, direct, and coordinate the activities of others to accomplish a mission. Mandatory physical fitness training 3 times a week to build stamina and physical condition to lead from the front. Participation in one overnight adventure training exercise per semester is required.

MSL 315+. Summer Training Program - Leader Development and Assessment Course (LDAC). 6 Credits.
6 credits. Prerequisites: MSL 301/302 or 395/396. A five-week summer camp conducted at Fort Lewis, Washington. The student will receive pay. Travel, lodging and most meal costs are defrayed by the U.S. Army. The camp environment is highly structured and demanding, stressing leadership at the small unit level under varying, challenging conditions. The leadership and skills evaluations at the camp weigh heavily in the subsequent selection process that determines the type of commission and job opportunities given to the student upon graduation from ROTC and the University.

MSL 317+. Cadet Troop Leadership Training. 3 Credits.
3 credit hours. Prerequisite: departmental approval. A two to four week training program designed to introduce junior officers to responsibilities of commissioned lieutenants. Stateside or overseas programs are available. Travel, lodging and most meals are defrayed by the U.S. Army.

MSL 395. Independent Study. 3 Credits.
Lecture 3 hours; 3 credit hours. Prerequisite: departmental approval. A study of selected topics within military science designed to accommodate special cadet educational and commissioning requirements. Participation in a one-hour physical fitness session is mandatory.

MSL 396. Independent Study. 3 Credits.
Lecture 3 hours; 3 credit hours. Prerequisite: departmental approval. A study of selected topics within military science designed to accommodate special cadet educational and commissioning requirements. Participation in a one-hour physical fitness session is mandatory.

MSL 401. Military Leadership and Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MSL 301/302, 395/396, or departmental approval. Corequisite: MSL 411+. Class teaches the Army’s training management system, leadership theories, staff planning and coordination, and counseling skills. Simultaneously, students in the course will assume leadership responsibilities in the ROTC battalion, affording practical opportunities to apply skills learned in the classroom. At the end of the semester, students will possess the fundamental skills, attributes, and abilities to operate as competent leaders in the cadet battalion and confidently shoulder the responsibilities entrusted to them.

MSL 402. Officership. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MSL 401 or departmental approval. Corequisite: MSL 412+. Final preparation for commissioning as a Lieutenant. Course emphasizes effective communications skills gained through individual presentations and by leading and influencing groups within the Cadet Battalion. Students also examine topics in military law and explore practical and ethical challenges of military leadership as they relate to personnel management, logistics, training, and operations. Students are the primary instructors and leaders within the Cadet Battalion.

MSL 411+. Senior Military Leadership and Management Laboratory. 1 Credit.
1 credit. Corequisite: MSL 401. Practical application of individual and leadership skills in simulated tactical environments of increasing complexity and intensity. Includes weekend training in basic rifle marksmanship, day and night land navigation, and small unit tactics. Affords students opportunities to apply leadership skills to plan, direct, and coordinate the activities of others to accomplish a mission. Mandatory physical fitness training 3 times a week to build stamina and physical condition to lead from the front. Participation in one overnight adventure training exercise per semester is required.

MSL 412+. Senior Leadership Laboratory. 1 Credit.
1 credit. Corequisite: MSL 402. Practical application of individual and leadership skills in simulated tactical environments of increasing complexity and intensity. Includes weekend training in basic rifle marksmanship, day and night land navigation, and small unit tactics. Affords students opportunities to apply leadership skills to plan, direct, and coordinate the activities of others to accomplish a mission. Mandatory physical fitness training 3 times a week to build stamina and physical condition to lead from the front. Participation in one overnight adventure training exercise per semester is required.

MSL 495. Independent Study. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: departmental approval. A study of selected topics within the military science program designed to accommodate special cadet education and commissioning requirements. Participation in a one-hour physical fitness session is mandatory.

MSL 496. Independent Study. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: departmental approval. A study of selected topics within the military science program designed to accommodate special cadet education and commissioning requirements. Participation in a one-hour physical fitness session is mandatory.

MUSA - Music, Applied

MUSIC, APPLIED Courses
MUSA 139. Half-Hour Lesson. 1 Credit.
One half-hour lesson per week; 1 credit. Prerequisite: permission of the faculty.

MUSA 140. Half-Hour Lesson. 1 Credit.
One half-hour lesson per week; 1 credit. Prerequisite: permission of the faculty and 139 for 140.

MUSA 141. Hour Lesson. 2 Credits.
One hour lesson per week; 2 credits each semester. Prerequisite: permission of faculty.

MUSA 142. Hour Lesson. 2 Credits.
One hour lesson per week; 2 credits each semester. Prerequisite: permission of faculty.
MUSA 151. One Hour Lesson. 3 Credits.
One hour lesson per week; 2 credits each semester. Prerequisite: permission of faculty.

MUSA 152. Hour Lesson. 3 Credits.
One hour lesson per week; 2 credits each semester. Prerequisite: permission of faculty.

MUSA 232. Hour Lesson - Applied Composition. 3 Credits.
One hour lesson per week; 3 credits per semester. Prerequisite: MUSC 222.

MUSA 239. Half-Hour Lesson. 1 Credit.
One half-hour lesson per week; 1 credit. Prerequisite: previous number and permission of the faculty.

MUSA 240. Half-Hour Lesson. 1 Credit.
One half-hour lesson per week; 1 credit. Prerequisite: previous number and permission of the faculty.

MUSA 241. Hour Lesson. 2 Credits.
One hour lesson per week; 2 credits each semester. Prerequisite: permission of faculty.

MUSA 242. Hour Lesson. 2 Credits.
One hour lesson per week; 2 credits each semester. Prerequisite: permission of faculty.

MUSA 251. Hour Lesson. 3 Credits.
One hour lesson per week; 3 credits each semester. Prerequisites: previous number and permission of faculty. Completion of this level includes successful performance of a half-hour public recital. Numbers may be repeated.

MUSA 252. Hour Lesson. 3 Credits.
One hour lesson per week; 3 credits each semester. Prerequisites: previous number and permission of faculty. Completion of this level includes successful performance of a half-hour public recital. Numbers may be repeated.

MUSA 331. Hour Lesson - Applied Composition. 3 Credits.
One hour lesson per week; 3 credits per semester. Prerequisites: MUSA 232. Original work in composition starting with the smaller forms in both the vocal and the instrumental fields. At least one 10-minute lecture-performance at Student Performance Hours or an equivalent thereof is required.

MUSA 332. Hour Lesson - Applied Composition. 3 Credits.
One hour lesson per week; 3 credits per semester. Prerequisites: MUSA 331. Original work in composition starting with the smaller forms in both the vocal and the instrumental fields. At least one 10-minute lecture-performance at Student Performance Hours or an equivalent thereof is required.

MUSA 339. Hour Lesson - Applied Composition. 2 Credits.
One hour lesson per week; 2 credits per semester. Prerequisite: MUSA 240.

MUSA 340. Hour Lesson - Applied Composition. 2 Credits.
One hour lesson per week; 2 credits per semester. Prerequisite: MUSA 240. MUSA 339 is prerequisite for 340.

MUSA 341. Hour Lesson. 2 Credits.
One hour lesson per week; 2 credits each semester. Prerequisites: previous number and permission of faculty.

MUSA 342. Hour Lesson. 2 Credits.
One hour lesson per week; 2 credits each semester. Prerequisites: previous number and permission of faculty.

MUSA 351. Hour Lesson. 3 Credits.
One hour lesson per week; 3 credits each semester. Prerequisites: previous number and permission of faculty to advance to upper-division performance level.

MUSA 352. Hour Lesson. 3 Credits.
One hour lesson per week; 3 credits each semester. Prerequisites: previous number and permission of faculty to advance to upper-division performance level.

MUSA 431. Hour Lesson - Applied Composition. 3 Credits.
One hour lesson per week; 3 credits per semester. Prerequisite: MUSA 332. Original composition in larger forms. One or more lecture-performances at Student Performance Hours or equivalents thereof are required.

MUSA 432. Hour Lesson - Applied Composition. 3 Credits.
One hour lesson per week; 3 credits per semester. Prerequisite: MUSA 431. Original composition in larger forms.

MUSA 439. Hour Lesson - Applied Composition. 2 Credits.
One hour lesson per week; 2 credits per semester. Prerequisite: MUSA 430.

MUSA 440. Hour Lesson - Applied Composition. 2 Credits.
One hour lesson per week; 2 credits per semester. Prerequisite: MUSA 439. Prerequisite for 440.

MUSA 441. Hour Lesson. 2 Credits.
One hour lesson per week; 2 credits each semester. Prerequisites: previous number and permission of faculty. Satisfaction of a degree requirement on this level includes successful performance of a one-half hour private or, at faculty discretion, public recital. Numbers may be repeated.

MUSA 442. Hour Lesson. 2 Credits.
One hour lesson per week; 2 credits each semester. Prerequisites: previous number and permission of faculty. Satisfaction of a degree requirement on this level includes successful performance of a one-half hour private or, at faculty discretion, public recital. Numbers may be repeated.

MUSA 445. Advanced Electronic Composition I. 2 Credits.
2 credits. Prerequisites: MUSC 335T and MUSC 336. This course is designated only for music majors and/or minors. Students must complete two semesters of the recording class (MUSC 335T and MUSC 336) or have equivalent experience before taking MUSA 441. Music hardware and software to be studied includes, but is not limited to: K2500 Mackie 1604 VLZ 2 pro, Opcode MIDI 96 and Digital.

MUSA 446. Advanced Electronic Composition II. 2 Credits.
2 credits. Prerequisite: MUSA 445. This course is designated for music majors and/or minors. Music hardware and software to be studied includes, but is not limited to: K2500, Sound Designer, Oro Tools, and Finale. The participants are expected to compose a medium-length work (at least 4-5 minutes) Using the above equipment. Grading is based on the knowledge of the electronic equipment and the quality of composing.

MUSA 451. Hour Lesson. 3 Credits.
One hour lesson per week; 3 credits each semester. Prerequisites: previous number and permission of faculty. Completion of this level includes successful performance of a one-hour public recital. Numbers may be repeated.

MUSA 452. Hour Lesson. 3 Credits.
One hour lesson per week; 3 credits each semester. Prerequisites: previous number and permission of faculty. Completion of this level includes successful performance of a one-hour public recital. Numbers may be repeated.

MUSC - Music
MUSIC Courses

MUSC 101. Beginning Piano Class. 1 Credit.
Two meetings per week; 1 credit each semester. 101 is prerequisite to 102. Introduction, practical training, and development of basic piano skills, including the playing of scales, arpeggios, chords, and simple songs; sight reading, transposition, harmonization of melodies, and improvisation. (For music majors only).

MUSC 102. Beginning Piano Class. 1 Credit.
Two meetings per week; 1 credit each semester. 101 is prerequisite to 102. Introduction, practical training, and development of basic piano skills, including the playing of scales, arpeggios, chords, and simple songs; sight reading, transposition, harmonization of melodies, and improvisation. (For music majors only).

MUSC 103. Intermediate Piano Class. 1 Credit.
Two meetings per week; 1 credit each semester. Prerequisite: MUSC 102 or permission of the instructor. MUSC 103 is a prerequisite to 104. Continued practical training and development of basic piano skills. (For music majors only).

MUSC 104. Intermediate Piano Class. 1 Credit.
Two meetings per week; 1 credit each semester. Prerequisite: MUSC 102 or permission of the instructor. MUSC 103 is a prerequisite to 104. Continued practical training and development of basic piano skills. (For music majors only).

MUSC 105. Advanced Piano Class. 1 Credit.
Two meetings per week; 1 credit each semester. Prerequisite: MUSC 104 or permission of the instructor. MUSC 105 is a prerequisite to MUSC 106. Practical training and further development of basic piano skills, including the playing of scales, arpeggios, chords, and simple songs; sight reading, transposition, harmonization of melodies, and improvisation. (For music majors only).

MUSC 106. Advanced Piano Class. 1 Credit.
Two meetings per week; 1 credit each semester. Prerequisite: MUSC 104 or permission of the instructor. MUSC 105 is a prerequisite to MUSC 106. Practical training and further development of basic piano skills, including the playing of scales, arpeggios, chords, and simple songs; sight reading, transposition, harmonization of melodies, and improvisation. (For music majors only).

MUSC 107. Beginning Voice Class. 1 Credit.
Two meetings per week; 1 credit each semester. Introduction, practical training, and development of basic singing skills. Students scoring below the Applied Music 141 level in the voice placement test may enroll in this course prior to pursuing Applied Music 141 for credit.

MUSC 108. Beginning Voice Class. 1 Credit.
Two meetings per week; 1 credit each semester. Introduction, practical training, and development of basic singing skills. Students scoring below the Applied Music 141 level in the voice placement test may enroll in this course prior to pursuing Applied Music 141 for credit.

MUSC 109. Intermediate Voice Class. 1 Credit.
Two meetings per week; 1 credit each semester. Prerequisite: MUSC 108 or permission of the instructor. Introduction, practical training, and development of basic singing skills. Students scoring below the Applied Music 141 level in the voice placement test may enroll in this course prior to pursuing Applied Music 141 for credit.

MUSC 110. Intermediate Voice Class. 1 Credit.
Two meetings per week; 1 credit each semester. Prerequisite: MUSC 108 or permission of the instructor. Introduction, practical training, and development of basic singing skills. Students scoring below the Applied Music 141 level in the voice placement test may enroll in this course prior to pursuing Applied Music 141 for credit.

MUSC 111. Advanced Voice Class. 1 Credit.
Two meetings per week; 1 credit each semester. Prerequisite: MUSC 110 or permission of the instructor. Introduction, practical training, and development of basic singing skills. Students scoring below the Applied Music 141 level in the voice placement test may enroll in and repeat this course prior to pursuing Applied Music 141 for credit.

MUSC 112. Advanced Voice Class. 1 Credit.
Two meetings per week; 1 credit each semester. Prerequisite: MUSC 110 or permission of the instructor. Introduction, practical training, and development of basic singing skills. Students scoring below the Applied Music 141 level in the voice placement test may enroll in and repeat this course prior to pursuing Applied Music 141 for credit.

MUSC 115. Introduction to Pro Tools. 3 Credits.
Lecture 3 hours; 3 credits. This course is designed to introduce students to the most widely used digital audio workstation in the professional audio industry. Topics include basic of digital audio theory, system configuration, file structure and organization, recording and editing audio and MIDI data as well as post-production video.

MUSC 116. Essentials of Pro Tools. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MUSC 115. Expanding of the skills learned in MUSC 115, this course focuses on the core concepts and skills required to successfully operate Pro Tools LE systems. Students will explore various I/O setups, controller options, session management techniques, recording and editing approaches as well as automation and mixing methods.

MUSC 120. Rudiments of Music. 3 Credits.
Lecture 3 hours; 3 credits. This course is designed specifically for non-music majors and will cover music basics only.

MUSC 121. Basic Musicianship. 3 Credits.
Lecture 3 hours; 3 credits. Provides the knowledge of and skills in music theory fundamentals necessary for music majors and minors to prepare for upper levels of music theory.

MUSC 126A. Honors: Music in History and Culture. 3 Credits.
Lecture 3 hours; 3 credits. A survey of major composers and their works in the historical context of different style periods, including a discussion of the central philosophical and cultural issues of each period. Students will be required to attend at least three musical events and turn in written critiques. Open to Honors College students only.

MUSC 195. Topics. 1-3 Credits.

MUSC 196. Topics. 1-3 Credits.

MUSC 215. ProTools Production. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MUSC 116. This course concentrates on building the basic skills required to successfully operate ProTools HD systems in a professional environment. Students will explore various components of an HD system, session management techniques, selection and editing procedures as well as automation and mixing processes.

MUSC 216. Music Production Techniques. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MUSC 215. This is the final course in a four-part sequence and prepares the student for Pro Tools Operator certification in music. Students will investigate various workflows, tracking and overdubbing techniques, virtual instruments, professional editing techniques as well as advanced automation and mixing processes.

MUSC 221. Music Theory. 3 Credits.
221 is prerequisite to 222. Lecture 3 hours; 3 credits each semester. Prerequisite: music major or permission of the instructor. Written and keyboard harmony. An elementary course dealing with the fundamentals of pitch and time and the use of triads.
MUSC 222. Music Theory. 3 Credits.
221 is prerequisite to 222. Lecture 3 hours; 3 credits each semester. Prerequisite: music major or permission of the instructor. Written and keyboard harmony. An elementary course dealing with the fundamentals of pitch and time and the use of triads.

MUSC 223. Ear Training, Sight Singing and Dictation. 1 Credit.
223 is prerequisite to 224. Lecture 1 hour; drill section 1 hour; 1 credit each semester. Prerequisite or corequisite: MUSC 221. Melodic, rhythmic, and harmonic dictation; singing, recognition, and writing of various intervals and triads.

MUSC 224. Ear Training, Sight Singing and Dictation. 1 Credit.
223 is prerequisite to 224. Lecture 1 hour, drill section 1 hour; 1 credit each semester. Prerequisite or corequisite: MUSC 221. Melodic, rhythmic, and harmonic dictation; singing, recognition, and writing of various intervals and triads.

MUSC 225. Live Audio Engineering. 3 Credits.
Lecture 3 hours; 3 credits. This course covers fundamentals of live audio engineering, rudimentary acoustics, auditory perception and psychoacoustical concepts. Students will learn to assemble sound reinforcement systems for small and large ensembles and examine how sound is perceived by the human ear. Topics such as signal flow, cabling, mixing, busing and monitoring will be addressed.

MUSC 261. Music Literature Survey. 1 Credit.
Lecture 1 hour; 1 credit each semester. Required for music majors. Available to qualified nonmajors. A technical study of music from the Middle Ages through the twentieth century. Listening to recordings and attending live concerts are required.

MUSC 262. Music Literature Survey. 1 Credit.
Lecture 1 hour; 1 credit each semester. Required for music majors. Available to qualified nonmajors. A technical study of music from the Middle Ages through the twentieth century. Listening to recordings and attending live concerts are required.

MUSC 264A. Music in History and Culture. 3 Credits.
Lecture 3 hours, 3 credits. This course is designed to be an introduction to the appreciation and understanding of music through music listening activities and a survey of music history. Basic principles and elements of music are discussed in relation to contexts within a variety of musical styles including classical, jazz, popular, and world music. Regular and repeated listening is an important part of the course in addition to required concert attendance.

MUSC 295. Topics. 1-3 Credits.

MUSC 296. Topics. 1-3 Credits.

MUSC 301. Music Education: High Brass Class. 1 Credit.
Prerequisite: students must display the ability to read music. Open to Music Education majors only. Required of all instrumental music education students. Designed to develop basic skills of playing and teaching the trumpet and French horn. (offered Fall, odd years).

MUSC 302. Music Education: Low Brass Class. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisite: MUSC 301 or permission of the instructor. Required of all instrumental music education students. Designed to develop basic skills of playing and teaching trombone, euphonium, and tuba. (offered spring, even years).

MUSC 303. Music Education: Clarinet Class. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: students must display the ability to read music. Designed to develop basic skills of playing and teaching the clarinet, which serves as a foundation for the other woodwind instruments. (offered fall, even years).

MUSC 304. Music Education: Woodwind Class. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisite: MUSC 303 or permission of the instructor. Designed to develop basic skills of playing and teaching flute, oboe, bassoon, and saxophone. (offered spring, odd years).

MUSC 305. Music Education: Upper Strings Class. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: students must display the ability to read music. Designed to develop basic skills of playing and teaching the violin and viola and to evaluate instructional materials used with these instruments. (offered fall, even years).

MUSC 306. Music Education: Lower Strings Class. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisite: MUSC 305. The course is designed to develop basic skills of playing and teaching cello and string bass and to evaluate instructional materials used with these instruments. Introduces heterogeneous teaching and rehearsal techniques using all four stringed instruments. (offered spring, odd years).

MUSC 307. Music Education: Percussion Class. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisite: students must display the ability to read music. Class lessons on all percussion instruments and the study of teaching methods for these instruments. (offered fall, odd years).

MUSC 308. Music Education: Music for the Elementary Classroom Teacher. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Students gain skills and experience related to the use of music in elementary school.

MUSC 309. Principles of Conducting. 1 Credit.
1 hour; 1 credit. Prerequisites: MUSC 224, MUSC 322, or permission of the instructor. The development of basic skills and techniques necessary for conducting choral and instrumental ensembles.

MUSC 316. Popular Songwriting Techniques. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MUSC 222. This course focuses on the craft of songwriting. Covering contemporary song forms, techniques of lyric and melody writing as well as popular harmony and analysis, the course prepares students to write hit songs. Students will learn how to effectively demo their own songs, successfully collaborate, write jingles and copyright their own material.

MUSC 321. Advanced Theory. 2 Credits.
321 is prerequisite to 322. Lecture 2 hours; 2 credits each semester. Prerequisites: MUSC 222 and MUSC 224, or permission of the instructor. A continuation of MUSC 222; written and keyboard work introducing modulation, seventh chords, and harmonic harmony.

MUSC 322. Advanced Theory. 2 Credits.
321 is prerequisite to 322. Lecture 2 hours; 2 credits each semester. Prerequisites: MUSC 222 and MUSC 224, or permission of the instructor. A continuation of MUSC 222; written and keyboard work introducing modulation, seventh chords, and harmonic harmony.

MUSC 323. Advanced Ear Training, Sight Singing and Dictation. 1 Credit.
323 is prerequisite to 324. Lecture/laboratory 2 hours; 1 credit each semester. Prerequisites: MUSC 222 and MUSC 224 or permission of the instructor. A continuation of MUSC 224, written and keyboard work introducing modulation, seventh chords and harmonic harmony.

MUSC 324. Advanced Ear Training, Sight Singing and Dictation. 1 Credit.
323 is prerequisite to 324. Lecture/laboratory 2 hours; 1 credit each semester. Prerequisites: MUSC 222 and MUSC 224 or permission of the instructor. A continuation of MUSC 224, written and keyboard work introducing modulation, seventh chords and harmonic harmony.
MUSC 335T. Music Production; MIDI I. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: music student or permission of instructor. This course will introduce students to MIDI technology with an emphasis on sequencing and editing techniques and music notation skills.

MUSC 336. Electronic Music. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: music major or permission of instructor. This introductory course is designed to give students a historical overview of mechanical and electronic music through topical study and listening examples. Additionally, students will create their own electronic music compositions using analog, digital and virtual hardware/software.

MUSC 337. Jazz Improvisation I. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: MUSC 222 or permission of the instructor. This course will introduce students to the basic concepts of Jazz improvisation, including harmonic and melodic implications.

MUSC 338. Jazz Improvisation II. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: MUSC 337 or permission of the instructor. This course is a continuation of MUSC 337, and will delve further into more advanced techniques used in Jazz improvisation.

MUSC 345. Diction for Singers. 1 Credit.
Lecture 1 hour; 1 credit each semester. Prerequisites: MUSA 142 or MUSA 152, or permission of the instructor. An introductory course dealing with correct principles of effective diction essential to the singing of English and Italian songs (MUSC 345). (345 offered every fall).

MUSC 346. Diction for Singers. 1 Credit.
Lecture 1 hour; 1 credit each semester. Prerequisites: MUSA 142, MUSA 152, or permission of the instructor. An introductory course dealing with correct principles of effective diction essential to the singing of German and French songs (MUSC 346). (346 offered every spring).

MUSC 350. Music Notation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MUSC 120. This course is designed to introduce students to the art of music notation through exploring the history of music engraving practices, hands-on experience writing music manuscript (hand-written) and the use of modern notation software (Finale, Sibelius, etc.) with MIDI implementation.

MUSC 361. History of Music. 3 Credits.
Lecture 3 hours; 3 credits each semester. Prerequisites: MUSC 264A, or MUSC 261 and MUSC 262, or permission of instructor. A general survey of the growth of music showing the influence of historical events upon musical developments.

MUSC 362W. History of Music. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: grade of C or better in ENGL 211C or 221C or 231C; MUSC 261 and MUSC 262 or MUSC 264A. A general survey of the growth of music showing the influence of historical events upon musical development. (This is a writing intensive course.).

MUSC 370. Jazz Combo. 1 Credit.
1 credit. Prerequisite: permission of the instructor. This ensemble will explore Jazz literature, focusing primarily on the small group format. Previous experience with improvisation is necessary for all participants.

MUSC 371+. Ensemble. 1 Credit.
3 rehearsal periods per week; 1 credit each semester. Prerequisite: ability to read music and permission of the instructor.

MUSC 377. Extracurricular Studies. 1-6 Credits.
1-6 credits each semester. Prerequisites: approval by the department and the dean, in accordance with the policy on granting credit for extracurricular activities. Extracurricular activities may be approved for credit based on objectives, criteria, and evaluative procedures as formally determined by the department and the student prior to the semester in which the activity is to take place. Credit is subject to review by the provost.

MUSC 378. Extracurricular Studies. 1-6 Credits.
1-6 credits each semester. Prerequisites: approval by the department and the dean, in accordance with the policy on granting credit for extracurricular activities. Extracurricular activities may be approved for credit based on objectives, criteria, and evaluative procedures as formally determined by the department and the student prior to the semester in which the activity is to take place. Credit is subject to review by the provost.

MUSC 380. Symphony Band. 1 Credit.
1 credit. Open to all university students. Prerequisite: Students must exhibit the ability to play a standard concert band instrument, read music and permission of the instructor. Symphony band is a large ensemble for woodwind, brass and percussion players. Students will participate in rehearsals and concerts.

MUSC 381+. Concert Choir. 1 Credit.
2 rehearsal periods per week; 1 credit each semester. Prerequisite: ability to read music. Audition Required. Participation in rehearsals and public performances of the Concert Choir.

MUSC 382+. Wind Ensemble. 1 Credit.
3 rehearsal periods per week; 1 credit each semester. Prerequisite: ability to read music and/or permission of the instructor. Participation in rehearsals and public performances of the Wind Ensemble.

MUSC 383+. Symphony Orchestra. 1 Credit.
Rehearsals 3 days per week and dress rehearsals TBA; 1 credit each semester. Prerequisite: by audition or permission of the instructor. Participation in rehearsals and public performances of the University Symphony Orchestra.

MUSC 384+. Jazz Ensemble. 1 Credit.
1-3 rehearsal periods per week; 1 credit each semester. Prerequisite: ability to read music and/or permission of the instructor.

MUSC 385+. Basketball Band. 1 Credit.
Meeting schedule TBD: 1 credit. Prerequisite: ability to read music and/or permission of the instructor. Basketball band performs at all home Men’s and Women’s basketball games and selected tournament performances.

MUSC 386+. New Dominions. 1 Credit.
1-3 rehearsal periods per week; 1 credit each semester. Prerequisite: ability to read music and/or permission of the instructor.

MUSC 387+. Collegium Musicum. 1 Credit.
1-2 rehearsal periods per week; 1 credit each semester. Prerequisite: ability to read music and/or permission of the instructor.

MUSC 388+. Madrigal Singers. 1 Credit.
3 rehearsal periods per week; 1 credit each semester. Prerequisite: ability to read music and/or permission of the instructor.

MUSC 389+. Brass Choir. 1 Credit.
3 rehearsal periods per week; 1 credit each semester. Prerequisite: ability to read music and/or permission of the instructor.

MUSC 390. Marching Band. 1 Credit.
1 credit. Prerequisite: Successful playing audition, the ability to read music and permission of the instructor. An audition is required. Marching band will meet only during the fall semester and perform at all home and some away football games and other selected events. Students will participate in rehearsals and performances. Meets MW 5-7 p.m., F 6-8 p.m., Foreman Field Stadium.

MUSC 395. Topics in Music. 1-3 Credits.
1-3 credits each semester. Prerequisite: junior standing or permission of the instructor. A study of selected topics designed for nonmajors, or for credit within a major. These courses will appear in the course schedule. Course descriptions and prerequisites for each course may be found in information distributed to all academic advisors.
MUSC 396. Topics in Music. 1-3 Credits.
1-3 credits each semester. Prerequisite: junior standing or permission of the instructor. A study of selected topics designed for nonmajors, or for credit within a major. These courses will appear in the course schedule. Course descriptions and prerequisites for each course may be found in information distributed to all academic advisors.

MUSC 397. Tutorial Work in Special Topics in Music. 1-3 Credits.
1-3 credits each semester. Prerequisite: junior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

MUSC 398. Tutorial Work in Special Topics in Music. 1-3 Credits.
1-3 credits each semester. Prerequisite: junior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

MUSC 401. Music Education: Elementary Vocal Methods. 2 Credits.
Lecture 2 hours; 2 credits. Corequisite: MUSC 402. Prerequisite: TLED 301 or TLED 290. Required prior to student teaching for all students in music education with voice, keyboard or guitar concentration. Focuses on elementary materials and methods of vocal instruction for music classrooms. (offered spring even years).

MUSC 402. Music Education: Practicum (Elementary Vocal). 1 Credit.
Hours to be arranged; 1 credit. Prerequisite: TLED 301 or TLED 290. Pass/fail grading. Required prior to student teaching for all students in music education with voice, keyboard or guitar concentration. Must be taken concurrently with MUSC 401. Enables students to observe master classroom teachers and to test accumulated teaching practices in elementary school vocal classroom settings. Passing score of 160 on the PRAXIS II Music Content Knowledge examination and VCLA are requirements of this course. 20 hours of observation required (offered spring, even years) (qualifies as a CAP experience).

MUSC 403. Music Education: Secondary Vocal Methods. 2 Credits.
Lecture 2 hours; 2 credits. Corequisite: MUSC 404. Prerequisite: TLED 301 or TLED 290. Required prior to student teaching for all students in music education with voice, keyboard or guitar concentration. Focuses on methods of vocal instruction, materials and rehearsal methods for secondary vocal classroom settings. (offered fall, odd years).

MUSC 404. Music Education: Practicum (Secondary Vocal). 1 Credit.
1 credit. Prerequisite: TLED 301 or TLED 290. Required prior to student teaching for all students in music education with voice, keyboard or guitar concentration. Enables students to observe master teachers and to test accumulated teaching practices in secondary school vocal classroom settings. 20 hours of observation required (offered fall, odd years) (qualifies as a CAP experience).

MUSC 405. Music Education: Elementary Instrumental Methods. 2 Credits.
Lecture 2 hours; 2 credits. Corequisite: MUSC 406. Prerequisite: TLED 301 or TLED 290. Required prior to student teaching for all students in music education with instrumental music concentration. Focuses on materials and methods of instrumental instruction in the elementary setting. (offered spring, odd years).

MUSC 406. Music Education: Practicum (Elementary Instrumental). 1 Credit.
1 credit. Prerequisite: TLED 301 or TLED 290. Required prior to student teaching for all students in music education with an instrumental music concentration. Must be taken concurrently with MUSC 405. Enables students to observe master teachers and to test accumulated teaching practices in elementary school instrumental classroom settings. Passing score of 160 on the PRAXIS II Music Content Knowledge examination and VCLA are requirements of this course. (offered spring, odd years) (qualifies as a CAP experience).

MUSC 407. Music Education: Secondary Instrumental Methods. 2 Credits.
Lecture 2 hours; 2 credits. Corequisite: MUSC 408. Prerequisite: TLED 301 or TLED 290. Required prior to student teaching for all students in music education with instrumental music concentration. Focuses on methods of instruction, materials and rehearsal methods for secondary instrumental classrooms. (offered fall, even years).

MUSC 408. Music Education: Practicum (Secondary Instrumental). 1 Credit.
1 credit. Prerequisite: TLED 301 or TLED 290. Required prior to student teaching for all students in music education with instrumental music concentration. Enables students to observe master teachers and to test accumulated teaching practices in secondary school instrumental classrooms. (offered fall, even years) (qualifies as a CAP experience).

MUSC 409. Music Education: Instrumental Techniques. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: ability to read music or permission of the instructor. Required prior to student teaching for all students in music education with vocal, keyboard and guitar concentration. Focuses on development of vocal majors’ ability to read instrumental scores; provides vocal majors an understanding of families of instruments.

MUSC 410/510. Psychology of Music. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. This course is designed to assist students in enhancing their understanding of the aesthetic response to music in various settings. Students will learn to integrate their understanding of musical aptitude as it relates to human growth and development. In addition, students will study the psychological implication of personality types as they develop, implement, and assess their pedagogical approach.

MUSC 413. Advanced Choral Conducting. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: MUSC 309. Course deals with the analysis, interpretation, and conducting of varied choral literature.

MUSC 414. Advanced Instrumental Conducting. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: MUSC 309. Course deals with the analysis, interpretation, and conducting of varied instrumental literature.

MUSC 421. Counterpoint. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: MUSC 221. A study of the contrapuntal techniques of sixteenth century composers and their influence upon composers of the eighteenth through twentieth centuries. (offered fall, even years).

MUSC 422/522. Form and Analysis. 2 Credits.
Lecture 2 hours; aural analysis 1 hour; 2 credits. Prerequisites: MUSC 322 and MUSC 324 or permission of the instructor. Study and analysis of the principal traditional musical forms. Stylistic and harmonic analysis as it related to score study will be discussed. (offered spring, odd years).

MUSC 424. Orchestration. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: MUSC 321. A study of the range, musical functions, and technical characteristics of the instruments and their color possibilities in various combinations. Practical experience in scoring for small and large ensembles. (offered spring, even years).

MUSC 425. Vocal and Instrumental Arranging. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MUSC 222. Building on the skills acquired in orchestration, this course covers basic arranging techniques for traditional vocal and instrumental ensembles. Students will develop the ability to reshape pre-existing melodies and chord progressions into successful arrangements for various media.

MUSC 426. Marching Band Techniques and Arranging. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: MUSC 335T or permission of the instructor. Students will learn how to chart and arrange music for the marching band. Students will be required to observe different styles of school marching bands.

OLD DOMINION UNIVERSITY 107
MUSC 435. Music Production: MIDI II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MUSC 335T. This course builds upon the fundamentals experienced in the introductory MIDI course. Topics include: advanced sequencing techniques, looping, editing, data manipulation, patch and control changes through real-time recording, patch editing, storage and retrieval, incorporation of external hardware, sampling, and an introduction to the incorporation of digital audio.

MUSC 436. Computers and Music. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MUSC 336. This course is designed to give students a historical overview of computer music through topical study and listening examples. Additionally, students will create their own music compositions by using software to program, assist, enhance, manipulate and even compose the music.

MUSC 445/545. Applied Music Pedagogy. 1 Credit.
One hour seminar; 1 hour laboratory; 1 credit each semester. Prerequisite: music major senior standing or permission of the department. Teaching techniques, literature in the performing area. Seminar deals with resource materials. Laboratory: observation and teaching under supervision.

MUSC 446. Applied Music Literature. 1 Credit.
One hour seminar; 1 hour laboratory; 1 credit each semester. Prerequisite: music major senior standing or permission of the department. Teaching techniques, literature in the performing area. Seminar deals with resource materials. Laboratory: observation and teaching under supervision.

MUSC 460/560. History of Jazz. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course will study the historical development of jazz as an American art form. The emotion and meaning of this style will be investigated as well as the historical and contemporary aesthetic response. Emphasis will include the defining role of African American artists. The influence of jazz on the development of contemporary American music will be discussed. Written critiques of live performances and a research paper will be required.

MUSC 466/566. Modern Music. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MUSC 361 and MUSC 362W or permission of the instructor. A study of the techniques and styles in music in the twentieth and twenty first century. (offered spring, odd years).

MUSC 467. Musicology Seminar. 3 Credits.
Independent study and weekly meetings with the instructor; 3 credits. Prerequisite: senior and music major standing. An introduction to techniques and materials for research in music. Students conduct investigations of selected topics and submit written reports of findings.

MUSC 491/591. Music in the Baroque Era. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MUSC 221, MUSC 222, MUSC 361 and MUSC 362W. A study of music history from monody through the works of Bach and Handel. A discussion of musical style within the context of cultural history.

MUSC 492/592. Music in the Classical Era. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MUSC 221, MUSC 222, MUSC 361 and MUSC 362W. A study of music history from the Rococo Period through the works of Haydn, Mozart and Beethoven. A discussion of musical style within the context of cultural history.

MUSC 494/594. Music in the Romantic Era. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MUSC 221, MUSC 222, MUSC 361, and MUSC 362W. A study of music history from the late works of Beethoven to Mahler and Strauss. A discussion of musical style within the context of cultural history.

MUSC 495/595. Topics in Music. 1-3 Credits.
1-3 credits each semester. Prerequisite: junior standing or permission of the instructor. These courses will appear in the course schedule. Course descriptions and prerequisites for each course may be found in information distributed to all academic advisors.

MUSC 496/596. Topics in Music. 1-3 Credits.
1-3 credits each semester. Prerequisite: junior standing or permission of the instructor. These courses will appear in the course schedule. Course descriptions and prerequisites for each course may be found in information distributed to all academic advisors.

MUSC 497. Tutorial Work in Special Topics in Music. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

MUSC 498. Tutorial Work in Special Topics in Music. 3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

NAVS - Naval Science

NAVAL SCIENCE Courses

NAVS 101. Introduction to Naval Science. 2 Credits.
Lecture 2 hours; 2 credits. General introduction to the naval service. Particular emphasis placed on the mission, organization, regulations and broad warfare components of the Navy and Marine Corps. Includes customs, discipline, courtesies, leadership, core values and shipboard nomenclature.

NAVS 111+. Naval Laboratory I. 1 Credit.
On-campus laboratory 2 hours; 1 credit. Prerequisite: departmental permission. Covers basic military formations, drill movements, commands, customs, courtesies, honors and inspection. Lecture and discussion topics include security, equal opportunity and military justice. First year Naval Science students only.

NAVS 112+. Naval Laboratory I. 1 Credit.
On-campus laboratory 2 hours; 1 credit. Prerequisite: departmental permission. Continues basic military formations, drill movements, commands, customs, courtesies, honors and inspections. Lecture and discussion topics include cruise preparation, safety education, administration, security, equal opportunity and military justice. First year Naval Science students only.

NAVS 201. Naval Ships Systems I. 3 Credits.
Lecture 3 hours; 3 credits. Familiarizes students with types, structure and purpose of naval engineering systems, propulsion systems, auxiliary power systems, electrical systems and ship control. Ship design and stability characteristics are examined.

NAVS 202. Naval Ships Systems II. 3 Credits.
Lecture 3 hours; 3 credits. Introduction to theory and principles of operation of naval weapons systems. Covers types of weapons and fire control systems, capabilities/limitations, theories of target acquisition, identification and tracking, trajectory principles and basics of naval ordnance.

NAVS 211+. Naval Laboratory II. 1 Credit.
On-campus laboratory 2 hours; 1 credit. Prerequisite: departmental permission. Covers military formations, drill movements, commands, customs, courtesies, honors and inspections. Lecture/discussion topics include cruise preparation/evaluation, security, administration and military justice. Second year Naval Science students only.

NAVS 212+. Naval Laboratory II. 1 Credit.
On-campus laboratory 2 hours; 1 credit. Prerequisite: departmental permission. Military formations, drill movements, commands, customs, courtesies, honors and inspections. Lecture and discussion topics include cruise preparation and evaluation, safety, administration, security, equal opportunity and military justice. Second year Naval Science students only.
NAVS 301. Navigation and Naval Operations I. 3 Credits.
Lecture 3 hours; 3 credits. In-depth study of piloting including theory, principles and procedures. Includes use of charts, visual and electronic aids, and theory and operation of compasses. Other topics include tides, currents, effects of wind and weather, and nautical rules of the road.

NAVS 302. Navigation and Naval Operations II. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Relative motion vector-analysis theory, relative motion problems, formation tactics, and ship employment. Also includes an introduction to naval operations and operations analysis, ship behavior and characteristics in maneuvering, applied aspects of ship handling, and afloat communications. Concepts in naval leadership and naval operations reinforced through case studies.

NAVS 310. Evolution of Warfare. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: departmental permission. Explores the basic concepts for understanding the operational art of warfare from the beginning of recorded history to the present.

NAVS 311+. Naval Laboratory III. 1 Credit.
On-campus laboratory 2 hours; 1 credit. Prerequisite: departmental permission. Military formations, drill movements, commands, customs, courtesies, honors and inspections. Lecture/discussion topics include cruise preparation and evaluation, security and military justice. Third year Naval Science students only.

NAVS 312+. Naval Laboratory IV. 1 Credit.
On-campus laboratory 2 hours; 1 credit. Prerequisite: departmental permission. Military formations, drill movements, commands, customs, courtesies, honors and inspections. Lecture and discussion topics include cruise preparation and evaluation, security and military justice. Fourth year Naval Science students only.

NAVS 320. Naval Sea Power. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: NAVS 101 or department approval. The study of the evolution of the major world naval and maritime nations. The role of American naval and maritime affairs in the rivalries of the great world powers during the colonial period, the spread of revolutionary movements, and the era of civil and international conflicts in the 19th and 20th centuries.

NAVS 395. Topics. 3 Credits.

NAVS 401. Leadership and Management I. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: NROTC Junior or Senior Midshipman or STA-21/MECEP. Non-NOTC student: departmental permission. The fundamentals of the managerial process (planning, organization, directing, and controlling) are considered in their relationship to the effectiveness of naval organization and readiness. Coverage includes human resources management, naval personnel management, material management and administration of division discipline.

NAVS 402. Leadership and Ethics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: completion of all previous NAVS courses. Capstone course designed to equip the student with the critical thinking skills to address moral and ethical dilemmas frequently faced by naval officers.

NAVS 410. Amphibious Warfare. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: departmental permission. Historical survey of the projection of sea power with the emphasis on the evolution of the amphibious warfare in the 20th century. Defines the concept of amphibious warfare, explores its doctrinal origins and traces its evolution as an element of naval policy.

NAVS 411+. Naval Laboratory IV. 1 Credit.
On-campus laboratory 2 hours; 1 credit. Prerequisite: departmental permission. Covers military formations, drills, commands, customs, courtesies, honors and inspections. Lecture/discussion topics include precommissioning preparation, administration, equal opportunity, safety and military justice. Fourth year Naval Science students only.

NAVS 412+. Naval Laboratory IV. 1 Credit.
On-campus laboratory 2 hours; 1 credit. Prerequisite: departmental permission. Military formations, drill movements, commands, customs, courtesies, honors and inspections. Lecture and discussion topics include precommissioning preparation, safety, administration, security, equal opportunity and military justice. Fourth year Naval Science students only.

NMED - Nuclear Medicine Technology

NUCLEAR MEDICINE TECHNOLOGY Courses

NMED 300. Medical Terminology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: permission of the program director. A course designed to cover the terminology and abbreviations used in the clinical sciences.

NMED 331. Fundamental Concepts in Nuclear Medicine Technology. 4 Credits.
Lecture 4 hours; 4 credits. Prerequisites: PHYS 101N, 102N or equivalent and permission of the program director. A course designed to cover the physical principles related to nuclear medicine technology. The methods of radioactive decay, types of radiation, radiation interactions, origins of radionuclides, SPECT/PET/CT radionuclides and non-nuclear imaging techniques are presented.

NMED 332. Nuclear Instrumentation. 4 Credits.
Lecture 4 hours; 4 credits. Prerequisite: permission of the program director. This course is designed to familiarize the student with the theory, operation and quality assurance associated with the instrumentation found in a typical nuclear medicine department.

NMED 335. Radiation Health. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. Discussions of radiation effects on cellular systems as well as guidelines for radiation protection and safe handling of radioactive material.

NMED 401. Nuclear Medicine Technology I. 4 Credits.
Lecture 4 hours; 4 credits. Prerequisites: BIOL 250-251 or permission of the program director. A course designed to cover the nuclear medicine procedures of the gastrointestinal, genitourinary, central nervous and skeletal systems. Relevant clinical procedures are also covered.

NMED 402. Nuclear Medicine Technology II. 4 Credits.
Lecture 4 hours; 4 credits. Prerequisites: NMED 401 or permission of the program director. A course designed to cover the nuclear medicine procedures of the respiratory, cardiovascular and endocrine systems. Relevant clinical procedures are also presented.

NMED 403. Radiopharmacy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: NMED 331, CHEM 101N-102N or equivalent and permission of the program director. This course is designed to cover the concepts and techniques related to the field of radiopharmacy. The production, preparation and quality assurance of radiopharmaceuticals are presented.
NMED 410. Non-Imaging Nuclear Medicine Technology. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: NMED 401. This course is designed to provide the student with an understanding of the theory and techniques relevant to non-imaging nuclear medicine technology. Topics include organ function studies, cellular kinetics and radionuclide therapy.

NMED 440. Clinical Nuclear Medicine Technology I. 8 Credits. 8 credits. Prerequisites: NMED 401 and permission of the program director. Clinical instruction in patient care, radiation safety, radiopharmaceutical administration, imaging and nonimaging techniques and quality assurance procedures. (qualifies as a CAP experience).

NMED 450. Clinical Nuclear Medicine Technology II. 8 Credits. 8 credits. Prerequisites: NMED 440 and permission of the program director. Continued clinical instruction in diagnostic and therapeutic nuclear medicine procedures, including PET/CT. The correlation of nuclear medicine procedures is also presented. (qualifies as a CAP experience).

NMED 460. Clinical Nuclear Medicine Technology III. 8 Credits. 8 credits. Prerequisites: NMED 450 and permission of the program director. Advanced clinical instruction in diagnostic and therapeutic nuclear medicine procedures, including PET/CT. The correlation of nuclear medicine procedures is also presented. (qualifies as a CAP experience).

NMED 475W. Administration and Management in Nuclear Medicine Technology. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: admission to the program and a grade of C or better in ENGL 211C or 221C or 231C. This writing intensive course is designed to provide a review of the administration, management, policies, and practices relevant to nuclear medicine technology. The leadership, legal, ethical and planning aspects of operating a nuclear medicine department are covered. (This is a writing intensive course.).

NMED 495. Special Topics in Nuclear Medicine Technology. 1-3 Credits. 3 credits. Prerequisite: permission of the program director. A study of selected current topics in nuclear medicine technology.

NMED 497. Directed Study in Nuclear Medicine Technology. 1-3 Credits.

NURS - Nursing

NURSING Courses

NURS 300. Introduction to Nursing Theories and Concepts I. 3 Credits. Lecture 3 hours; 3 credits. Corequisite: NURS 302. Prerequisite: admission to the B.S.N. program. Emphasis is placed on concepts and theories underlying professional nursing practice, the nursing process, and therapeutic nurse-client communication.

NURS 301. Introduction to Nursing Theories and Concepts II. 3 Credits. Lecture 3 hours; 3 credits. Corequisite: NURS 303. Prerequisite: NURS 300. This course emphasizes theories specific to nursing and their relevance to the practice of professional nursing.

NURS 302. Health Assessment Clinical Laboratory. 2 Credits. Laboratory 6 hours; 2 credits. Prerequisite: admission to the B.S.N. program. Corequisite: NURS 300. This clinical laboratory course emphasizes the assessment phase of the nursing process. Skill acquisition in health assessment and health history interviewing is facilitated by supervised practice, faculty demonstration, and self-paced learning in the audio-visual laboratory.

NURS 303. Fundamentals of Nursing Practice. 2 Credits. Clinical experience 6 hours; 2 credits. Corequisite: NURS 301. This clinical course emphasizes the supervised application of health assessment skills, nursing process, and clinical nursing techniques in clinical laboratory and acute care settings. (qualifies as a CAP experience).

NURS 305. Health Assessment. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: admission to the B.S.N. program. This course emphasizes the physical assessment phase of the nursing process. For registered nurse students only.

NURS 306. Theoretical Foundation of Professional Nursing Practice. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: admission to the B.S.N. program. Pre- or corequisite: NURS 401. This course focuses on selected nursing models, concepts, and theories as supporting frameworks for professional nursing practice. Emphasis is placed on the utilization of nursing theory as a methodology for improving nursing practice in various client situations and practice settings. For registered nurse students only.

NURS 310. Therapeutic Diets I. 1 Credit. Lecture 1 hour; 1 credit. Prerequisite: admission to the B.S.N. program. This course focuses on concepts of normal nutrition. Emphasis is placed on understanding the impact of various nutrients on the body.

NURS 311. Therapeutic Diets II. 1 Credit. Lecture 1 hour; 1 credit. Prerequisite: NURS 310 or permission of instructor. This course builds upon NURS 310 and introduces the student to selected therapeutic diets. Emphasis is placed on restrictive diets associated with maternal-infant and selected medical-surgical processes.

NURS 312. Therapeutic Diets III. 1 Credit. Lecture 1 hour; 1 credit. Prerequisites: NURS 310, 311. This course focuses on therapeutic diets associated with selected medical/surgical and pediatric disease processes.

NURS 320. Adult Health Nursing I. 3 Credits. Lecture 3 hours; 3 credits. Corequisite: NURS 321. Prerequisites: junior standing in the B.S.N. program and completion of NURS 300, 301, 302, 303, and 374. This lecture course focuses on the adult client experiencing alteration and/or adaptations in bodily defense mechanisms. Emphasis is on the use of the nursing process to assist adult clients to adapt to the body’s breakdown of defense mechanisms.

NURS 321. Clinical Management: Adult Health Nursing I. 2 Credits. Clinical experience 6 hours; 2 credits. Corequisite: NURS 320. Prerequisites: junior standing in the B.S.N. program and completion of NURS 300, 301, 302, 303, and 374. This clinical course focuses on the nursing process with adult clients experiencing alterations/adaptations in bodily defense mechanisms. The concepts inclusive in the didactic component (NURS 320) will be actualized on general surgical nursing units and oncology units. (qualifies as a CAP experience).

NURS 330. Nursing Care of the Childbearing Family. 3 Credits. Lecture 3 hours; 3 credits. Corequisite: NURS 331. Prerequisites: junior standing in the B.S.N. program and completion of NURS 320 and 321. This lecture course focuses on the theoretical and applied concepts related to the care of families experiencing pregnancy and childbirth. Emphasis is on the dynamic familial, societal, psychologic and physiologic changes which occur in this stage of family and personal development. The role of the nurse as assistive and family-centered provider of care is a major focus.
NURS 331. Clinical Management of the Childbearing Family. 1 Credit.
Clinical experience 3 hours; 1 credit. Corequisite: NURS 330. Prerequisites: junior standing in the B.S.N. program and completion of NURS 320 and 321. This clinical course provides the opportunity for planning and provision of nursing care to the childbearing family. Emphasis is on the use of the nursing process to plan, provide and coordinate quality care. Students are expected to demonstrate responsibility and accountability for personal actions as well as a respect for families and clients. (qualifies as a CAP experience).

NURS 340. Adult Health Nursing II. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: NURS 341; Pre- or Corequisite: NURS 375. Prerequisites: junior standing in the B.S.N. program and completion of NURS 320 and 321. This lecture course focuses on the adult experiencing alteration/adaptation in organ and system mechanisms. Emphasis is on the use of the nursing process to assist adult clients to adapt to system related insults.

NURS 341. Clinical Management: Adult Health Nursing II. 2 Credits.
Clinical experience 6 hours; 2 credits. Corequisite: NURS 340. Prerequisites: junior standing in the B.S.N. program and completion of NURS 320 and 321. This clinical course focuses on the nursing process with adult clients experiencing alterations/adaptations in organ and system mechanisms. Concepts emphasized in the didactic component (NURS 340) will be actualized on general medical nursing units and orthopedic surgical units. (qualifies as a CAP experience).

NURS 350. Psychiatric/Mental Health Nursing. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: NURS 351. Prerequisite: junior standing in the B.S.N. program. This lecture course focuses on psychotherapeutic processes across the lifespan. Building on foundations from the social and behavioral sciences, emphasis is on the use of the nursing process in providing care to clients with acute and chronic illness in a variety of psychiatric settings.

NURS 351. Clinical Management of Psychiatric/Mental Health Problems. 1 Credit.
Clinical experience 3 hours; 1 credit. Corequisite: NURS 350. Prerequisite: junior standing in the B.S.N. program. This clinical course provides a mechanism for students to perform mental health assessments, plan nursing care, practice therapeutic communication techniques and observe group processes in both inpatient and outpatient settings. (qualifies as a CAP experience).

NURS 358. Studies in Professional Nursing. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: admission to B.S.N. program. The study of selected topics in professional nursing practice; designed to provide an in-depth exploration of current nursing issues. Topic titles denoted in Guide to Enrollment each semester.

NURS 363. Nursing Science. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: admission to B.S.N. program. Co- or prerequisite: STAT 130M. This course focuses on the theories and concepts utilized in the scientific investigation of nursing practice. Content emphasizes the development of skills necessary to be a consumer of nursing research.

NURS 369. Practicum: Studies in Clinical Nursing Practice. 1-3 Credits.
1-3 credits. Prerequisite: admission to B.S.N. program and permission of undergraduate program director or chief departmental advisor. The study of selected clinical practice applications in professional nursing practice; designed to provide an in-depth practicum in selected nursing practice areas. Students must have specific practicum arrangements (ex: externship) prior to registration.

NURS 374. Nursing Process and Drug Therapy I. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: admission to the B.S.N. program. This course addresses the general principles of drug therapy and beginning application of the nursing process as related to drug therapy for clinical situations involving individuals at all phases of the life cycle and at different levels of wellness.

NURS 375. Nursing Process and Drug Therapy II. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisites: NURS 374 and junior standing in the B.S.N. program. This course addresses drug therapy and continued application of the nursing process as related to drug therapy for clinical situations involving individuals at all phases of the life cycle and at different levels of wellness.

NURS 387. Nursing Science. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: admission to the B.S.N. program. This course focuses on the theories and concepts utilized in the scientific investigation of nursing practice. Content emphasizes the development of skills necessary to be a consumer of nursing research. An honors version of NURS 363. Open to Honors Program students only.

NURS 393. Clinical Skills for Nonnursing Majors. 2 Credits.
Lecture 1 hour; laboratory 2 hours; 2 credits. Prerequisites: junior standing and permission of the instructor. Focuses on basic hygiene, comfort and safety skills required of health professionals providing diagnostic and/or supportive therapies to clients in a health care facility. May not be taken as required elective by nursing majors. Open to nuclear medicine technology students only.

NURS 395. Topics. 1-3 Credits.
1-3 credits. Prerequisite: school permission. Selected health-related topics of interest. Course descriptions and prerequisites are available from the chief academic advisor.

NURS 396. Independent Study. 1-3 Credits.
1-3 credits. Prerequisite: school permission. Nursing majors only. Selected health-related topics of interest to nursing majors. Course descriptions and prerequisites are available from the chief academic advisor.

NURS 397. Independent Study. 1-3 Credits.
1-3 credits. Prerequisite: school permission.

NURS 398. Clinical Nursing Concepts I. 17 Credits.
17 credits. This advanced placement credit is awarded to the registered nurse who has demonstrated knowledge of selected basic clinical nursing concepts for the provision of nursing care to individuals experiencing health deviations. Awarded upon completion of 14 credits in major. Registered nurse students only.

NURS 401. Career Pathway: Assessment. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Prerequisite: admission to the B.S.N. program. This course focuses on basic skills required for success in the post-licensure baccalaureate nursing program. Emphasis is placed on career pathway assessment. Selected skills to be acquired include development of a professional portfolio, use of computers, APA professional writing format, library use and professional communication strategies. For registered nurse students only.

NURS 402. Career Pathway: Development. 4 Credits.
Lecture 2 hours; laboratory 6 hours; 4 credits. Prerequisite: Admission to the B.S.N. Program; Co- or prerequisite: NURS 401. This course focuses on further development of the post-licensure baccalaureate nursing student with an emphasis on expanding critical thinking skills, teaching-learning theories and application, professional resume development and exploration of nursing specialties and practice roles. For registered nursing students only.
NURS 403. Career Pathway: Expanding Horizons. 4 Credits.
Lecture 2 hours; laboratory 6 hours; 4 credits. Pre- corequisite: all other RN sequence nursing courses. This course facilitates the completion of a professional portfolio for the post-licensure baccalaureate nursing student. Emphasis is on advanced professional communication strategies and reflective processes for professional role expansion and development. For registered nurse students only.

NURS 420. Nursing Care of Infants and Children. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: NURS 421. Prerequisites: senior standing in the B.S.N. program and completion of NURS 340 and 341. This lecture course provides a basis for understanding the nursing care of children of various ages. Emphasis is on the use of the nursing process to assist children as they encounter acute and chronic illness. The nurse’s communication with and education of the family and child as individuals or as part of a group are discussed as a means of achieving the goal of comprehensive individualized child care in the home and in health care settings.

NURS 421. Clinical Management of Infants and Children. 2 Credits.
Clinical experience 6 hours; 2 credits. Corequisite: NURS 420. Prerequisites: senior standing in the B.S.N. program and completion of NURS 340 and 341. This clinical course emphasizes the provision of nursing care to infants and children suffering from acute and chronic illnesses. Through the use of the nursing process, students provide and coordinate care, serving as client advocates. Students are expected to demonstrate responsibility for personal actions related to the practice of nursing. (qualifies as a CAP experience).

NURS 430. Nursing and the Gerontological Client. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: admission to the B.S.N. program. This course focuses on the nursing needs of the gerontological client. Emphasis is on the multi/complex needs of the older adult.

NURS 431. Transition to Professional Nursing Practice. 3 Credits.
Clinical experience 6 hours; seminar 1 hour; 3 credits. Prerequisites: senior standing in the B.S.N. program and completion of NURS 340 and 341. This capstone clinical course allows students to practice in selected areas. The focus of this practicum is to enhance the clinical decision making and nursing intervention skills of the senior student. This capstone course must be completed in the last semester of the BSN curriculum.

NURS 440. Nursing Process in Rehabilitation. 2 Credits.
Lecture 2 hours; 2 credits. Corequisite: NURS 441. Prerequisites: senior standing in the B.S.N. program and completion of NURS 340, 341, and 450. This course focuses on using the nursing process to prevent further dependence and restore maximum levels of function to the client who has a physical disability.

NURS 441. Clinical Management of Rehabilitation Clients. 2 Credits.
Clinical experience 6 hours; 2 credits. Corequisite: NURS 440. Prerequisites: senior standing in the B.S.N. program and completion of NURS 340, 341, and 450. This clinical course emphasizes the provision of nursing care to clients to prevent further dependence and restore levels of function. (qualifies as a CAP experience).

NURS 450. Adult Health Nursing III. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: NURS 451. Prerequisites: senior standing in the B.S.N. program and completion of NURS 340 and 341. This course focuses on the adaptation of clients to critical illness. Content emphasizes concepts and theories of crisis and the utilization of the nursing process with critically ill clients who require assistance in adapting to their condition.

NURS 451. Clinical Management: Adult Health Nursing III. 2 Credits.
Clinical experience 6 hours; 2 credits. Corequisite: NURS 450. Prerequisites: senior standing in the B.S.N. program and completion of NURS 340 and 341. This clinical course emphasizes the provision of nursing care to clients who are critically ill. Through the use of the nursing process, students will provide and coordinate care and serve as client advocates in a variety of critical care settings. (qualifies as a CAP experience).

NURS 458. Studies in Professional Nursing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: admission to B.S.N. program or permission of instructor. The study of selected topics in professional nursing practice; designed to provide an in-depth exploration of current nursing issues.

NURS 464. Developing Case Management Skills: Clinical Pathways and Outcomes. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: admission to B.S.N. program. The focus of this course is twofold: exploration and discussion of the historical, theoretical and international contexts of the emergence and value of managing care, clinical pathways and outcomes in nursing and health care practices as well as the practical application of the principles in each. For registered nurse students only.

NURS 470. Community Health Nursing I. 2 Credits.
Lecture 1 hour; clinical experience 3 hours; 2 credits. Prerequisite: senior standing in the B.S.N. program. This course focuses on family and community health nursing. Content emphasizes concepts and themes of families and communities and the use of the nursing process to assist in promoting and maintaining health. Application of course concepts through experience and interactions with health care coalition groups is emphasized.

NURS 471. Community Health Nursing II. 2 Credits.
Lecture 1 hour; clinical experience 3 hours; 2 credits. Prerequisite: senior standing in the B.S.N. program. This course focuses on family and community health nursing. Content emphasizes concepts and themes of families and communities and the use of the nursing process to assist in promoting and maintaining health. Application of course concepts through experiences and interactions with health care coalition groups is emphasized. (qualifies as a CAP experience).

NURS 480W. Leadership and Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: senior standing in the B.S.N. program, completion of NURS 340 and 341, and completion of ENGL 110C or ENGL 111C with a grade of C or better. Theoretical and applied concepts of leadership and management within the health care setting. Focuses on the management issues and responsibility of the new graduate in contemporary professional nursing practice. Emphasis is on communication and complex organization, decision-making, leadership and motivation, techniques of delegation and evaluation, conflict management and change, and risk management and quality assurance. (This is a writing intensive course.).

NURS 487W. Leadership and Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: senior standing in the B.S.N. program, completion of NURS 340 and 341, and completion of ENGL 110C and ENGL 211C or 221C or 231C with a grade of C or better. Theoretical and applied concepts of nursing leadership and management within the health care setting. Focuses on management issues and responsibilities of new graduates. Emphasis is on communication, decision making, leadership motivation, delegation, evaluation, conflict and change. An honors version of NURS 480W. Open to Honors College students only. (This is a writing intensive course.).

NURS 489. Transition to Professional Nursing Practice. 3 Credits.
Clinical experience 6 hours; 2 credits. Prerequisite: senior standing in the B.S.N. program. This capstone clinical course allows students to practice in selected areas. The focus of this practicum is to enhance the clinical decision making and nursing intervention skills of the senior student. An honors version of NURS 431. Open to Honors College students only.
OEAS - Ocean, Earth & Atmospheric Sci

OCEAN, EARTH ATMOSPHERIC SCI Courses

OEAS 106N. Introductory Oceanography. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. This course emphasizes geology and chemistry covering the formation and constitution of the earth and the ocean basins. Laboratory emphasizes practice of basic scientific methods. Knowledge of the metric system, scientific notation, ratio and proportion, and graphing is required. Field trip required.

OEAS 107N. Introductory Oceanography. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. This course emphasizes physics and biology including meteorology, waves, tides, currents and life in the sea. Laboratory emphasizes practice of basic scientific methods. Knowledge of the metric system, scientific notation, ratio and proportion, and graphing is required. Field trip required.

OEAS 108N. Understanding Global Climate Change. 4 Credits.
Lecture 3 hours; Lab, 2 hours. 4 credits. What is the science behind global climate change? How reliable are forecasts of future global warming? This course examines these questions to evaluate the likelihood and potential severity of anthropogenic climate change in the coming centuries. It includes an overview of the physics of the greenhouse effect, an overview of the global carbon cycle and its role as a global thermostat; an examination of predictions and reliability of model forecasts of future climate change; and examination of local impacts of global climate change (e.g., sea level rise in the Tidewater area).

OEAS 110N. Earth Science. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. 110N is an introductory course in geological sciences. The course relates the principles of natural science to Earth as a planet, its resources, and its environment. The effects of geologic processes on the environment are stressed. 110N or 111N is a prerequisite for 112N. A student receiving credit for 111N cannot receive credit for 110N.

OEAS 111N. Physical Geology. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. 111N introduces the student to the study of the materials, structures, and processes of the Earth. Present terrestrial resources are interpreted in terms of the internal and surface processes that formed them. 110N or 111N is a prerequisite for 112N. A student receiving credit for 111N cannot receive credit for 110N.

OEAS 112N. Historical Geology. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. 110N or 111N is a prerequisite for 112N. In 112N, evolution of the continents, ocean basins, mountain chains, and the major life forms throughout Earth's history are studied chronologically and are related to the physical and biological changes which have caused them.

OEAS 126N. Honors: Introductory Oceanography. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. 126N is prerequisite to 127N. Open only to students in the Honors College. Special honors section of OEAS 106N. In addition to broad coverage of the geology, chemistry, physics and biology of the ocean, students will read scientific papers with current environmental problems. There will be several field trips to nearby ecosystems.

OEAS 127N. Honors: Introductory Oceanography. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. 126N is prerequisite to 127N. Open only to students in the Honors College. Special honors section of OEAS 107N. In addition to broad coverage of the geology, chemistry, physics and biology of the ocean, students will read scientific papers with current environmental problems. There will be several field trips to nearby ecosystems.

OEAS 195. Topics. 1 Credit.
Special topics in physical, geological, chemical or biological oceanography.

OEAS 196. Topics. 1 Credit.
Special topics in physical, geological, chemical, or biological oceanography.

OEAS 210. Environmental Earth Science. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Dynamic processes of the land, ocean, and atmosphere and how they affect people. Topics include plate tectonics; rocks and minerals; soil and water; weather and climate; tides and currents; limits to natural resources. OEAS 210 is a required course for the IDS program in Early Childhood Education. Does not satisfy OEAS major degree requirements.

OEAS 302. Environmental Geology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and an 8-hour sequence in a General Education science course. Geologic resources and processes that limit human activities and pose significant hazards. Does not satisfy OEAS major degree requirements.

OEAS 303. Paleontology. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: OEAS 112N. Concepts of paleontology and application of paleontological data to problems in other scientific fields are discussed. Major invertebrate phyla represented in the fossil record are studied. Laboratory work includes preparation techniques and study of representative examples of important fossil types.
OEAS 306. Oceanography. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 211, BIOL 115N, CHEM 121N-122N, OEAS 111N, and PHYS 111N or 231N. General survey of physical, geological, chemical and biological oceanography. The application of skills from mathematics, geology, physics, biology and chemistry for the solution of oceanographic problems.

OEAS 310. Global Earth Systems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: BIOL 115N, CHEM 121N-122N, MATH 211, and OEAS 111N. Core course for ocean and earth sciences majors that examines the processes linking the Earth’s atmosphere, lithosphere, and hydrosphere into an interactive system.

OEAS 313. Mineralogy. 3 Credits.
Lecture 2 hours; laboratory 3 hours; 3 credits. Prerequisite: CHEM 121N-122N. Corequisite: PHYS 111N or 231N. The concepts of mineralogy are developed on the basics of geometrical, crystallographic, chemical bonding, crystal structures, and physical and optical properties. Mineral associations and genesis will be emphasized. Laboratory exercises include mineral identification by physical and optical properties, X-ray diffraction, and crystal form.

OEAS 314. Petrology. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Prerequisite: OEAS 313. The study of igneous, sedimentary, and metamorphic petrology is developed using the concepts of crystal growth, phase equilibria, mineral associations, and composition of the Earth’s crust and mantle. Laboratory exercises include hand specimen, microscopic, and X-ray diffraction identification and origin of rocks.

OEAS 320. Sedimentology and Stratigraphy. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Prerequisite: OEAS 110N or 111N. The origin, transport, and deposition of sediments with emphasis on interpretation of sediment sequences, principles and methods of correlation. Laboratory exercises involve field sampling, textual analyses, and sedimentary structures. Field trip required.

OEAS 344W. Geomorphology. 3 Credits.
Lecture 2 hours; laboratory 3 hours; 3 credits. Prerequisites: OEAS 112N, 314 or 320 AND either ENGL 211C or 221C or 231C with a grade of C or better; or permission of instructor. Geologic processes that shape the earth’s surface. Laboratory studies involve interpretation of topographic maps, soil maps, and aerial photographs. Field trip required.

OEAS 367. Cooperative Education. 1-3 Credits.
1-3 credits. Prerequisites: junior standing and permission of the department. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and the Career Management program prior to the semester in which the experience is to take place. (Qualifies as a CAP experience).

OEAS 368. Internship in Ocean and Earth Sciences. 1-3 Credits.
1-3 credits. Prerequisites: junior standing, permission of department and a 3.00 grade point average. Available for pass/fail grading only. Students gain on the job work experience related to their undergraduate curriculum. (Qualifies as a CAP experience).

OEAS 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: junior standing, permission of department and must have declared ocean and earth sciences major or minor. (Qualifies as a CAP experience).

OEAS 395. Selected Topics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: completion of 8 hours of a laboratory science. A nonmathematical course based on topics such as urban geology, urban biometeorology, and intelligent life in the universe. Specific topics will be announced each semester.

OEAS 402/502. Field Experiences in Oceanography for Teachers. 3 Credits.
Lecture 2 hours; field experience 2 hours; 3 credits. Prerequisite: background in K-12 Education. Field and laboratory experiences in oceanography including hands-on experience using equipment and methods suitable for middle and secondary education professionals. Course will provide understanding of oceanic processes using simple field and laboratory experiments. Not available for credit for OEAS majors and minors.

OEAS 403W/503. Aquatic Pollution. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: grade of C or better in ENGL 211C or 221C or 231C and at least two semesters of one of the following: BIOL 115N-116N, CHEM 121N-122N and CHEM 123N-124N, OEAS 111N-112N, PHYS 111N-112N, OEAS 106N-107N or 126N-127N. This course will present basic ecological principles relevant to water pollution and toxicology. Topics will cover runoff, eutrophication, sewage treatment, industrial waste, oil pollution, pesticides, and plastics in the sea. Case studies provide focal points for consideration of issues in making decisions and setting policy. (This is a writing intensive course.).

OEAS 404/504. Environmental Physiology of Marine Animals. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing; upper level biology courses. Functional morphology and physiological aspects of growth and ecological energetics of marine animals. Basic concepts and habitat comparisons.

OEAS 405/505. Physical Oceanography. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 211 and either PHYS 231N-232N or two semesters of hydraulics. Physics of the ocean: properties of seawater and their distribution; water mass formation; mass and energy flows; waves; tides; models; estuarine and coastal processes. An elective for science and engineering majors.

OEAS 406/506. Matlab. 1 Credit.
1 credit. Prerequisite: MATH 211. This course is designed to introduce students to Matlab programming and to develop skills utilizing this program for data analysis.

OEAS 408/508. Introductory Soils. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Prerequisite: CHEM 121N-122N and CHEM 123N-124N. Nature and properties of soils. Physical and chemical processes in soils and their influence on plant growth, the movement of water, and pollutants. Importance of soil properties in determining urban, industrial and agricultural uses.

OEAS 410/510. Chemical Oceanography. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Prerequisites: CHEM 121N-122N and CHEM 123N-124N, OEAS 306 or consent of instructor. Chemical composition of the ocean and the chemical, biological, geological and physical processes controlling it. Laboratory experiments include determination of salinity, oxygen, and nutrients, and a field sampling trip is undertaken.

OEAS 411/511. Structural Geology. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Prerequisite: OEAS 320 or permission of instructor. Recognition, habitat, and origin of deformed geologic structures. Relationships between structural patterns and tectonic settings. Laboratory sessions emphasize cartographic and stereographic projections, map interpretation, and hand sample evaluation. Weekend field trip required.

OEAS 412/512. Global Environmental Change. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: OEAS 306 and 310. An examination of the development of the earth as a habitable planet, from its origin to human impacts on global biogeochemical cycles on land, and in the oceans and atmosphere.
OEAS 413/513. Geochemistry. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: CHEM 121N/122N and CHEM 123N-124N and OEAS 313. Low temperature geochemistry of surface and near-surface materials and processes. Weathering and the geochemical cycle as influenced by environment.

OEAS 415/515. Waves and Tides. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: MATH 211-212 and PHYS 231N-232N or permission of the instructor. Causes, nature, measurement and analysis of water waves and tides. Mathematical and graphical application to wave and tide problems.

OEAS 416/516. Electronics and Oceanographic Instrumentation. 4 Credits.
Lecture/Lab, 3 hours. 4 credits. Prerequisites: PHYS 232N or 112N, OEAS 306, OEAS 310, STAT 310 or STAT 330. The course will consist of brief lectures and hands-on laboratory exercises, in which students will learn to build, use, and debug electronic devices relevant to ocean and earth science applications. Topics covered will include circuit theory, power supplies and budgets, transducers and amplifiers, computerized data acquisition, instrument control, signal conditioning and resolution.

OEAS 418/518. Chemical Limnology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: OEAS 306. Chemical cycling in lakes and reservoirs, and interactions with biological and physical processes; quantitative modeling of lake geochemistry.

OEAS 419/519. Spatial Analysis of Coastal Environments. 3 Credits.
Lecture 1.5 hours; laboratory 3 hours; 3 credits. Prerequisites: GEOG 404/504. The course integrates remotely sensed and field techniques for scientific investigation and practical management of coastal environmental systems. Spatial modeling of coastal processes and management tools using geographic information system (GIS).

OEAS 420/520. Hydrogeology. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisites: OEAS 320, MATH 211, PHYS 111N-112N or 231N-232N, or permission of the instructor. Topics covered will include the occurrence and movement of surface and subsurface water, the nature and distribution of permeable rocks and strata, field techniques used in ground-water studies, and the flow of ground-water to wells.

OEAS 426/526. Concepts in Oceanography for Teachers. 3 Credits.
3 credits. Prerequisite: junior standing or permission of the instructor. This web-based course will provide a practical introduction to oceanography for earth science teachers. It is particularly aimed at current science teachers attempting to become certified in earth science education. Topics will include discussions of geological, biological, physical and chemical oceanography. Not available for credit for OEAS majors and minors.

OEAS 430/530. Introduction to Geophysics. 3 Credits.
3 cr. Lecture. Prerequisites: OEAS 111N, MATH 211, and PHYS 111N/112N or PHYS 231N/232N. Introduction to the physics of the earth, including plate tectonics, volcanism, earthquakes and seismology, gravity, the Earth’s magnetic field, geophysical remote sensing, and mantle convection.

OEAS 431/531. Sedimentary Petrology. 3 Credits.
Lecture 2 hours; laboratory 3 hours; 3 credits. Prerequisite: OEAS 320. The chemical aspects of sediments and sedimentary rock needed for modern geologic and oceanographic studies. Optical petrology and x-ray diffraction are emphasized in the laboratory with particular attention to clay mineralogy. Field trip required.

OEAS 432. Introduction to Thermo- and Fluid Dynamics for Oceanographers. 3 Credits.
Lecture. 3 hours. 3 credits. Prerequisite: MATH 211, 212. PHYS 231N and 232N. The objective of this course is to impart the basic knowledge of thermo- and fluid dynamics required to understand these concepts and theories in physical oceanography.

OEAS 433. Introduction to Geophysical Fluid Dynamics. 3 Credits.
Lecture. 3 hours; 3 credits. Prerequisite: OEAS 432. An introduction to geophysical fluid dynamics. The course is concerned with the fundamentals of the dynamics of ocean flows.

OEAS 440/540. Biological Oceanography. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Prerequisites: OEAS 106N-107N, 126N-127N or 306. Marine organisms and their relationship to physical and chemical processes in the ocean. Laboratory study of local marine organisms, marine ecosystem and sampling techniques. Includes identification, data analysis and field trips.

OEAS 441. Ocean and Earth Sciences Field Study I. 3 Credits.
Lecture 1 hour; laboratory 4 hours; 3 credits. Prerequisites: OEAS 306 and 310; CHEM 123N-124N, BIOL 116N, or OEAS 303; PHYS 112N or 232N; MATH 212. Interdisciplinary investigation of selected sites in Southeast Virginia that includes field sampling, sample analyses, data interpretation and integration, and group report preparation and presentations. Focuses on site selection and evaluation mapping, sampling, and sample analyses. Oral presentations of results will be made by each student.

OEAS 442W. Ocean and Earth Sciences Field Study II. 3 Credits.
Lecture 1 hour; laboratory 4 hours; 3 credits. Prerequisites: a grade of C or better in ENGL 211C or 221C or 231C; OEAS 441. Interdisciplinary investigation of selected sites in Southeast Virginia that includes field sampling, sample analyses, data interpretation and integration, and group report preparation and presentations. Focuses on site selection and evaluation mapping, sampling, and sample analyses. Oral presentations of results will be made by each student. (This is a writing intensive course.).

OEAS 443. General Meteorology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Structure of the atmosphere; air masses, fronts, and cyclones; ice and water precipitation; hurricanes, tornadoes, and thunderstorms; introduction to modern weather forecasting; weather modification and air pollution. Required for earth science track; not available as OEAS upper-division elective.

OEAS 444. Communicating Ocean Science to Informal Audiences. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: OEAS 306 and 310; OEAS 444 is a prerequisite for 445. This course sequence provides Earth Science Education students with instruction on presenting scientific information to informal audiences (K through adult). The courses provide techniques and practical experience in designing informal lessons. Students in 445 will develop more in-depth presentations and extended practice presenting their materials on the Virginia Aquarium floor. For Earth Science Education track students, this two-semester sequence can replace OEAS 441/442W. It is available as an elective for all other students.

OEAS 445. Communicating Ocean Science to Informal Audiences. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: OEAS 306 and 310; OEAS 444 is a prerequisite for 445. This course sequence provides Earth Science Education students with instruction on presenting scientific information to informal audiences (K through adult). The courses provide techniques and practical experience in designing informal lessons. Students in 445 will develop more in-depth presentations and extended practice presenting their materials on the Virginia Aquarium floor. For Earth Science Education track students, this two-semester sequence can replace OEAS 441/442W. It is available as an elective for all other students.

OEAS 446/546. Quaternary Geology. 3 Credits.
3 cr. Lecture. Prerequisite: OEAS 344W. Geological effects of Cenozoic climate changes and tectonic movements on marine and terrestrial systems. Weekend field trips to study landscapes and deposits in the coastal plain and Appalachian provinces.
OPHS 448/548. Population Ecology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 211. This course uses conceptual and mathematical models to understand how populations grow and persist in space and time. Both plants and animals are discussed.

OPHS 451. Data Collection and Analysis in Oceanography. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: OES 306, 310 and MATH 211-212. This course introduces the student to basic oceanographic tools used to obtain and analyze information. The student will use various oceanographic instruments to obtain data at different locations in the Chesapeake Bay. Data obtained with these instruments will be processed and analyzed using the data analysis techniques discussed in class. The data will then be used to answer a particular question related to the temporal and spatial variability in a natural system.

OPHS 455/555. Introduction to Geomicrobiology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: OES 303. This course explores microorganisms in marine environments and their role in the fossil record. Students will examine bacteria and protista and investigate Earth’s history during the Precambrian. One field trip.

OPHS 487. Honors Research in Ocean and Earth Sciences. 1-3 Credits.
Independent studies and scheduled meetings with faculty advisor; 1-3 credits each semester. Prerequisite: senior standing and admission to the Academic Honors Program. Supervised study in a field of individual interest. Research results are reported in a public oral presentation and a thesis.

OPHS 488. Honors Research in Ocean and Earth Sciences. 1-3 Credits.
Independent studies and scheduled meetings with faculty advisor; 1-3 credits each semester. Prerequisite: senior standing and admission to the Academic Honors Program. Supervised study in a field of individual interest. Research results are reported in a public oral presentation and a thesis.

OPHS 495/595. Special Topics. 1-4 Credits.
Lectures, field and laboratory studies; 1-4 credits each semester. Prerequisites: junior standing and permission of the instructor. An investigation of a selected problem in physical, geological, chemical, or biological oceanography.

OPHS 497. Special Problems and Research. 1-3 Credits.
1-3 credits. Prerequisite: junior standing. Independent reading and study on a topic to be selected with the direction of an instructor.

OPHS - Ophthalmic Science

OPHTHALMIC SCIENCE Courses

OPHS 311. Motility. 4 Credits.
Lecture 3 hours; laboratory 3 hours; 4 credits. Prerequisite: admission in the ophthalmic technology program. Fundamental study of muscle anatomy and physiology, vision testing for infants and children, and ocular motor evaluation.

OPHS 312. Ocular Anatomy and Systemic Disease. 3 Credits.
Lecture 3 hours; laboratory 1 hour; 3 credits. Prerequisite: admission in the ophthalmic technology program. In-depth study of the anatomy and physiology of the ocular system and medical terminology.

OPHS 320. Optics and Refraction. 5 Credits.
Lecture 2 hours; laboratory 6 hours; 5 credits. Prerequisite: admission in the ophthalmic technology program. Lensometry, visual function and testing, retinoscopy, refractometry, and basic optics.

OPHS 321. Visual Pathway. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: admission in the ophthalmic technology program. Manual and Automated Perimetry, visual pathway, associated lesions, glaucoma and tonometry.

OPHS 330. Pharmacology and Systemic Disease. 3 Credits.
Lecture 3 hours; laboratory 1 hour; 3 credits. Prerequisite: admission in the ophthalmic technology program. General technical skills, systemic disease, case histories, basic pharmacology.

OPHS 335. Technical Skills. 5 Credits.
Lecture 5 hours; 5 credits. Prerequisite: admission in the ophthalmic technology program. Advanced retinoscopy and refractometry, basic contact lens fitting, photography, and introduction to fluorescein angiography.

OPHS 337. Advanced Motility. 4 Credits.
Clinical experience 8 hours; 4 credits. Prerequisite: admission in the ophthalmic technology program. Advanced motility with sensory evaluation. (qualifies as a CAP experience).

OPHS 350. Advanced Technical Skills. 5 Credits.
Clinical experience 20 hours; 10 credits. Prerequisite: admission in the ophthalmic technology program. Continuation of advanced lecture topics, introduction to diagnostic testing. (qualifies as a CAP experience).

OPHS 352. General Clinical Rotation. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: admission in the ophthalmic technology program. Externship in private ophthalmologist’s office.

OPHS 420. Specialty Rotation I. 5 Credits.
(2 month rotation) Clinical experience 20 hours; 5 credits. Prerequisite: admission in the ophthalmic technology program. Ten-week rotation in each of the following: pediatric ophthalmology, contact lenses, low vision, ophthalmic surgical assisting, and advanced diagnostic testing. (qualifies as a CAP experience).

OPHS 421. Specialty Rotation II. 5 Credits.
(2 month rotation) Clinical experience 20 hours; 5 credits. Prerequisite: admission in the ophthalmic technology program. Ten-week rotation in each of the following: pediatric ophthalmology, contact lenses, low vision, ophthalmic surgical assisting, and advanced diagnostic testing. (qualifies as a CAP experience).

OPHS 422. Specialty Rotation III. 5 Credits.
(2 month rotation) Clinical experience 20 hours; 5 credits. Prerequisite: admission in the ophthalmic technology program. Ten-week rotation in each of the following: pediatric ophthalmology, contact lenses, low vision, ophthalmic surgical assisting, and advanced diagnostic testing. (qualifies as a CAP experience).

OPHS 423. Specialty Rotation IV. 5 Credits.
(2 month rotation) Clinical experience 20 hours; 5 credits. Prerequisite: admission in the ophthalmic technology program. Ten-week rotation in each of the following: pediatric ophthalmology, contact lenses, low vision, ophthalmic surgical assisting, and advanced diagnostic testing. (qualifies as a CAP experience).

OPHS 430. Advanced Topics I. 3 Credits.
Seminar 3 hours; 3 credits. Prerequisite: admission in the ophthalmic technology program. Lectures on various advanced topics in ophthalmic disease and special testing.

OPHS 440. Advanced Topics II. 3 Credits.
Seminar 3 hours; 3 credits. Prerequisite: admission in the ophthalmic technology program. Lectures on various advanced topics in ophthalmology and Board Exam review.

OPMT - Operations Management
OPERATIONS MANAGEMENT Courses

OPMT 303. Operations Management. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisites: DSCI 206 or STAT 130M, and a declared major in the university or permission of the Dean’s Office of the CBPA. Examines strategic, tactical, and operational issues in the planning and control of manufacturing and service delivery systems. This course examines such topics as process design, capacity and materials planning and control, inventory management, facility layout, quality and work management.

OPMT 367. Cooperative Education. 1-3 Credits.
1-3 credits. Prerequisite: junior standing and a declared major in the university or permission of the Dean’s Office of the CBPA. Approval for enrollment and allowable credits is determined by the department and Career Management in the semester prior to enrollment. Available for pass/fail grading only. (qualifies as a CAP experience).

OPMT 368. Student Internship. 1-3 Credits.
1-3 credits. Prerequisite: junior standing and a declared major in the university or permission of the Dean’s Office of the CBPA. Approval for enrollment and allowable credits is determined by the department and Career Management in the semester prior to enrollment. Available for pass/fail grading only. (qualifies as a CAP experience).

OPMT 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisites: OPMT 303T and a declared major in the university or permission of the Dean’s Office of the CBPA. Approval for enrollment and allowable credits is determined by the department and Career Management in the semester prior to enrollment. Student participation in a professional work experience. Available for pass/fail grading only. (qualifies as a CAP experience).

OPMT 495. Selected Topics in Operations Management. 3 Credits.
3 credits. Prerequisite: Senior standing and a declared major in the university or permission of the Dean’s Office of the CBPA. Selected advanced topics in operations management. Taught on an occasional basis. See the course schedule for the particular topic being taught each semester.

OPMT 497. Independent Study in Operations Management. 1-3 Credits.
1-3 credits. Prerequisite: permission of the department. Affords students the opportunity to undertake independent study under the direction of a faculty member.

PUBLIC AFFAIRS AND SERVICE Courses

PAS 300. Foundations of Public Service. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: A declared major in the University or permission of the Dean’s Office of the CBPA. Designed for the study of selected topics in public administration.

PAS 301. Ethics, Governance and Accountability in Public Service. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: A declared major in the University or permission of the Dean’s Office of the CBPA. This course provides an overview of ethics, governance and accountability in public service, with particular emphasis on the linkages between these three concepts. The focus is on the ethical context and implications of public management, governance structures, and public sector accountability, particularly in relation to critical social, political, and economic issues.

PAS 368. Internship in Public Service. 1-3 Credits.
1-3 credits. Student participates in a relevant public service-related work experience. Approval for enrollment and allowable credits is determined by the PAS CAP advisor and the Career Management Center in the semester prior to enrollment. (Qualifies as a CAP experience.).

PAS 395. Selected Topics in Public Administration. 3 Credits.
3 credits. Prerequisite: A declared major in the University or permission of the Dean’s Office of the CBPA. Designed for the study of selected topics in public administration.

PAS 410. Public and Non-profit Organization. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: PAS 300 or PAS 301 or permission of the instructor, and a declared major in the University or permission of the Dean’s Office of the CBPA. An introduction to the study and practice of public and non-profit agencies. The course is designed to explore fundamental issues of organizational structure, management, and operations of public and non-profit organizations in modern American society.

PAS 411. Multi-Sector Partnerships for Public Service. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisites: PAS 300 or PAS 301 or permission of the instructor, and a declared major in the University or permission of the Dean’s Office of the CBPA. This course examines the interplay between the public, private, and non-profit sectors. Particular emphasis is placed on the structure and operation of intersectoral partnerships to achieve public goals.

PAS 497. Independent Study in Public Service. 3 Credits.
3 credits. Provides students the opportunity to undertake independent study of selected topics/issues in public service under the guidance of a faculty member. Student and faculty member must complete and agree on a learning contract before study begins. Pass/Fail grading only.

OTED - Occupational Technical Educ

Courses

OTED 404/504. INSTRUCTION DESIGN/DEVELOPMENT. 3 Credits.

OTED 407/507. MAINSTREAM SPEC STU-VOC CLASS. 3 Credits.

OTED 495/595. TOPICS. 1-6 Credits.

PE - Physical Education

PHYSICAL EDUCATION Courses

PE 101+. Swim Conditioning. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Students will discuss and learn the training process including advantages and benefits of swimming, principles of training, training procedures, evaluation and motivation, and minor annoyances. Stroke mechanics and improvement and information for triathletes.

PE 102+. Beginning Swimming. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Development of the basic water safety skills and knowledge to make one reasonably safe in the water.
PE 103+. Intermediate Swimming. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisite: must be comfortable in deep water. Instruction in all strokes will be covered.

PE 104+. Lifeguard Training. 2 Credits.
Three classes per week; 16 weeks; 2 credits. Development of the skills and knowledge designed to save the life of another in the event of an emergency in the water. Red Cross certification.

PE 105+. Water Safety Instruction. 3 Credits.
3 credits. Prerequisite: must be at least 17, in sound physical condition, and have the ability to perform skills in the level VI ARC swim course. This course is designed to provide the student with knowledge and skills in water safety and teaching techniques for teach swimming, lifesaving, rescue and water safety courses. Red Cross Water Safety Instructor Certificate upon successful completion.

PE 107+. Beginning SCUBA. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Development of the basic skills and knowledges of skin and SCUBA diving. NAUI certification issued upon completion of PE 107+ and 108+. Students must furnish their own equipment and pay for air used.

PE 108+. Intermediate SCUBA. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisite: completion of any beginning SCUBA course. Development of intermediate SCUBA skills. NAUI certification issued upon completion of PE 108+. Several open-water dives are required. Students must furnish their own equipment and pay for air used.

PE 112+. Yoga. 2 Credits.
2 credits. This course provides a foundation for the understanding and practice of Hatha yoga in its complete form. Course covers yoga postures, breathing exercises, philosophy, and meditation.

PE 113+. SCUBA Assistant Instruction. 2 Credits.
2 credits. Prerequisite: certification as an advanced scuba diver or documented equivalent experience. This course is the initial leadership-level certification for scuba divers. The course is designed to prepare individuals to pass the tests in fundamental water skills and basic diving instruction necessary to authorize them to assist scuba instructors in the conduct of diving training.

PE 114+. Beginning Sailing. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Development of basic seamanship and sailing techniques. Additional fees are required. Swimming competency required.

PE 117+. Disabled and Fit. 1,2 Credit.
1 credit; 3 hours per week for 7 1/2 weeks. 2 credits; 3 hours per week for 15 weeks. Developed for students with a physical disability who wish to participate in an individually designed fitness program.

PE 118+. Weight Training. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Designed to allow students an individualized weight training program. The program will include use of free weights, universal, and other appropriate tools for the variety of weight training differences.

PE 124+. Intermediate Badminton. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Development of all the strokes to enable an individual to play a good game of badminton. Emphasis is placed on the strategy of the game of singles and doubles.

PE 125+. Beginning Tennis. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Development of sufficient skills in the basic strokes and knowledge to give the individual an enjoyment of the game. The student is responsible for furnishing one can of new and approved USTA balls.

PE 126+. Intermediate Tennis. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Development of strokes to enable an individual to play a good game of tennis. Emphasis is placed on the strategy of the game of singles and doubles. The student is responsible for furnishing one can of new and approved USTA balls.

PE 134+. Beginning Golf. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. The fundamentals of golf, stance, grip, swing, rules, and etiquette are presented. Driving range and golf course may be used. Students pay all fees.

PE 139+. Volleyball. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Development of fundamental skills of soccer. Rules and strategies are stressed.

PE 167+. Beginning Judo. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. An introduction to Judo including the techniques of throws, holdings, lockings, and pinnings. Philosophy and cultural aspects of Sport Judo are also covered.

PE 168+. Intermediate Judo. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. An intermediate course in Sport Judo covering intermediate skills and strategies.

PE 171+. Physical Conditioning. 1 Credit.
Three hours per week; 7 1/2 weeks; 1 credit. This course addresses the basic principles of progressive weight training. Objectives of the course include knowledge of various weight-training systems, proper use of weight-training equipment, and effective record-keeping to monitor individual progress.

PE 174+. Aerobics I. 2 Credits.
Three classes per week; 2 credits. This course is designed to introduce the student to a complete physical fitness program that strengthens the heart and lungs, and tones up the muscles.

PE 175+. Zumba. 1 Credit.
1 credit. Zumba is a Latin inspired, dance-fitness class that incorporates Latin and International music with dance movements. It is a high calorie-burning fitness class that features fast and slow rhythms. The student will participate in instructor led routines. This class will include discussion of Zumba’s history and basic four rhythms. No dance experience necessary.

PE 180+. Beginning Aikido. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Course is designed to introduce the fundamental dynamics of Aikido principle. It contains the fundamental skills in body dynamics, body movements, safety landing, defensive pattern drills, and overall understanding of Aikido as a classical art form. Course provide comprehensive information on the philosophical and aesthetic aspects of Aikido.

PE 181+. Kobudo. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. This course is designed to introduce the fundamentals of classical weaponry arts in Bo (long oak stick), Kama (sickle), Jo (short oak stick), Sai (speared iron sword), and Bokuto (wooden sword).

PE 182+. Kendo. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. This course is designed to introduce the fundamental Japanese classical swordsmanship in skill components as well as its philosophical foundation. Bokuto (wooden sword), Shinai (bamboo sword) and a full armor are used for the skill training.

PE 184+. Intermediate Aikido. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisite: PE 180+. Course is designed to introduce the intermediate level of Aikido dynamics. It contains the basics of fundamental skills in body dynamics, body movements, safety landing, intermediate level of defensive pattern drills, and overall understanding of Aikido as a classical art form.
PE 185+. Advanced Aikido. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisite: PE 184+. Course is designed to introduce the advanced level of Aikido dynamics. It contains training in advanced skills in body dynamics, body movements, defensive pattern drills, and overall understanding of Aikido theory and application as a classical art form.

PE 186+. Beginning Karate. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. This course is designed to give the traditional Karate training (‘Art of Empty Hand’) to the beginning student. It emphasizes the traditional mode of training with mental and physical discipline. Formal Kata, defensive skills, punches, kicks, and blocking techniques are introduced.

PE 187+. Intermediate Karate. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisite: PE 186+. This course is designed to give the student further instruction and practice in traditional Karate.

PE 188+. Beginning Self-Defense. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. The student is introduced to the various practical skills and methods of self-defense. Judo, Aikido, Jujutsu, and Karate are combined to explore the most effective means to defend oneself.

PE 189+. Intermediate Self-Defense. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisite: PE 188+. This course is designed to give the student further instruction and practice in the various practical skills and methods of self-defense.

PE 190+. Advanced Karate. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisite: PE 187+. This course is designed to introduce further instruction and practice in traditional martial art aspects of Karate-doh. Philosophical understanding and high level of skill proficiency are emphasized.

PE 191+. IAI-DO (Art of Sword Harmony). 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Pre- or corequisite: PE 185+. Prerequisites: PE 182+, PE 180+ or 186+, PE 184+. This course is designed to introduce the classical art form of sword drawing skills and its philosophical principle. This course focuses on the skills dynamics of traditional and ceremonial art forms.

PE 194+. Intermediate Kendo. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisite: PE 182+ or equivalent proficiency. This course is designed to provide the intermediate level of Kendo skills beyond a basic skill level. The course emphasizes the correct mental attitude and physical discipline.

PE 195+. Theory of Advanced Aikido. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisites: PE 180+, 184+, 185+ or equivalent proficiency level. This course is designed to provide the theoretical framework of Aikido that embodies the mental and physical dynamics of the martial arts discipline of Aikido.

PE 196+. Topics in Health and Physical Education. 1-3 Credits.
7 1/2 weeks; variable credit. A variety of new and innovative courses in lifetime physical activities are offered such as advanced theory class in martial arts, advanced Iaido, self defense seminar, yoga, cross country skiing, yacht racing, racquetball, nautilus, swim conditioning, water safety instructor, scuba and aerobic dance.

PE 197+. Theory of Advanced Karatedo. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisites: PE 186+, 187+, 190+ and/or equivalent proficiency level. This course is designed to provide the theoretical framework of Karatedo that embodies the higher principle of physical and mental dynamics and aims to achieve the advanced skills in Karatedo.

PE 198+. Intermediate Self-Defense. 1 Credit.
Three classes per week; 7 1/2 weeks; 1 credit. Prerequisite: PE 188+ or equivalent skills. This course is designed to provide the intermediate level of self-defense skills beyond the basic skill. The course stresses both the application of basic techniques and proper physical and mental discipline.

PE 200. Foundations of Education, Physical Education and Health. 3 Credits.
Three classes per week; 3 credits. This is an introductory course for physical education majors that includes principles, philosophy, and history of education, physical education and health. Current issues and practices will be presented. The professional teaching portfolio is introduced.

PE 217. Fundamental Movement Skills and Dance. 2 Credits.
Lecture 2 hours; 2 credits. This course is designed to introduce the fundamental components of dance and rhythms. Techniques in rhythmic movements and basic fundamental skills of folk dance, square dance, and contemporary dance; stresses dance positions for motions and sequencing of movements. Through participation, individuals will develop skills in a variety of dance styles and build a range of rhythmic activities to be taught in the physical education classroom.

PE 218. Aquatics and Outdoor Education. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: PE 102+ will be required for any student who is unable to swim in deep water. This course introduces the principles and practices of swimming and outdoor education for the school setting. Activities will include orienteering, team building, cooperative games, and aquatics. Effective instructional strategies, basic skills, and assessment techniques for the teaching of these physical activities will be included.

PE 220. Teaching of Team Sports I. 2 Credits.
Lecture 1 hour; laboratory 3 hours; 2 credits. This course will introduce the sports of soccer, flag football, field hockey, speedball, team handball, and ultimate frisbee. Effective instructional strategies, game tactics, and assessment techniques for the teaching of these team sports will be included.

PE 221. Teaching of Team Sports II. 2 Credits.
Lecture 1 hour; laboratory 3 hours; 2 credits. This course will introduce the sports of basketball, volleyball, and softball. Effective instructional strategies, game tactics, and assessment techniques for the teaching of these team sports will be included.

PE 222. Teaching of Individual Sports. 2 Credits.
Lecture 1 hour; laboratory 3 hours; 2 credits. This course will introduce a variety of individual and dual sports for the enhancement of life-span involvement in physical activity. Instructional strategies, game tactics, and assessment techniques for the teaching of these individual and dual sports will be included.

PE 224. Teaching Elementary Physical Education. 3 Credits.
Lecture 3 hours; 3 credits. Designed for the preparation in teaching all elementary age children developmentally appropriate physical activities in educational games, educational gymnastics and motor skill development. Skill proficiency levels, learning styles, and effective assessment are studied through a conceptual-skills theme approach.

PE 226+. Advanced SCUBA. 2 Credits.
Three classes per week; 2 credits. Prerequisites: PE 107+ and 108+ or permission of the instructor. NAUI Advanced Diver certification issued. Development of advanced SCUBA skills. Open water training with the emphasis on leadership training necessary for assisting the instruction of group dives. Students must furnish their own equipment and air.

PE 295. Topics in Physical Education. 1-3 Credits.
1-3 credits. Prerequisite: sophomore standing and approval of program advisor. This course provides an opportunity for in-depth study of selected topics in physical education.
PE 300. Management Skills for Teaching Health and Physical Education. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: passing scores on Praxis I and junior standing. Foundations in psychological, sociological, and academic needs of students, with specific focus on management skills in open classroom and sport settings. Specialized safety concerns and environmental considerations are also addressed. Lesson planning, goal setting, and movement formations unique to HPER activities are included.

PE 301W. Teaching Physical Education in the Secondary Schools. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and a grade of C or better in ENGL 211C or 221C or 231C. Acquaints the students with current theories, principles, styles and best practices utilized in teaching physical education to students at the secondary school level. (This is a writing intensive course.).

PE 308. Driver Education Foundations of Traffic Safety. 3 Credits.
Three classes per week; 3 credits. Prerequisite: permission of the instructor. The intent of the course is to develop a thorough understanding of the highway transportation systems, the complexity of the driving task, and factors contributing to performance of highway users (e.g. attitudes and skills) necessary to develop competent drivers for prospective teachers to have the essential knowledge and skills to effectively deliver course content as an endorsed driver education trainer.

PE 309. Principles and Methodologies of Classroom and In-Car Instruction. 3 Credits.
Three classes per week; 3 credits. Prerequisite: PE 308. This course provides teacher candidates with an overview of teaching methods and effective practices for driver education instruction with a focus on teaching skills. An emphasis is placed on program organization, administration, classroom instruction, single car instruction, multiple-car range instruction, simulation and evaluation. A minimum of 20 hours behind-the-wheel supervised teaching experiences.

PE 318. Motor Learning. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Designed to provide the student with experiences in the practical application of theory related to motor learning. Feedback, transfer learning, practice, and motor control principles and concepts are addressed.

PE 319. Physical Growth and Motor Development. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. An examination of the physical growth and motor development of the human being over the life span. Emphasis is on the assessment of physical and cognitive development, particularly in the K-13 ages. Theory and technique for research are discussed and the use of research findings is incorporated into the assessment materials. Attention is directed toward acquisition of basic skills, perceptual-motor development, and age-related changes.

PE 368. Coaching Internship. 6 Credits.
6 credits. Prerequisites: Senior standing; EXSC 409, PE 415, PE 456. Final field placement required for all students with an emphasis in a coaching minor. Students will be placed in an athletic coaching environment to gain experience in personal communication, technique instruction, practice organization and administrative duties required of the specific sport of their emphasis. Placement of internship subject to instructor approval. Minimum of 200 clock hours (hours to be arranged).

PE 404/504. Adapted Physical Education. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Prerequisites: PE 300 and 319. Students will be acquainted with and research the different disabilities, learning modes of the exceptional child, IDEA—the law that advocates free and appropriate education, and working with the child with disabilities within an ecosystem. A vital component of the course will be the practical application of theory.

PE 415. Principles of Coaching Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course is designed to provide students with a basic knowledge of the coaching profession. Special emphasis will be placed on establishing a sound coaching philosophy, selecting a coaching style, desirable qualities of a coach, ethics and the coach, roles of the head coach, planning and organizing for games and practices, coaching pedagogy, off-season planning, final preparations for the season, and issues and problems related to coaching and recruiting athletes.

PE 419. SCUBA Instructor. 3 Credits.
Lecture 2 hours; laboratory 3 hours; 3 credits. Prerequisites: NAUI assistant instructor or equivalent; one year and 24 hours of open water time after basic SCUBA course certification, and permission of the instructor. NAUI instructor certification issued. Practice teaching of beginning SCUBA class required. Students must furnish their own equipment and air.

PE 456. Sports Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: Junior standing. Study of the psychological bases of coaching strategies and methodologies. Emphasis is placed on applying knowledge in field settings.

PE 497/597. Topics in Health and Physical Education. 1-3 Credits.
1-3 credits. Prerequisite: junior standing and approval of program advisor. This course provides an opportunity for in-depth study of selected topics in health and physical education.

PHIL - Philosophy

PHILOSOPHY Courses
PHIL 110P. Introduction to Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. An introduction to basic concepts, methods and issues in philosophy, and a consideration of representative types of philosophical thought concerning human nature, the world, knowledge, and value.

PHIL 120P. Logic and Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. A study of the principles of correct reasoning and the types of fallacious reasoning. Includes an examination of the philosophical and historical context of logic, and the application of logical methods to philosophical questions.

PHIL 126P. Honors: Introduction to Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. A special honors section of PHIL 110P.

PHIL 127P. Honors: Introduction to Philosophy of Science. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. Scientific developments are used as an occasion for philosophical reflection. In the process the student is led to a better understanding of science. The course introduces and makes use of basic logical and conceptual tools of philosophy.

PHIL 140P. Introduction to Philosophy of Science. 3 Credits.
Lecture 3 hours; 3 credits. Scientific developments are used as an occasion for philosophical reflection. In the process the student is led to a better understanding of science. The course introduces and makes use of basic logical and conceptual tools of philosophy.

PHIL 227E. Honors: World Religions: Beliefs and Values. 3 Credits.
Lecture 3 hours, 3 credits. Open only to students in the Honors College. A special Honors section of PHIL 250E.

PHIL 228E. Honors: Introduction to Ethics. 3 Credits.
Lecture 3 hours, 3 credits. Open only to students in the Honors College. A special Honors section of PHIL 230E.
PHIL 230E. Introduction to Ethics. 3 Credits.
Lecture 3 hours; 3 credits. An introduction to the study of ethics through philosophical reflection on a variety of moral issues of contemporary significance. Topics covered will vary by semester and instructor, and may include issues drawn from professional fields such as business, medicine, and information technology, plus matters of public concern like the environment, the treatment of animals, the use of military force, social justice, and civil and human rights.

PHIL 250E. World Religions: Beliefs and Values. 3 Credits.
Lecture 3 hours; 3 credits. A comparative and philosophical study of major world religions in the Eastern and Western traditions with particular attention being paid to their views about the basis of right action and the nature of good and evil. Other points of comparison include the foundations of religious knowledge and belief, the meaning of human life, divinity, and death and immortality. A student with credit for PHIL 150P cannot receive credit for PHIL 250E.

PHIL 302. Gender and Ethics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy or permission of the instructor. An examination of ethical issues concerning whether men and women should be treated differently and of the standards by which such decisions are made.

PHIL 303E. Business Ethics. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: ENGL 110C. A philosophical examination of ethical issues that arise in business and commerce. Topics discussed will vary by semester and instructor, but may include affirmative action, ethical versus unethical sales and marketing techniques, the obligations of business to society (if any), and the moral foundations of capitalism.

PHIL 304. Marx and the Marxists. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and three semester hours in philosophy, or permission of the instructor. Learning how to understand Marxism, yesterday and today, through readings, applications, exercises for discussion and projects.

PHIL 305. American Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. An examination of the writings of some of the major American philosophers such as Peirce, James, Royce, Dewey, and Whitehead.

PHIL 313. Philosophy of Religion. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. An analytical and critical consideration of the philosophical foundations of religion. Such topics as the existence of God, the problem of evil, theism and atheism, prayer, and immortality are discussed.

PHIL 314. Studies in Western Religious Thought. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: three semester hours in philosophy, or permission of the instructor. Various topics exploring religious, philosophical, and cultural themes in the traditions of Judaism, Christianity, or Islam.

PHIL 324. Philosophy of Art. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy or permission of the instructor. A study of the various theories of art and human creativity in the context of historical and cultural backgrounds.

PHIL 330W. Ancient Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor and a grade of C or better in ENGL 211C or 221C or 231C. A study of the thought of the classical Greek and Roman philosophers from the sixth century B.C. to the fifth century A.D. (This is a writing intensive course.)

PHIL 331. Modern Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. A study of the thought of the major Western philosophers through the eighteenth century, including the empirical tradition of Descartes, Spinoza, and Leibniz, and the critical philosophy of Kant.

PHIL 332. Medieval Philosophy. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: ENGL 110C. This course focuses on philosophical inquiry during the middle ages (400-1400 A.D.). Students will study the work of major philosophers from the Christian, Jewish, and Islamic traditions including Augustine, Maimonides, Al-Ghazali Averroes (Ibn Sina), Aquinas, Duns Scotus, and Okham.

PHIL 340. Logic I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. A study of the basic concepts and methods of logic as they occur in ordinary language, formal logical arguments, and an elementary logical system. Traditional Logic is emphasized, but some elements of Modern Logic are also introduced.

PHIL 344E. Environmental Ethics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. An examination of the nature and basis of human obligations for the welfare of the environment with special attention to the foundations of ethical decision making.

PHIL 345E. Bioethics. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: ENGL 211C or ENGL 221C or ENGL 231C. An examination of the philosophical foundations of ethical decision making in biology, medicine, and the life sciences.

PHIL 353. Asian Religions. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. A study of religious and philosophical traditions of India, China and Japan. Primary emphasis will be given to Hinduism, Buddhism, Confucianism and Taoism. (cross listed with ASIA 353).

PHIL 354. Comparative Philosophy East and West - Personhood. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PHIL 110P or PHIL 250E or permission of the instructor. An examination of the philosophical theme "personhood" in Eastern and Western traditions. The course will include a methodology for comparative analysis, a dialogue on key issues and their application to contemporary topics from historical and contemporary religious, psychological and gender perspectives. The class will sample well known positions in the Eastern and Western traditions as well as social and political contexts for the various conceptions.

PHIL 355. Computer Ethics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. An examination of ethical issues created, aggravated or transformed by computer technology. Theory-grounded paradigms of ethical decision making will be presented with application to realistic cases. Principal topics: computer crime, privacy, cyberspace, and business applications.

PHIL 367. Cooperative Education. 1-3 Credits.
PHIL 369. Practicum. 3 Credits.
1-3 credits. Prerequisites: junior standing; minimum of 15 credit hours in philosophy. The course offers three forms of practical experience for philosophy majors: Professional (for students anticipating careers in relevant professions, including philosophy); Classroom (for students anticipating graduate study and a teaching career); Civic/Social Affairs (for students interested in grassroots activism). Consult the department for details and certain specific prerequisites. (qualifies as a CAP experience).
PHIL 383T. Technology: Its Nature and Significance. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: ENGL 110C. A philosophical examination of technology with special attention to its relationship with and mutual dependence upon society, culture, and human values. Historical developments and specific technologies will also be covered.

PHIL 395. Topics in Philosophy. 3 Credits.
3 credits each semester. Prerequisite: junior standing or approval of the department chair. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

PHIL 396. Topics in Philosophy. 3 Credits.
3 credits each semester. Prerequisite: junior standing or approval of the department chair. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

PHIL 404/504. Twentieth Century Continental Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. A study of influential contemporary movements in European philosophy. Emphasis will be given to the writings of Husserl, Heidegger, Sartre, Gadamer, Derrida, and Foucault.

PHIL 406/506. Contemporary Analytic Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. A study of the twentieth-century analytic tradition, including such thinkers as Moore, Russell, Wittgenstein, Ayer, Carnap, Ryle, Wisdom, and Austin.

PHIL 410/510. Social and Political Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. A philosophical analysis of the relation between man, society, and the state, studying about a dozen philosophers since Plato on such topics as justice, authority, law, freedom, and civil rights.

PHIL 411/511. Postmodernism and Political Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: three semester hours in philosophy and junior standing or permission of the instructor. An examination of intellectual currents in postmodernism as they pertain to central questions in social and political thought. The course covers the roots of modernism in the Enlightenment and various challenges to modernism in 19th and 20th century thought. Particular attention is given to the prospects for democracy in postmodern thinking.

PHIL 412/512. Philosophy of Law. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and three semester hours in philosophy, or permission of the instructor. An examination of the nature of law and philosophical issues concerning the law.

PHIL 417/517. Philosophy and Educational Issues. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and one introductory philosophy course or a course in Principles of Education. Considers the relationship of philosophy and education. Topics considered include: philosophy as a foundation for education, education as an institution, and educational and philosophical issues as they relate to each other.

PHIL 423/523. Philosophy of Work. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: Junior standing or permission of instructor. An examination of philosophical issues surrounding the practice of work. Topics to be discussed may include the definition of work, alienation, exploitation, whether there is a right to work or a right not to work, religious perspectives on work, and gender issues in work.

PHIL 427/527. Myth and Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. A study of the nature of myth, its role and importance in human thought. The analysis will stress the relationships between mythology, religion, literature, drama, and philosophy in ancient Greece.

PHIL 431/531. Nineteenth-Century Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. A study of significant intellectual innovations and revolutions in nineteenth century European thought that helped shape the modern mind. Emphasis will be given to the writings of Kant, Schopenhauer, Hegel, Marx, Kierkegaard and Nietzsche.

PHIL 434/534. Contemporary Theory of Knowledge. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: Junior standing or permission of instructor. This course provides students with a problem-oriented, critical, and comparative understanding of problems in contemporary epistemology. Topics include skepticism and responses thereto, analyses of knowledge, the externalist versus internalist debate, foundationalism and coherentism, and social approaches to knowledge including contextualism and feminism.

PHIL 435/535. Philosophy of Psychology. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: Junior standing or permission of instructor. An examination of various ways in which the mind has been understood in philosophy and in psychology and of the methods that have been used in the study of the mind.

PHIL 440/540. Philosophy of Natural Sciences. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing, three semester hours in philosophy and eight semester hours of laboratory science. A study of the concepts and philosophical problems common to the natural sciences: scientific reasoning, confirmation, explanation, laws, meaning, theories, revolutions, progress, and values.

PHIL 441E/541. Foundations of Ethics. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: ENGL 211C or ENGL 221C or ENGL 231C and Junior standing. An inquiry into the philosophical foundations of ethical inquiry. Various ethical systems are considered, and different views of metaethics and moral psychology may be as well.

PHIL 442E/542. Studies in Applied Ethics. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: ENGL 110C and Junior standing. An intensive examination of ethical issues in a particular field or profession; an emphasis on ethical theory underlying practical decisions.

PHIL 480/580. Hinduism. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. An intensive study of the basic teachings of Hinduism as manifested in its sacred writings.

PHIL 481/581. Buddhism. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy, or permission of the instructor. A study of the origin, historical development, and contemporary status of Buddhism, in terms of its religious and philosophical elements and its influence in Asian cultures.

PHIL 482/582. Chinese Religion and Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy or permission of the instructor. A study of Chinese thought emphasizing Early and Classical Confucianism and Taoism, Chinese Buddhism, and Neo-Confucianism. Modern currents of Chinese thought will also be discussed.

PHIL 485/585. Japanese Religion and Philosophy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: junior standing and three semester hours in philosophy or permission of the instructor. A study of the religious and philosophical traditions of Japan. Emphasis will be given to Shintoism, Buddhism, and Neo-Confucianism and their contemporary status and influence in Japanese culture.
PHIL 491/591. Seminar in Philosophy. 3 Credits.
3 credits each semester. Prerequisites: junior standing and six semester hours in philosophy, or permission of the instructor. Intensive examination of the thought of one major philosopher.

PHIL 492/592. Seminar in Philosophy. 3 Credits.
3 credits each semester. Prerequisites: junior standing and six semester hours in philosophy, or permission of the instructor. Intensive examination of the thought of one major philosopher.

PHIL 493/593. Seminar in Philosophy. 3 Credits.
3 credits each semester. Prerequisites: junior standing and six semester hours in philosophy, or permission of the instructor. Intensive examination of the thought of one major philosopher.

PHIL 494/594. Seminar in Philosophy. 3 Credits.
3 credits each semester. Prerequisites: junior standing and six semester hours in philosophy, or permission of the instructor. Intensive examination of the thought of one major philosopher.

PHIL 495/595. Topics in Philosophy. 1-3 Credits.
1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

PHIL 496/596. Topics in Philosophy. 1-3 Credits.
1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

PHIL 497/597. Tutorial Work in Special Topics in Philosophy. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study of a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

PHIL 498/598. Tutorial Work in Special Topics in Philosophy. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study of a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

PHYS - Physics

PHYSICS Courses

PHYS 101N. Conceptual Physics. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. An introductory descriptive course which develops and illustrates the concepts of physics in terms of phenomena encountered in daily life. Topics include mechanics, electricity and magnetism. (offered fall, summer).

PHYS 102N. Conceptual Physics. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. Prerequisite: PHYS 101N. An introductory descriptive course which develops and illustrates the concepts of physics in terms of phenomena encountered in daily life. Topics include covers sound, light, fluids and heat. (offered spring).

PHYS 103N. Introductory Astronomy. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. A study of the physical principles and scientific investigation of objects in our solar system. Emphasis on how we acquire knowledge of celestial objects to develop models of our universe.

PHYS 104N. Introductory Astronomy. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. Emphasizes the study of stars, star systems, cosmology and relativity. Emphasis on how we acquire knowledge of celestial objects to develop models of our universe.

PHYS 109. Introductory Astronomy Laboratory. 1 Credit.
Laboratory 2 hours; 1 credit. Prerequisite: written permission of the chief departmental advisor of the Physics Department. An introductory laboratory course in astronomy dealing with experiments about the laws of nature that apply to objects in our solar system.

PHYS 111N. Introductory General Physics. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. Prerequisite: MATH 102M or MATH 162M or MATH 166. Emphasizes mechanics, wave motion and heat and will also cover the needed elements of trigonometry and vectors. Students receiving credit for PHYS 111N cannot receive credit for PHYS 102N either simultaneously or subsequently. (offered fall, spring, summer).

PHYS 112N. Introductory General Physics. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. Prerequisites: PHYS 111N and MATH 102M or MATH 162M or MATH 166. Emphasizes electricity, light, and introduction to modern physics. (offered fall, spring, summer).

PHYS 113. Physics Laboratory. 1 Credit.
Laboratory 2 hours; 1 credit. Available for pass/fail grading only. Prerequisite: written permission of the chief departmental advisor of the Physics Department. An introductory laboratory covering experiments from mechanics, wave motion, and heat and sound. Available for pass/fail grading only.

PHYS 114. Physics Laboratory. 1 Credit.
Laboratory 2 hours; 1 credit. Available for pass/fail grading only. Prerequisite: written permission of the chief departmental advisor of the Physics Department. An introductory laboratory covering experiments from electricity, magnetism, and optics. Available for pass/fail grading only.

PHYS 120. Physics in the 21st Century. 1 Credit.
Lecture 1 hour; 1 credit. This seminar will provide students with a broad introduction to the cutting edge of physics research and its applications in diverse areas of contemporary physics. Recommended for incoming students interested in physics and the natural sciences.

PHYS 126N. Honors: Introductory Astronomy. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Open only to students in the Honors College. A special honors version of PHYS 102N.

PHYS 127N. Honors: Introductory Astronomy. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Open only to students in the Honors College. A special honors version of PHYS 104N.

PHYS 226N. Honors: University Physics. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Open only to students in the Honors College. A special honors version of PHYS 221N.

PHYS 227N. Honors: University Physics. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Open only to students in the Honors College. A special honors version of PHYS 232N.
PHYS 231N. University Physics. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. Corequisite: MATH 211 or MATH 226 or permission of instructor. A general introduction to physics in which the principles of classical and modern physics are applied to the solution of physical problems. The reasoning through which solutions are obtained is stressed. Topics include mechanics, fluids, and thermodynamics. This course is designed for majors in the physical sciences, engineering, mathematics, and computational sciences. Students receiving credit for PHYS 231N and PHYS 232N cannot simultaneously or subsequently receive credit for PHYS 101N and PHYS 102N or PHYS 111N and PHYS 112N. (offered fall, spring, summer).

PHYS 232N. University Physics. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits each semester. Corequisite: MATH 211 or MATH 226 or permission of instructor. Prerequisite: 231N. A general introduction to physics in which the principles of classical and modern physics are applied to the solution of physical problems. The reasoning through which solutions are obtained is stressed. This course is designed for majors in the physical sciences, engineering, mathematics, and computational sciences. Topics include electricity and magnetism, and optics. Students receiving credit for PHYS 231N and PHYS 232N cannot simultaneously or subsequently receive credit for PHYS 101N and PHYS 102N or PHYS 111N and PHYS 112N. (offered fall, spring, summer).

PHYS 303. Intermediate Experimental Physics. 3 Credits.
Laboratory 6 hours; 3 credits each semester. Prerequisite: PHYS 232N. 303 is a prerequisite to 304. A laboratory oriented course designed to provide students with a broad introduction to instrumentation and techniques used in modern physics laboratories. Topics to be covered include: basic electronics, vacuum technology, optics and lasers, nuclear instrumentation, LabView programming and computer interfacing.

PHYS 304. Intermediate Experimental Physics. 3 Credits.
Laboratory 6 hours; 3 credits each semester. Prerequisite: PHYS 232N and PHYS 303. A laboratory oriented course designed to provide students with a broad introduction to instrumentation and techniques used in modern physics laboratories. This course is a continuation of PHYS 303.

PHYS 309. Physics on the Back of an Envelope. 1 Credit.
Lecture 1 hour; 1 credit. Corequisite: PHYS 102N, PHYS 112N or PHYS 232N. Physicists should be able to estimate the order-of-magnitude of anything. How many atoms of Julius Caesar do you eat every day? How much waste does a nuclear power plant generate? Will develop concepts, relations and numbers useful for estimation. Will cover little new material, emphasizing already acquired knowledge. Will help students apply physics to real-life questions and understand which physical effects are appropriate on which scales. Seminar course.

PHYS 311. Color in Nature and Art. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 102. Explores the relationship between light as stimulus and color perceived by us. Develops underlying concept of technology of art and applied art. Describes basis for optical phenomena involved in many facets of daily life. Topics include: the interaction of light and the visual perception it produces; the basic concept of spectra; wave, ray, and quantum optics; polarized light; photography; paintings; pigments; rainbows and mirages; color theory systems; formation of images; optical instruments. There is no physics prerequisite for this course.

PHYS 313. Elements of Astrophysics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PHYS 232N. A one-semester course covering the important topics of modern astrophysics. The physical basis of stellar evolution and chemical element formation is derived from first principles. Observational details of white dwarfs, neutron stars, pulsars, and black holes are developed.

PHYS 319. Analytical Mechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PHYS 232N. Corequisite: MATH 307. Fundamentals of Newtonian mechanics. Topics include kinematics, dynamics, energy and momentum, central forces and planetary motion, and resonance phenomena.

PHYS 323. Modern Physics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PHYS 232N. Introduction to the wave nature of matter, with applications in materials science, atomic, and nuclear physics. Introduction to relativity, including applications in mechanics and electrodynamics.

PHYS 332. Physics of Music and Musical Reproduction. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: MATH 102M. This course explores the topics of: the nature of sound, vibrations, resonance, the human ear, loudness, pitch, timbre, musical scales, dissonance and consonance, musical instruments, sound recording and reproduction, electronic music, noise, and acoustics.

PHYS 350. Light and Lasers. 3 Credits.
Lecture and demonstrations 3 hours; 3 credits. Prerequisite: PHYS 102N or PHYS 112N or PHYS 232N. An analysis of those concepts of geometrical physical optics needed for the understanding of laser resonators, optical propagation, and radiation detection. A study of laser diodes, molecular, neutral and ion gas lasers, tuneable dye and excimer lasers. Laser applications in medicine, communications, information processing, holography, pollution detection, and material testing and fabrication are stressed.

PHYS 355. Mathematical Methods of Physics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PHYS 232N and MATH 212. This course will provide a strong foundation in the mathematical methods and applications necessary for undergraduate study of physics beyond the introductory level.

PHYS 367. Cooperative Education. 1-3 Credits.
1-3 credits each semester (may be repeated for credit). Prerequisite: approval of the chief departmental advisor and Career Management in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (qualifies as a CAP experience).

PHYS 368. Internship. 1-3 Credits.
1-3 credits. Prerequisite: approval of the chief departmental advisor and Career Management. Available for pass/fail grading only. Academic requirements will be established by the department and will vary with the amount of credit desired. Allows students to gain short duration career-related experience. (qualifies as a CAP experience).

PHYS 406/506. Observational Astronomy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Observational techniques in astronomy with emphasis on constellation identification, celestial movements, and telescopic observation. Individualized night observations are required.

PHYS 408/508. Astronomy for Teachers. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A course in astronomy dealing with stars and stellar systems. Topics will include observational astronomy, the electromagnetic spectrum, relativity, stellar and galactic structures, cosmology, and the search for extraterrestrial intelligence.

PHYS 411. Introduction to Atomic Physics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PHYS 452 and MATH 307. The hydrogen atom, radiative transitions, two-electron systems, many-electron atoms, interaction with external fields, theory of atomic spectra.
PHYS 415/515. Introduction to Nuclear and Particle Physics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PHYS 452. Corequisite: MATH 307. An introduction to the structure of the atomic nucleus, natural and artificial radioactivity, nuclear decay processes and stability of nuclei, nuclear reactions, properties of nuclear forces, and nuclear models. Also, particle phenomenology, experimental techniques and the standard model. Topics include the spectra of leptons, mesons, and baryons; strong, weak, and electromagnetic interactions.

PHYS 416/516. Introduction to Solid State Physics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PHYS 352 and MATH 307. Introduction to solid state physics and materials science, with emphasis placed on the applications of each topic to experimental and analytical techniques. Topics include crystallography, thermal and vibrational properties of crystals and semiconductors, metals and the band theory of solids, superconductivity and the magnetic properties of materials.

PHYS 417/517. Introduction to Particle Accelerator Physics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PHYS 319 or MAE 205, and PHYS 425 or ECE 323. Introduction to the historical development and applications of particle accelerators to the fields of nuclear physics, particle physics, material sciences, and medical therapy and the design and physics of particle accelerators. Aspects of linear accelerators, circular accelerators such as cyclotrons, betatrons, synchrotrons, and storage rings, and recirculated linacs are covered. Topics include linear and non-linear single particle motion in accelerators, collective effects and beam stability in particle accelerators, and the electromagnetic radiation emitted by relativistic particles in accelerators. Up to date descriptions of the most modern particle accelerators will be included, as well as applications such as fixed target nuclear physics arrangements, colliding beam accelerators for high energy physics research, advanced storage ring sources of X-Rays, advanced neutron sources, radiation and radioactive material sources, and cancer therapy devices.

PHYS 420/520. Introductory Computational Physics. 3 Credits.
Lecture 2 hours; Laboratory 2 hours; 3 credits. Prerequisites: PHYS 232N and MATH 212. Introduction of computational methods and visualization techniques for problem solving in physics.

PHYS 425/525. Electromagnetism I. 3 Credits.
Lecture, 3 hours. 3 credits. Corequisite: MATH 312. Prerequisite: PHYS 232N and PHYS 355. A study of the classical theory and phenomena of electricity and magnetism. Topics include the calculation of electric and magnetic fields, magnetic and dielectric properties of matter, and an introduction to Maxwell’s equations.

PHYS 451/551. Theoretical Mechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PHYS 319 and MATH 312. A mathematical study of the concepts of mechanics. Vector calculus methods are used. Topics include mechanics of a system of particles, Lagrangian mechanics, Hamilton’s canonical equations, and motion of a rigid body.

PHYS 452/552. Introduction to Quantum Mechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PHYS 319, PHYS 323, and PHYS 355. Introduction to the physical and mathematical structure of quantum theory, including the historical and experimental origins of the subject. The curriculum includes techniques for solving the Schrodinger wave equation, particularly for the harmonic oscillator and the hydrogen atom.

PHYS 453/553. Electromagnetism II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PHYS 425 or ECE 323 and MATH 312. A course in electrodynamics developed from Maxwell’s Equations. Topics include Maxwell’s Equations, Conservation Laws, Electromagnetic Waves, Potentials and Fields, Radiation, and the interplay of electrodynamics and special relativity.

PHYS 454/554. Thermal and Statistical Physics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PHYS 319 and PHYS 323. A study of the fundamental concepts of thermodynamics, kinetic theory, and statistical mechanics. Topics include the thermodynamics of simple systems, kinetic theory of gases, statistical mechanics of gases and an introduction to quantum statistics.

PHYS 456/556. Intermediate Quantum Mechanics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PHYS 323 and PHYS 452 or permission of the instructor. A study of the experimental basis of quantum mechanics, basic postulates, solution of the wave equation for simple systems, uncertainty relations, potential barriers, wave packets, angular momentum, symmetry properties of wave functions, Pauli exclusion principle, Dirac notation, perturbation theory, and scattering.

PHYS 490W. Senior Thesis I. 1 Credit.
1 credit. Prerequisite: permission of the instructor and a grade of C or better in ENGL 211C or 221C or 231C. Part one of a two-semester option for completing the Senior Thesis. PHYS 490W plus PHYS 490W is equivalent to PHYS 499W.

PHYS 490W. Senior Thesis II. 2 Credits.
2 credits. Prerequisite: PHYS 489W. Part two of a two-semester option for completing the Senior Thesis. PHYS 489W plus PHYS 490W is equivalent to PHYS 499W. (This is a writing intensive course.).

PHYS 491. Special Problems and Research. 1-3 Credits.

PHYS 497/597. Special Problems and Research. 1-3 Credits.
1-3 credits each semester. Prerequisite: senior standing or permission of the instructor. These courses afford the student an opportunity to pursue individual study and research.

PHYS 499W. Senior Thesis. 3 Credits.
3 credits. Prerequisite: grade of C or better in ENGL 211C or 221C or 231C and permission of the instructor. Each student will undertake a research experience under the supervision of a department faculty member. The experience can be of an experimental, theoretical, or calculational type. A final oral and written report are required. The research may be completed on campus or at one of the department affiliated research organizations. (offered fall, spring, summer) (This is a writing intensive course.).

POLS - Political Science

POLITICAL SCIENCE Courses

POLS 100S. Introduction to International Politics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. This course provides a basic introduction to the study of international politics. The first part of the course considers some of the more prominent theoretical perspectives in the discipline, organized around alternative levels of analysis. The course then examines conflict and competition in the global arena and alternative mechanisms for promoting cooperation among nation-states and the more pressing economic, social and ecological problems facing the global community.

POLS 101S. Introduction to American Politics. 3 Credits.
Lecture and discussion 3 hours; 3 credits. This course introduces students to the political processes and the institutions of American politics. The course examines American political culture, gender and minority rights, citizen participation, national institutions, public policy, and foreign and defense policy.

POLS 102S. Introduction to Comparative Government and Politics. 3 Credits.
Lecture 3 hours, 3 credits. This is a comparative course of political systems of established and emerging democracies and non-democratic states.
POLS 126S. Honors: Introduction to American Politics. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. A special honors section of POLS 101S.

POLS 127S. Honors: Introduction to International Politics. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. Special honors section of POLS 100S.

POLS 300. Introduction to Public Policy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: six credits in the social sciences. An introduction to various approaches to policy making followed by a detailed study of several of the most important domestic contemporary issues (housing, transportation, education, welfare, etc.).

POLS 301W. Introduction to Law. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S and a grade of C or better in ENGL 211C or 221C or 231C. Introduces the student to the American legal system through an examination of its institutions, practitioners, and processes. A general survey of constitutional law, administrative law, civil and criminal law, and selected topics of substantive and procedural dimensions of the court system. (This is a writing intensive course.).

POLS 306. Judicial Process and Behavior. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S. In-depth analysis of the American court system with an emphasis on the political behavior of the system’s participants and the procedural dimensions of the court system.

POLS 307. Constitutional Criminal Procedure. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S. Development of criminal procedure under the United States Constitution, with particular emphasis on the Fourth, Fifth, Sixth, Eighth, and Fourteenth Amendments as interpreted by the U.S. Supreme Court.

POLS 308. Research Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: POLS 100S, POLS 101S and POLS 102S or permission of instructor. Covers the design and implementation of quantitative and qualitative methods of inquiry in social sciences.

POLS 309. Race, Culture and Public Policy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours in social sciences. This course examines the public policy problems of various racial groups in America. It analyzes the extent to which the American political system protects and promotes the concerns of African Americans, Hispanics, Native Americans and Asians.

POLS 310. Political Theory. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: POLS 100S and 101S or permission of the instructor. This course is a survey of political theory covering political thinkers such as Plato, Aristotle, St. Thomas Aquinas, Machiavelli, Locke, Mill, Marx and Rawls as well as central concepts like justice, order, liberty, and equality.

POLS 311. Virginia Politics and Government. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S. This course is a survey of Virginia state and local government institutions, functions, processes, and behavior of political actors.

POLS 312. American Political Thought. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S or permission of the instructor. The course considers the origins, evolution, purposes, and relevancy of American political thought. It includes studies in democracy versus elitism; civil disobedience versus revolution; liberalism versus conservatism.

POLS 313. United Nations Seminar. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: junior standing or permission of the instructor. An examination of the United Nations and key issues facing the international community. Includes a three-day visit to United Nations headquarters in New York.

POLS 314. European Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 100S, POLS 102S or permission of the instructor. Analyzes and compares the major political functions and the social, economic, and cultural bases of European states. Also examines the contemporary movement for European economic, military, and political unity.

POLS 316. Politics of Africa. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course is intended to familiarize students with the struggles, advances, and setbacks of African peoples for state-building and socioeconomic development during the colonial and post-independence eras.

POLS 319. Lobbies and Interest Groups. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S. A survey of the lobby movement in America, its history and present status, with particular attention to current lobbies and interest groups and their impact on the national government.

POLS 320. United Nations I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: POLS 100S or GEOG 100S or permission of the instructor. Part One of the history, working and role of the United Nations system, stressing contemporary issues and student participation in UN simulations and conferences.

POLS 321W. United Nations II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: POLS 100S or GEOG 100S and a grade of C or better in ENGL 211C or 221C or 231C; POLS 320 recommended or instructor permission. Part II of the history, working and role of the United Nations system. The course includes management of a major UN simulation, conference attendance and debate on the role of the UN in current global issues. (This is a writing intensive course.).

POLS 322. International Political Economy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: six hours of social science. Introduces students to the primary mechanisms of the global political economy in allocating goods, income, wealth and the means to produce them, with emphasis on the international division of labor.

POLS 324. International Relations Theory. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: six hours of social science including POLS 100S. Comparative study of the various theories that attempt to explain the patterns of interactions among the different members of the global community. Draws on historical and modern cases to explain traditional and alternative theories.

POLS 325W. World Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C, six hours of social science and junior standing. This course is designed for intermediate students who are interested in the theoretical and systematic study of world politics. The course first introduces students to several major theoretical approaches to the study of world politics, and then applies these approaches to a number of major, contemporary issues—ranging from war and peace, conflict and cooperation, development and underdevelopment to global and national interests. (This is a writing intensive course.).

POLS 326W. American Foreign Policy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: POLS 100S, a grade of C or better in ENGL 211C or 221C or 231C, or permission of the instructor. This course presents those factors that go into the making and analyzing of American foreign policy, explores their application in decision making, and seeks to test their utilization against contemporary problems. (This is a writing intensive course.).
POLS 327W. Politics of National Security. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 100S or permission of the instructor and a grade of C or better in ENGL 211C or 221C or 231C.
Examination of issues facing America as it debates the use of international force, including the range of national security choices, defense reform, and the tensions between American resort to warfare and global trends transforming the ability to use violence effectively. (This is a writing intensive course.).

POLS 328. Russian Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 100S or POLS 102S or GEOG 100S or permission of the instructor. Starting with the Soviet communist system, explores Russia’s efforts to establish democracy and the rule of law, to fashion a productive, beneficial market economy, to establish viable relationships with the other former republics of the USSR and to craft advantageous foreign and military policies toward the West, Asia, and the developing countries.

POLS 331. State and Local Government. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: POLS 101S. This course is a survey of state and local government institutions, functions, processes, and behavior of political actors.

POLS 332. Europe in World Affairs. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 100S. Analyzes European politics from World War II to the present. Emphasizes the foreign policies of major European states, including policies towards EU and NATO.

POLS 333. Media and Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S. An examination of the development of the news media and the role of political communication and information in American politics. Analysis of the newsmaking process; media coverage of political campaigns, the President and Congress; the impact of the news media on the American public; and the interaction between public officials and journalists.

POLS 334. Electoral Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours in political science including POLS 101S. A survey of electoral politics and behavior, including the structure of the electoral system, contemporary political campaigning, political partisanship, voting behavior, and role of interest groups in the electoral process.

POLS 335. Environmental Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S. This course examines the evolution of environmentalism in the United States, including the policy-making process, science and the role played by the public and political institutions.

POLS 336. South Asia Since Independence. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 100S or POLS 102S. This is a comparative study of the main political, economic and social developments in the major countries of South Asia. Themes will include democratization, problems of economic development, the role of caste and religion, the causes of intrastate conflict and interstate conflict and the influence of global forces on the region.

POLS 337. Latin American Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours in social science. Examines the evolution of Latin American politics, including early colonial and caudillo rule, populism and radicalism, the emergence of military regimes, and the reestablishment of constitutional democracies. Also considers contemporary economic, social, cultural, and environmental issues which condition state-society relations in the region.

POLS 338W. Politics of East Asia. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: six hours of social science and junior standing or permission of the instructor and a grade of C or better in ENGL 211C or 221C or 231C. This course is designed for intermediate students who are interested in the theoretical and systematic study of world politics. The course first introduces students to several major theoretical approaches to the study of world politics and then applies these approaches to a number of major, contemporary issues--ranging from war and peace, conflict and cooperation, development and underdevelopment to global and national interests. (This is a writing intensive course.).

POLS 350T. Technology and War. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 100S or permission of the instructor. This course examines the fundamental changes and continuities that the evolution of technology has brought to armed conflict. It explores the historical development of technology and warfare, emphasizing the role of cultural, social and political choice shaping the development of new military technologies and affecting how they are used. What is the future of Western assumptions about technologically dominated warfare?

POLS 357. Cooperative Education. 1-3 Credits.
1-12 credits (may be repeated for credit). Prerequisite: approval of the department chair and Career Management, in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Individualized practical experience in public bureaucracies, political groups, administrative agencies or law firms. Group seminars are held periodically under the supervision of faculty. Credits are commensurate with the level of the student’s involvement. (qualifies as a CAP experience).

POLS 358. Internship in Political Science. 1-12 Credits.
1-12 credits. Prerequisite: 9 hours in political science, 3 of which must be in an upper-level course. Admission at discretion of faculty advisor. Available for pass/fail grading only. Individualized practical experience in public bureaucracies, political groups, administrative agencies or law firms. Group seminars are held periodically under the supervision of faculty. Credits are commensurate with the level of the student’s involvement. (qualifies as a CAP experience).

POLS 359. Topics in Political Science. 1-3 Credits.
Lecture, discussion, or seminar 1-3 hours; 1-3 credits each semester. Prerequisites: junior standing and permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses and any additional prerequisites will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

POLS 360. Congress. 3 Credits.
Lecture, discussion, or seminar 1-3 hours; 1-3 credits each semester. Prerequisites: junior standing and permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses and any additional prerequisites will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

POLS 361. Global Environmental Policy. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: six credits in political science. This course analyzes the causes, severity, potential consequences, and proposed solutions regarding global ecological issues with special attention to the scientific debate and the political and policy process. It examines environmental policies of national governments, regional/international organizations, and global conferences.
POL 403/503. First Amendment Freedoms. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S or permission of the instructor. The course deals with the development and practice of conflicting judicial and legal theories concerning our substantive guaranties. Students are asked to act as advocates in developing and substantiating theories of their own.

POL 407. American Presidency. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S, or permission of the instructor. The course covers the development of presidential power and activity, the contemporary operations of the Presidency, and the problems which may confront the institution in the future.

POL 408. American Constitutional Law and Politics I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S. An examination of the vexatious line between the rights of individuals and those of the state in the American democracy, focusing on such major issues as freedom of expression and worship; freedom of the press; separation of church and state; privacy; and racial and gender discrimination.

POL 409. American Constitutional Law and Politics II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S. An examination of separation of powers, federalism and the democratic process as reflected by Supreme Court decisions. Also, the Supreme Court as a political institution.

POL 410/510. African American Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: 6 hours in social science and junior standing. This course will examine the political development of Black people in the United States by focusing on the relationship and processes of the American political system. In addition, the political dynamics of Black political thought, the Civil Rights Movement, and Black protest politics will also be analyzed.

POL 412/512. Politics of the Civil Rights Movement. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: six hours in social science and junior standing. Examines the political activities which resulted in the passage of the nation’s second Civil Rights policy, the 1960 and 1964 Civil Rights Acts, the 1965 Voting Rights Act and the 1968 Fair Housing Act. The course will analyze the underpinnings, leadership, and political strategies of the Civil Rights Movement.

POL 414/514. Politics of Education. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. The question of power, often ignored by education policy analysts and researchers, is a principal focus of this seminar. Issues ranging from the role of education in political socialization and the politics of affirmative action and equal opportunity are examined.

POL 415/515. Women and Politics in America. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S or permission of the instructor. Examines women’s place in political theory and the practice of politics in the United States. A major focus is to trace the development of women’s political rights, the impact of public policy on the lives of American women and to see how women influence and participate in the political process.

POL 418. Quantitative Methods. 3 Credits.
Lecture 3 hours; 3 credits. Pre- or corequisite: STAT 130M with a grade of C- or better. Prerequisites: POLS 101S; POLS 308 with a grade of C- or better. A survey of and practicum in the basic techniques of quantitative research, including the logic of empirical research, the identification of data sources, and the use of appropriate statistical techniques.

POL 419. Jurisprudence. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 408 or 409 or permission of the instructor. An examination of the history of legal thought and developments of natural law, as well as an in-depth analysis of legal positivism and realism. Particular attention is paid to American legal philosophy.

POL 420W/520. Southern Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 101S, a grade of C or better in ENGL 211C or 221C or 231C, or permission of the instructor. This seminar focuses on the politics of the American South from the 1940s to the present. Emphasis is on introducing students to contrasting explanations and analysis about the politics of the American South. (This is a writing intensive course.).

POL 421/521. International Law. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours in political science or permission of the instructor. POLS 325W is recommended. Surveys major areas of public international law (e.g., laws of warfare, law of the sea, conflict resolution, etc.). Emphasizes the relationship between international law and international politics.

POL 424/524. International Organization. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 9 hours in international courses, including POLS 100S and 325W, or permission of instructor. Corequisite: POLS 313. Course provides a basis for understanding the role and importance of international organizations in contemporary international relations. Focuses on development and history of global organizations, with particular emphasis on the United Nations, and regional and functional organizations.

POL 434/534. Political Participation in the United States. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: six semester hours of political science. An examination of current theories and research on political behavior, conventional and unconventional modes of political participation, and the impact of participation on the political system.

POL 435/535. Chinese Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: POLS 100S, 102S, or permission of the instructor. A study of origins of the Chinese revolution; development and functions of the Chinese Communist Party; government institutions; the defense establishment; evolution of foreign policy; and post-Mao political and economic reforms. (cross listed with ASIA 435).

POL 436/536. Japanese Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: POLS 100S, 102, or permission of the instructor. A study of Japan’s historical political development and social patterns; government institutions; problems of the constitution; and foreign and defense policy.

POL 437/537. International Relations in East Asia. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 100S. A study of contemporary issues (political, economic, and strategic) in the East Asia area; the interactions of China, Japan, the United States, and the former Soviet republics in East Asia.

POL 442/542. Twentieth Century Dictatorships. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: six hours of social science, junior standing, or permission of the instructor. A study of the Fascist, Nazi, Stalin and Mao regimes and the forces that brought them to power and sustained them, including a study of the impact of their policies on their people and neighboring states.

POL 445. Globalization: Dynamics and Implications. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: 3 hours of economics and 6 hours of political science. Explores the essential characteristics of globalization and its implications for social relations and existing institutions.
POLS 451. African Americans and Foreign Affairs. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course focuses on the political behavior of African Americans in foreign affairs. It illuminates the nexus between African American international and domestic participation. Specifically, African American foreign affairs participation is explored with an emphasis on how African Americans have participated. The eras of slavery, colonialism, and the rise of European and American hegemony in the Americas, Africa, and the African Diaspora and the rest of the developing world constitute the critical time frame for the course.

POLS 458. Weapons of Mass Destruction in Global Security. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: POLS 100S. Since the end of the Cold War, weapons of mass destruction have emerged as one of the most dangerous and contentious issues in International affairs. The course examines how they are made, how they proliferate, and how they are controlled.

POLS 461. Seminar in European Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: POLS 100S or 102, and 314 or 332. This course focuses on one specific European country such as France, Germany, the United Kingdom, etc. Examination of trends and events which most influenced the evolution of domestic politics and foreign relations from World War II to the present.

POLS 462. Ethnic Conflict in the New Global Order. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: six hours in social sciences. Ethnically based conflict is presently a pervasive worldwide phenomenon. This course examines internal and external factors causing ethnic conflicts and mechanisms for resolving or mitigating such conflicts.

POLS 466/566. Politics of the Middle East. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. An analysis of the political processes throughout the region and in selected nations of the Middle East. Topics to be discussed include inter-Arab relations, the Arab-Israeli conflict, the Iran-Iraq rivalry and foreign power involvement in the Middle East.

POLS 470. African Americans and Foreign Affairs. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: Junior standing or permission of the instructor. This course focuses on race, ethnicity, and the role and influence of African Americans in international affairs and American foreign policy making. It investigates the activities of African Americans in the international arena. The emphasis is on how African Americans have participated and the results of that participation from the era of slavery to Barack Obama.

POLS 480W. Senior Seminar in International Studies. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: A grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C, senior standing in the BAIS degree program or permission of the instructor and the director of the BAIS program. This seminar examines political convergence in the world today, focusing on the role that intergovernmental and non-governmental institutions play in structuring transnational relations. Special focus is placed on the central challenges currently facing the global community, including reducing military conflict, defending universal human rights, promoting economic development, enhancing ethnic and gender equity, and preserving natural environments. (This is a writing intensive course.)

POLS 481. Seminar in American Politics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing in political science. The advanced study of selected topics in American politics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly.

POLS 493. Great Decisions. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: POLS 100S or 101S. An examination and discussion of critical world issues based upon the Foreign Policy Association’s Great Decision Series.

POLS 495/595. Topics in Political Science. 1-3 Credits.
Lecture, discussion, or seminar 1-3 hours; 1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly.

POLS 496/596. Topics in Political Science. 3 Credits.
Lecture, discussion, or seminar 1-3 hours; 1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly.

POLS 497/597. Independent Research in Political Science. 1-3 Credits.
1-3 credits. Prerequisite: senior standing or permission of the instructor. Independent research in political science under the supervision of a faculty member. May be repeated up to 6 credit hours.

POLS 498. Tutorial Work-Special Topics. 1-3 Credits.

PRTG - Portuguese

PORTUGUESE Courses

PRTG 101F. Beginning Portuguese I. 3 Credits.
Lecture 3 hours; 3 credits each semester. 101F or permission of the instructor is prerequisite to 102F. Introduction to the four skills (listening, speaking, reading, writing) of elementary Portuguese. 102F will build and expand on the linguistic proficiency in all four skills.

PRTG 102F. Beginning Portuguese II. 3 Credits.
Lecture 3 hours; 3 credits each semester. 101F or permission of the instructor is prerequisite to 102F. Introduction to the four skills (listening, speaking, reading, writing) of elementary Portuguese. 102F will build and expand on the linguistic proficiency in all four skills.

PRTG 295. Topics in Portuguese. 1-3 Credits.
1-3 credits. A study of selected topics for elective credit. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

PRTS – Parks, Recreation and Tourism Studies

PARKS, RECREATION/TOURISM STUDIES Courses

PRTS 200. Backpacking. 2 Credits.
Lecture 2 hours; 2 credits. Students will finish this course with the ability to demonstrate competency in and teach fundamental camping skills, including backpacking, cooking, travel techniques, Leave No Trace skills, and associated safety skills. Additionally, students will demonstrate an increased understanding of issues related to the administration of federally managed public lands, such as those used in this class, as they relate to recreation and other uses. An overnight field trip is required.
PRTS 201. Recreation Programming and Leadership. 3 Credits. Lecture and participation 3 hours; 3 credits. Prerequisite: sophomore standing. This course is designed to help students understand and develop their activity leadership and programming skills. Theories and techniques in relation to community, therapeutic, commercial, and outdoor recreation are explored. The course will examine the basic principles of recreation programming and leadership including needs assessment, public relations, and evaluation.

PRTS 211. Foundations of Parks, Recreation and Tourism. 3 Credits. Lecture 3 hours; 3 credits. An examination of the historical and philosophical bases of the recreation movement in the U.S. To include a review of theories of play and an assessment of the social, economic and cultural determinants of nonwork-time behavioral patterns. The relationship of leisure to education and the involvement of the government at federal, state and local levels will be considered.

PRTS 251. Introduction to Park and Recreation Management. 3 Credits. Lecture, 3 hours; 3 credits. This introductory course addresses all of the essential topics that professionals within park and recreation management must know, including: program planning and evaluation, decision making, facility management, human resources, marketing, budgeting and financial planning, and policy making.

PRTS 261. Introduction to Therapeutic Recreation. 3 Credits. Lecture 3 hours; 3 credits. This course is designed to present an overview of therapeutic recreation as a profession. Philosophy, historical development and standards of practice will be discussed. Students will develop an understanding of professional training, credentialing, and the recreation profession's responsibility to provide recreational opportunities for all individuals. Implementation of therapeutic recreation services for a wide variety of special populations will be explored.

PRTS 271. Introduction to Tourism Management. 3 Credits. Lecture and participation 3 hours; 3 credits. This course is designed to present an introduction to the development of the tourism (airline, cruise, rail, and hotel) industry. Emphasis is placed on historical and technological development, the different components of the industry, and career opportunities in tourism.

PRTS 285. Diversity in Parks, Recreation and Tourism Studies. 3 Credits. Lecture 3 hours; 3 credits. This course is designed as an introduction to the responsibilities of public, private, and commercial leisure service delivery systems in relation to their diverse constituencies. The objective of the course is to increase students' understanding of ethnic/racial groups, gays and lesbians, people with disabilities, the elderly, and other diverse groups in park/recreation/tourism settings.

PRTS 301. Youth Development through Recreation. 4 Credits. Lecture 3 hours; lab 1.5 hours; additional service learning hours; 4 credits. Prerequisite: junior standing. This class will use the Benefits-Based Programming (BBP) Model to construct an experience that targets the social-emotional needs of youth. Through this service-learning based class students will explore research, theory, practice, and techniques of structuring recreation experiences for youth.

PRTS 302. Facilitating the Recreation Experience. 4 Credits. Lecture 3 hours; laboratory 1.5 hours; additional service learning hours; 4 credits. Prerequisite: PRTS 301. This course examines research, theory, practice, and technique of structuring recreation experiences to facilitate predetermined outcomes. This course includes the examination of theories of learning, motivation, emotion, socialization, human development, and group dynamics as related to the facilitation of recreation experiences.

PRTS 321. Recreation Programming and Leadership. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: Junior standing or permission of the instructor. This course examines personnel management principles, practices, and policies in the public, private, and commercial recreation delivery systems. The course explores general personnel management as well as personnel management practices unique to the park, recreation, and tourism industry.

PRTS 366. Internship Seminar. 1 Credit. Lecture and discussion 1 hour; 1 credit. Prerequisite: junior standing or permission of the instructor. Agency field placement is required of all students in Park, Recreation and Tourism Studies. Seminar will include resume and cover letter writing skills, internship requirements, agency placement referrals, and interviewing techniques. (cross-listed with SMGT 366) (qualifies as a CAP experience).

PRTS 368. Internship. 12 Credits. 12 credits. Prerequisites: completion of all recreation emphasis and core courses including PRTS 366, plus senior standing. Supervised agency placement is required of all students in the Park, Recreation and Tourism Studies program. Placement must fulfill all professionally appropriate certification standards. Minimum of 400 clock hours. (qualifies as a CAP experience).

PRTS 369. Practicum in Parks, Recreation and Tourism Studies. 3-6 Credits. 3-6 credits. Prerequisite: junior standing. Selected field-based experiences in a park, recreation and tourism service setting. Minimum of 200 clock hours. (qualifies as a CAP experience).

PRTS 405. Outdoor Recreation. 3 Credits. Lecture 3 hours. 3 credits. Prerequisite: junior standing or permission of the instructor. This course is designed to increase knowledge, skills, techniques, policies and procedures related to selected outdoor recreation activities. Students are required to participate in outdoor recreation experiences through the Outdoor Adventure Center.

PRTS 406. Outdoor Leadership and Environmental Education. 3 Credits. Lecture, 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course is designed to examine the history, development, and trends in outdoor leadership and environmental education, including the development of curriculum concepts that foster an environmentally literate citizenry. Leadership and teaching techniques for successful utilization of the out-of-doors as a classroom will be explored.

PRTS 410. Clinical Aspects of Therapeutic Recreation. 3 Credits. Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. The course is designed to provide students with an understanding of treatment centered therapeutic recreation program design. The role of the recreation therapist will be explored. Topics will include patient assessment, activity analysis, documentation, treatment plans and program development.

PRTS 420. Intervention Techniques in Therapeutic Recreation. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. Course is designed to introduce students to various disabling conditions that receive therapeutic recreation services. Therapeutic recreation intervention techniques used while implementing a program will be discussed. Emphasis will be given to the rehabilitative and habilitative goals of intervention techniques.

PRTS 425. Financial and Risk Management in Recreation. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. An examination of the principles and practices of facility management in recreation. Focus is geared toward the planning and design of indoor and outdoor recreation facilities as well as how to review and develop effective financial plans.
PRTS 430. Assessment and Documentation in Therapeutic Recreation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PRTS 261, junior standing or permission of instructor. This course will provide students with a detailed examination of assessment and documentation procedures used in therapeutic recreation. Course focus includes the assessment and documentation process, including instrument design, selection, and implementation. Use of assessment data in treatment planning and evaluation will also be examined.

PRTS 433. Community Recreation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. This course is designed to introduce students to the various facets of municipal and county parks and recreation service provision. It will include the broad scope of parks and recreation services and the impact on a community.

PRTS 441/541. Marketing of Hospitality Services. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course is designed to introduce students to the important aspects of hospitality/tourism operations, including human resources, guest services, psychographics, demographics, marketing and the assessment of industry needs.

PRTS 450. Disabilities and Aging in Therapeutic Recreation. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course is designed to introduce students to a variety of disabilities and the aging process. The course will examine disabilities with a specific emphasis placed on determining the treatment and recreational needs of mature adults. Projected trends and issues related to disabilities and aging will be discussed.

PRTS 460. Managing Therapeutic Recreation Services, 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. This course is designed to address issues related to managing therapeutic recreation services. Topics discussed include reimbursement of services, staff development, written plan of operation, marketing of services, ethical behavior, and service delivery management.

PRTS 461/561. The Tourism and Hospitality Industry, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course explores tourism from a social perspective. The focus of the course will be on economic and social dimensions of tourism, tourism development strategies, and current research in hospitality from national and international case studies.

PRTS 475/575. Tourism and Cultural Heritage Management, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course examines the principles and practices of planning, marketing, and managing cultural tourism. Assessment, development, and maintenance of cultural tourism products are explored.

PRTS 482W. Applied Research and Evaluation in Recreation, 4 Credits.
Lecture 3 hours; lab 2 hours. 4 credits. Prerequisite: A grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C. The purpose of this course is to give students basic knowledge in research and evaluation within the content of parks, recreation and tourism studies. Specific focus is placed on integrating basic research, program evaluation, and statistical analysis in an applied manner within the field. Topics include program interventions, program evaluations, and survey research. (This is a writing intensive course.).

PRTS 490. Convention and Meeting Services, 3 Credits.
Lecture 3 hours; 3 Credits. Prerequisite: Junior standing. This course introduces students to convention and meeting service management. Content includes both convention sales and convention services. Main topics include: planning, organization, and implementation of a meeting, convention or tradeshow. Students can earn a certificate through the American Hotel and Lodging Association Education Institute after completion of the course.

PRTS 491. Festival and Event Management, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course will introduce students to the growing profession of events management. Specific focus will be on knowledge that encompasses the management of public assembly for the purpose of celebration, education, marketing and reunions.

PRTS 495/595. Topics, 1-3 Credits.
1-3 credits. Prerequisite: junior standing. This course provides an opportunity for in-depth study of selected topics in the variety of areas comprising parks, recreation and tourism studies.

PRTS 496. Topics, 1-3 Credits.
Laboratory. 1-3 credits. Prerequisite: junior standing. This course provides an opportunity for in-depth study of selected topics in the variety of areas comprising parks, recreation and tourism studies.

PRTS 497. Independent Study, 1-3 Credits.
3 credits. Prerequisite: junior standing or permission of the instructor. Individualized instruction to include research, specialized studies, or other scholarly writing.

PSYC - Psychology

PSYCHOLOGY Courses

PSYC 201S. Introduction to Psychology, 3 Credits.
Lecture 3 hours; 3 credits. Introduction to the scientific study of psychology. The student is introduced to fundamental terms, facts, and concepts dealing with motivation, learning, perception, intelligence, measurement, personality structure, behavior disorders, psychological development, and social processes.

PSYC 203S. Lifespan Development, 3 Credits.
Lecture 3 hours; 3 credits. A broad contemporary view of the processes of development. The influences of biological and environmental factors in the development of personality and cognitive functioning are explored.

PSYC 226S. Honors: Introduction to Psychology, 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. A special honors section of PSYC 201S.

PSYC 227S. Honors: Lifespan Development, 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. A special honors section of PSYC 203S.

PSYC 295. Topics in Psychology, 3 Credits.
Lecture and discussion 3 hours; 3 credits. A study of selected topics designed for nonmajors or for elective credit within a major.

PSYC 296. Topics in Psychology, 3 Credits.
Lecture and discussion 3 hours; 3 credits. A study of selected topics designed for nonmajors or for elective credit within a major.
PSYC 303. Industrial/Organizational Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S or permission of instructor. An application of psychological principles and research to human behavior in work settings. Among the topics covered are personnel selection, training, and evaluation; employee motivation and job satisfaction; and organizational leadership and theory.

PSYC 304. Social Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S. The behavior of the individual as affected by other people and groups. Interpersonal attraction, attitude change, group dynamics, and the application of psychology to social problems are among the topics covered.

PSYC 306. Health Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S or permission of the instructor. Course examines how psychological states (e.g., anxiety, stress) influence physical health. The course also examines how physical states (e.g., illness, pain, injury) influence psychological health. Topics include the impact of stress on health and proneness to illness; coping with illness, injury and trauma; and the role of health-enhancing behaviors in maintaining physical health.

PSYC 308. Positive Psychology. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisite: PSYC 201S. This course examines and discusses psychological theories and research that focus on human strengths and potential. Factors that contribute to happiness and a fulfilling life are emphasized. Lectures, self-assessments and experiential exercises are used to understand how to cultivate a meaningful life.

PSYC 311. Psychology of Criminal Behavior. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S. The study of crime from a psychological perspective. Topics include theories of criminal behavior, violent and non-violent crime, sexual offenses, insanity, addiction, white collar crime, and other criminal behaviors.

PSYC 317. Quantitative Methods. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Prerequisite: PSYC 201S and STAT 130M or higher general education math requirement with a final grade of C (2.0) or higher. The application of statistical principles to psychological research problems, including an introduction to the principles of experimental design.

PSYC 318W. Research Methods in Psychology. 4 Credits.
Lecture 3 hours; laboratory 2 hours; 4 credits. Prerequisite: A grade of C or better in ENGL 211C or 221C or 231C and PSYC 317 with at least a grade of C (2.0). An examination of the principles of psychological research. Experimental design and interpretation are stressed. The student learns to locate and read technical articles and to report his or her own research in the style of the American Psychological Association. (This is a writing intensive course.).

PSYC 321. Psychology of the Exceptional Child. 2,3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S or PSYC 203S. A study of the psychological development of the child with physical, emotional, social, intellectual, and educational disabilities.

PSYC 322. The Psychology of Adolescence. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S or PSYC 203S. A survey of the processes of development during adolescence. Covers topics such as the influences of biological, emotional, social, and cognitive factors on personality development and adjustment of the adolescent.

PSYC 323. Psychology of Women. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S. An examination of the major determinants of the psychology of women from theoretical, biological, interpersonal and sociocultural perspectives.

PSYC 325. Drugs and Behavior. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S or permission of the instructor. An examination of the effects of psychoactive drugs on behavior and the factors involved in drug use. Current research literature is discussed.

PSYC 334. Social Development. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 203S. This course provides students with theories and research on the development of social processes from birth to adolescence. Major theories of social development and research are examined.

PSYC 343. Personnel Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 303. The application of psychological principles and research to the development and improvement of personnel subsystems in business and industry. Emphasis is placed on the assessment, selection and training of workers and manager. While not required, PSYC 317 is recommended.

PSYC 344. Human Factors. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 318W. The application and evaluation of psychological principles and research relating human behavior to the design of tools, technology, and the work environment.

PSYC 345. Organizational Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 303. This course emphasizes the study of human behavior in organizations. Topics include leadership, motivation, group behavior, communications, power and politics, and organization change.

PSYC 351. Child Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 203S or 201S. The development of children within their diverse environments is examined. A focus is on the methods used to understand how children experience their world.

PSYC 352. Cognitive Development During Childhood. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 203S. The course will acquaint the student with theories and research on the development of cognitive processes from birth to adolescence. Major theories of cognitive development and research on the various cognitive processes will be reviewed.

PSYC 353. The Psychology of Adulthood and Aging. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PSYC 201S, 203S, or 304. The study of adults with emphasis on aging. Current theories and research as well as the characteristics, life styles, and activities of adulthood and aging will be discussed.

PSYC 363. Psychology of Sex. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S or permission of the instructor. A study of critical issues in human sexuality; gender and sexual identity, sexual arousal and erotic behavior, relationship development, and sexual dysfunction and deviation disorders.

PSYC 367. Cooperative Education. 1-3 Credits.
3 credits (may be repeated for credit). Prerequisite: approval of the department and Career Management in accordance with the policy for granting credit for Cooperative Education Programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (qualifies as a CAP experience).
PSYC 412. Psychological Tests. 3 Credits.
3 credits. For ODU psychology majors only. Prerequisites: PSYC 317, PSYC 318W (pre- or corequisite) and permission of the instructor. Students engage in academically relevant work related activities in non-clinical settings. Available for pass/fail grading only. Students should work with the Career Management Center to identify their placement in the semester prior to enrollment. A maximum of 6 credits of PSYC 368 and/or 369 can be counted towards the major in Psychology. (qualifies as a CAP experience).

PSYC 413. Sensation and Perception. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S. An analysis of the processes by which humans obtain information about the environment through the eyes, ears, and other sensory systems.

PSYC 414. Principles of Learning. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S. Course focuses on basic learning principles and processes; classical conditioning, instrumental conditioning, discrimination, attention, appetitive and aversive conditioning.

PSYC 417. Advanced Statistics and Computer Applications. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PSYC 317 and PSYC 318W, or permission of the instructor. The course covers advanced statistical methods and computer applications that build on knowledge and skills acquired in PSYC 317 and PSYC 318W.

PSYC 420. Cross-Cultural Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. A wide variety of psychological research and theory relevant to human behavior in different cultures is examined and the impact of culture on human behavior is discussed. The course examines cross-cultural research conducted by scholars around the world. In addition to factual knowledge, emphasis is placed on critical thinking and problem solving.

PSYC 424. Physiological Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S. An investigation of the biological bases of behavior including mental illness, motivation, learning, memory and language.

PSYC 430. Animal Behavior. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S. This course explores the environmental and social factors that affect the behavior of animals. Special attention is given to the mechanisms of behavior and the evolutionary context of behavior.

PSYC 431. Community Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S or permission of the instructor. This course focuses on behavioral prevention and intervention efforts targeting social problems. The goal is to understand how to design and evaluate such programs. Topics vary, but include an emphasis on public health and safety issues. Individual and group behavior change, and cultural design, are each considered when targeting problems.

PSYC 440. Psychological Tests. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: PSYC 201S and PSYC 201S or permission of the instructor. This course is designed for students interested in careers in psychological assessment and testing. Emphasis is placed on understanding the principles and methods of psychological testing.

PSYC 442. Psychological Tests. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S. An examination of the history, theory and applications of psychological testing.

PSYC 446. Drug Abuse and Dependence. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PSYC 201S. This course offers an intensive review and clinical analysis of the issues and problems associated with addictive behavior with an emphasis on alcohol abuse and dependency.

PSYC 487. Honors Program in Psychology. 3 Credits.
For ODU psychology majors only; 3 credits each semester. Prerequisites: PSYC 497; cumulative GPA of 3.25 or higher and psychology GPA of 3.50 or higher; permission of the departmental Honors Program chair. With psychology faculty supervision, student develops an honors thesis proposal (in PSYC 487) for approval by the Psychology Honors Program committee. Student conducts the supervised honors research and documents it in a thesis (in PSYC 488) for approval by the Psychology Honors Program committee. See section on Honors Program in Psychology in this Catalog.
REL 350. Judaism, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: three semester hours in philosophy or permission of the instructor. A study of the Jewish tradition, including its primary texts, historical development, intellectual tenets, and contributions to human culture. Specific attention will be given to Judaism as a way of life.

REL 351. Christianity, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: three semester hours in philosophy or permission of the instructor. A study of the Christian tradition, including its primary texts, historical development, intellectual tenets, and contributions to human culture. Specific attention will be given to Christianity as a way of life.

REL 352. Islam, 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: three semester hours in philosophy or permission of the instructor. A study of the Islamic tradition, including its primary texts, historical development, intellectual tenets, and contributions to human culture. Specific attention will be given to Islam as a way of life.

REL 395. Topics in Religious Studies, 3 Credits.
3 credits each semester. Prerequisite: 3 hours in PHIL or permission of the instructor. The advanced study of selected topics designed to permit qualified students to work on subjects that, because of their specialized nature, may not be taught regularly. These courses will appear in the course schedule booklet and will be more fully described in information distributed to all academic advisors.

REL 396. Topics in Religious Studies, 3 Credits.
REL 495/595. Topics in Religious Studies, 1-3 Credits.
3 credits each semester. Prerequisite: 3 hours in PHIL or permission of the instructor. The advanced study of selected topics designed to permit qualified students to work on subjects that, because of their specialized nature, may not be taught regularly. These courses will appear in the course schedule booklet and will be more fully described in information distributed to all academic advisors.

REL 496/596. Topics in Religious Studies, 1-3 Credits.
REL 499. Supervised Research, 3 Credits.
3 credits each semester. Prerequisite: 3 hours in PHIL or permission of the instructor. The advanced study of selected topics designed to permit qualified students to work on subjects that, because of their specialized nature, may not be taught regularly. These courses will appear in the course schedule booklet and will be more fully described in information distributed to all academic advisors.

REL 497/597. Tutorial Work in Religious Studies, 1-3 Credits.
REL 498/598. Topics in Religious Studies, 1-3 Credits.

RUS - Russian

RUSSIAN Courses

RUS 101F. Beginning Russian I, 3 Credits.
101F is prerequisite to 102F. Lecture 3 hours; 3 credits each semester. Aural comprehension, oral drill and discussion of grammar principles, written exercises, and reading assignments.

RUS 102F. Beginning Russian II, 3 Credits.
101F is prerequisite to 102F. Lecture 3 hours; 3 credits each semester. Aural comprehension, oral drill and discussion of grammar principles, written exercises, and reading assignments.

RUS 195. Topics in Russian, 1-3 Credits.
1-3 credits each semester. Prerequisite: none. A study of selected topics designed as electives. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.
SCI - Sciences

SCIENCES Courses

SCI 101. Introduction to Sciences. 1 Credit.
1 credit. Presents the relationship between majors in the College of Sciences and the student’s career goals for students planning to major in a science. Provides an orientation to the University emphasizing the learning skills needed for science majors.

SCI 195. Topics. 1-3 Credits.

SCI 302T. The Evolution of Modern Science. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: HIST 100H, HIST 101H, HIST 102H, HIST 103H, HIST 104H, or HIST 105H. This course outlines the history of science from Aristotle to the present. Scientific progress has always been coupled with human progress and subject to the politics and culture of the times. Scientists, in most instances, have been in the mainstream of society. But, because of their curiosity and innovation, scientists have often clashed with the prevailing culture. (Cross-listed with HIST 386T).

SCI 395. Special Topics. 3 Credits.
0-3 credits.

SCI 495. Topics. 1-3 Credits.
1-3 credits.

SEPS - Stem Educ & Prof Studies

STEM EDUC PROF STUDIES Courses

SEPS 100. Sales Techniques. 3 Credits.
Lecture 3 hours; 3 credits. This is an introductory course that emphasizes the concept of determining customer needs, wants, and desires and matching them to products and services for a long-term sales relationship. The course is not intended for students pursuing majors in the College of Business and Public Administration.

SEPS 102. Advertising and Promotion. 3 Credits.
Lecture 3 hours; 3 credits. This is an introductory course designed to teach the fundamental product and service promotion processes of planning and producing advertising and promotion campaigns. The course is not intended for students pursuing majors in the College of Business and Public Administration.

SEPS 208. Buying. 3 Credits.
Lecture 3 hours; 3 credits. Designed for marketing education and fashion students, the course explores the buyer’s responsibilities, customer wants and needs, vendors and merchandising sources, buying plans, merchandise control and use of technology in merchandising. Not intended for students pursuing majors in the College of Business and Public Administration.

SEPS 220. The Fashion Industry. 3 Credits.
Lecture 3 hours; 3 credits. Course is designed for marketing education and fashion students. It covers fashion as a force which alters patterns of change and growth in the fashion industry to include designers, manufacturers, buyers, retailers, and customers. Students explore the latest trends in style and materials.

SEPS 234. Survey of Dress and Costume. 3 Credits.
Lecture 3 hours; 3 credits. Whether high fashion or low, glitz or grunge, from revolutionary politics to the new machine age, war and depression to growth and prosperity, fashion dress and costume goes hand-in-hand with history. This course examines the evolution of fashion and costume and finds innovation at every turn.

SEPS 297. Observation and Participation. 1 Credit.
1 credit. Prerequisite: sophomore standing. Students observe middle and/or high school classes for 30 clock hours. Assist teachers and students in practical settings. Relate principles and theories of education and specialty content to actual practice in the classrooms and schools. Attend seminars related to contemporary school practices. (qualifies as a CAP experience).

SEPS 302. Workforce Supervision. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. Explores the skills and knowledge required of successful supervisors: leading, motivating, setting goals, delegating, budgeting, interviewing, negotiating, counseling, coaching, conducting meetings, and handling grievances.

SEPS 303. Social Aspects of Clothing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of instructor. A study of the social meaning of appearance, how it is culturally defined and producing advertising and promotion campaigns. The fundamental product and service promotion processes of planning and producing advertising and promotion campaigns. Not intended for students pursuing majors in the College of Business and Public Administration.

SEPS 312. Technical Illustration and Design for Fashion. 3 Credits.
Lecture 1 hour; laboratory 5 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. Students learn technical illustration and design principles and techniques that are required of professionals in the fashion industry. Activities include traditional processes and computer aided design (CAD) techniques.
SEPS 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Career Management, in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and the Cooperative Education program prior to the semester in which the work experience is to take place. (qualifies as a CAP experience).

SEPS 389. Education and Training of Adults. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. An in-depth overview of education and training of adults. Attention is given to adult learning theory and strategies for facilitating the learning process. Aspects of the course will focus on helping students understand and visualize jobs and careers in adult education and training.

SEPS 395. Topics in Occupational Education. 1-3 Credits.
1-3 credits. Prerequisite: permission of the department. The department offers selected topics designed to permit small groups of qualified students to work on subjects of mutual interest.

SEPS 400/500. Instructional Systems Development. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Students learn how to design and develop classroom instructional materials including career and technical education and training curricula and programs for youths and adults. Skills in this area include the selection and use of materials, including media and computers and evaluation of pupil performance. Training specialist students learn to develop instructional materials using the instructional systems design process. Career and technical education students learn to plan instruction, to implement competency-based and standards-based education, and to modify and use the Virginia career and technical education curriculum guides.

SEPS 401/501. Foundations of Career and Technical Education. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course is designed to teach career and technical education majors to plan, develop, and administer a comprehensive program of career and technical education for high school students and adults. Students also develop an understanding of the historical and sociological foundations underlying the role, development and organization of public education in the United States.

SEPS 402/502. Instructional Methods in Occupational Studies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SEPS 400. Designed to develop a student’s ability to use basic instructional techniques and methods applicable to career and technical education, and adults in business, government, and industrial organizations. It involves videotaped micro-teaching demonstrations and presentations.

SEPS 403/503. Methods in Career and Technical Education. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. A practical study and application of recommended methods of teaching career and technical education to high school students. Video-taped micro-teaching demonstrations are included. The course should be taken the semester prior to student teaching.

SEPS 405. Directed Work Experience. 3 Credits.
3 credits. Prerequisite: senior standing. Student must be employed the summer prior to his/her senior year in an emphasis-related job approved by the instructor. The student work is supervised by a job supervisor and the course instructor in a cooperative effort. Must complete a job package that describes all aspects of the organization. (qualifies as a CAP experience).

SEPS 408/508. Advanced Classroom Issues and Practices in Career and Technical Education. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: admission to an approved teacher education program. An overview of classroom issues and practices for prospective career and technical teachers. The course covers classroom management and safety, communication processes, reading in the content area and child abuse and neglect recognition and intervention. Students learn the legal requirements and alternative teaching strategies for serving students with special needs. Students visit schools for a 30-hour student observation. PRAXIS II and VCLA are course completion requirements.

SEPS 409/509. Fashion Market Trip. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SEPS 208. This is the study of planning and conducting a fashion buying trip to one of the major fashion markets in the United States like the Las Vegas Magic Trade Show. The students envision themselves as buyers in action and learn how trend forecasting and creative presentations help market fashion products and services to trade customers and consumers.

SEPS 410/510. The Foreign Fashion Market Trip. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SEPS 208. Students plan and conduct a fashion buying trip to a foreign market in Europe or Asia, and learn how to buy merchandise in the global marketplace. The course requires students to go on the trip as well as attend the pre- and post-trip classes.

SEPS 411/511. Fashion Show Production. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SEPS 220. Students plan and produce a fashion show. They examine each behind-the-scenes step from concept to execution as they organize and stage a show that is profitable, entertaining, and aesthetically pleasing.

SEPS 415. Advanced Merchandising. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SEPS 208 and ACCT 201. This course is designed for marketing education and fashion students. It includes advanced merchandising math concepts used in the merchandising industry. Topics include pricing and re-pricing merchandise, creating and analyzing advanced merchandising math concepts used in the merchandising industry. The course is designed for marketing education and fashion students. It includes advanced merchandising math concepts used in the merchandising industry. Topics include pricing and re-pricing merchandise, creating and analyzing six-month plans, maintaining inventory control, and solving problems that are typically experienced in the merchandising field.

SEPS 417. Exploring Technology in Modern Industry. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SEPS 251D and junior standing or permission of the instructor. A course designed to explore technological systems and new developments in technology education. Emphasis is on middle schools.

SEPS 422. Fashion Product Development. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SEPS 208 and 220. Students work step-by-step through the preproduction processes of apparel product development: planning, forecasting, fabricating, developing silhouettes and specifications, pricing, and sourcing. The course demonstrates how these processes must be coordinated to get the right product to retail when consumers want it and at a price they are willing to pay.

SEPS 423/523. Visual Merchandising and Display. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course is designed to introduce students to the best practices and effective strategies in visual merchandising. It will provide the basic framework with which prospective merchandisers plan and construct visual displays that enhance the selling of merchandise and ideas.

SEPS 424/524. Fashion, Textiles, and Construction Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course explores information related to new technological advances in the textile/apparel industry and determines consumer preferences and concepts of fashion product quality. It includes the development of standards for judging qualities of merchandise. Fabrics are examined to determine the value they provide to the apparel and accessories customer.
SEPS 425. Fashion Accessories. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SEPS 220. This course is a detailed analysis of women’s and men’s fashion accessory categories including the major categories of accessories, the materials used in the production of a variety of accessories, and an overview of the accessories business.

SEPS 430/530. Technology Applications in Training. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course is designed to prepare training professionals to plan and conduct training using technological applications. The course covers instructional technology skills, computer systems, and software that trainers need so that they can teach basic computer and information skills in business, industry and government.

SEPS 431/531. Web-Based Organization for Fashion. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: STEM 251G or equivalent or permission of instructor. This course provides the basic communications foundations needed to conceive, plan, develop, implement, and maintain a Web-based organization for fashion. Upon completion, students will understand what is required to plan, launch and maintain a successful online venture, limited only by the willingness of the student to explore these technological advances.

SEPS 450/550. Assessment, Evaluation and Improvement. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course prepares training and educational professionals to plan for and conduct assessments to use in planning instructional programs, evaluate individual learning, monitor student progress, measure program effectiveness and efficiency, and evaluate the return on investments of training courses and programs.

SEPS 471/571. Communication Industries. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and industrial technology major for 471. A course designed to provide career and technical education teachers, industrial technologists, counselors, and administrators an opportunity to observe and enhance their knowledge of representative communication industries from the local region. (qualifies as a CAP experience).

SEPS 472/572. Construction Industries. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and industrial technology major for 472. A course designed to provide career and technical education teachers, industrial technologists, counselors, and administrators an opportunity to observe and enhance their knowledge of representative construction industries from the local region. (qualifies as a CAP experience).

SEPS 480. Senior Project: Merchandise Retailing. 3 Credits.
Lecture 3 hours; 3 credits. A senior capstone course in which fashion and business knowledge and skills are applied to plan and implement a merchandise retailing business. Students must submit a professional quality written report and present results to a panel of consultants.

SEPS 481. Senior Project: Merchandise Retailing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: Senior standing. To provide the senior-level student majoring in occupational and technical studies with the skills and techniques necessary to bridge the gap from college to career. Focus is on the generation of a professional portfolio and experiential learning that will transfer into today’s job market.

SEPS 484/584. Student Teaching Mentored. 6-12 Credits.
6-12 credits. Prerequisites: completion of the approved teacher education program in the major area, departmental approval, and permission of the director of teacher education services. Passing scores on PRAXIS I or State Board of Education-approved SAT or ACT scores and passing scores on the appropriate PRAXIS II content examination required. Classroom placement in school systems for students to apply content and methodologies. The student is mentored by a school mentor and university faculty. This course is for newly hired teachers on provisional contracts.

SEPS 485. Student Teaching. 12 Credits.
Five days per week, full semester; 12 credits. Prerequisites: completion of the approved teacher education program in the major area, departmental approval, passing scores on PRAXIS I or State Board of Education-approved SAT or ACT scores, passing scores on the appropriate PRAXIS II content examination, and permission of the director of teacher education services. Available for pass/fail grading only. (qualifies as a CAP experience).

SEPS 486/586. Middle School Student Teaching for Technical Education. 6 Credits.
6 credits. Prerequisites: STEM 305, 306, SEPS 408, SPED 413, TLED 408 and SEPS 450; or SEPS 508, 596, STEM 730, SEPS 788, TLED 608, 616, READ 680 for graduate students. Passing scores on PRAXIS I or State Board of Education-approved SAT or ACT scores and passing scores on the appropriate PRAXIS II content examination are required. Classroom placement for student teaching in a middle school technology laboratory. Students apply content and methodology under the supervision of a cooperating teacher and university faculty member. Available for pass/fail grading only. (qualifies as a CAP experience).

SEPS 488. High School Student Teaching for Technical Education. 6 Credits.
6 credits. Prerequisites: STEM 305, 306, SEPS 408, SPED 413, TLED 408, SEPS 450, passing scores on PRAXIS I or State Board of Education-approved SAT or ACT scores, and passing scores on the appropriate PRAXIS II content examination. Classroom placement for student teaching in a high school technology laboratory. Students apply content and methodology under the supervision of a cooperating teacher and university faculty member. Available for pass/fail grading only. (qualifies as a CAP experience).

SEPS 495/595. Topics in Occupational Education. 1-3 Credits.
1-3 credits each semester. Prerequisite: permission of the instructor. The department offers selected topics designed to permit small groups of qualified students to work in subjects of mutual interest which, due to their specialized nature, may not be offered regularly.

SEPS 496/596. Topics in Career and Technical Education. 1-3 Credits.
1 - 3 credits.

SEPS 497/597. Independent Study in Occupational Education. 1-6 Credits.
1-6 credits. Prerequisite: permission of the instructor.

SEPS 498. Independent Study in Occupational Education. 1-6 Credits.
1-6 credits. Prerequisite: permission of the instructor.

SMGT - Sport Management

SPORT MANAGEMENT Courses

SMGT 214. Introduction to Sport Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C- or better in MATH 102M or MATH 162M. Course will introduce students to the sports industry, the wide range of career opportunities involving sport, and the economical impact of sports in America.

SMGT 235. Sport Management Recitation. 0 Credits.
1 credit. Corequisites: SMGT 214 and HIST 104H. Dedicated Monarch Advantage Program (MAP) section for sport management majors - freshmen only.

SMGT 305. Sport Administrative Theory. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SMGT 214 with a grade of at least C-. Principles of organization and administration as they apply to managing sport organizations. Issues related to working with and through individuals to achieve organizational goals and objectives are discussed.
SMGT 312. Sport Sales. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course will teach students to learn and navigate the sport sales process. The financial strength of a sport entity is determined by its sales ability, and through lecture, guest speakers, and applied 'real world' exercises, students will have the opportunity to obtain knowledge, skills, and experiences in sport sales that are essential for entry level positions.

SMGT 315. Sport Media and Public Relations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SMGT 214 with a grade of at least C- and ENGL 211C or ENGL 221C or ENGL 231C. An introduction to sport media and public relations. Special emphasis will be placed on the communications process in sport and the various mediums that can be used to convey messages. The internal and external publics involved in sport public relations will be examined along with the steps involved in the process.

SMGT 331. Fiscal Planning and Management in Sport and Recreation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SMGT 214 with a grade of C- or higher, ACCT 201, and MATH 102M or higher. This course is designed to examine the principles and practices of financial management in diverse recreation and sport service settings. Course will explore the basic concepts of financial planning and analysis to effectively manage a successful operation.

SMGT 366. Internship Seminar. 1 Credit.
Lecture and discussion 1 hour; 1 credit. Prerequisite: all emphasis core courses and junior standing. Agency field placement is required of all students in Sport Management. Seminar will include resume and cover letter writing skills, internship requirements, agency placement referrals, and interviewing techniques. (cross-listed with PRTS 366) (qualifies as a CAP experience).

SMGT 368. Internship. 12 Credits.
Hours to be arranged: 12 credits. Prerequisites: A grade of C- or better in SMGT 214; senior standing, permission of the instructor, and completion of all required courses in appropriate emphasis areas. Final field placement required for all students with an emphasis in sport management. Students will be placed in an agency to gain experience in methodologies, administration techniques, and programs specific to their area of emphasis. Minimum of 400 clock hours. (qualifies as a CAP experience).

SMGT 369. Practicum in Physical Education, Recreation, and Athletics. 2-6 Credits.
2-6 credits. Prerequisites: permission of the instructor, junior standing and a grade of C- or better in SMGT 214. Selected off-campus experiences in physical education, leisure activities, and athletics that will enable students to become more actively involved with field-based professionals engaged in skills within their respective discipline. (cross-listed with PE 369) (qualifies as a CAP experience).

SMGT 414. Sport Marketing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SMGT 214 with a grade of C- or better. Course will examine competitive market strategies as they apply to the sport industry. Emphasis will be placed on the relationship between sport products and sport markets, the communication mix, market research, and the role of strategic planning for business sponsorship.

SMGT 415. Principles of Coaching Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course is designed to provide students with a basic knowledge of the coaching profession. Special emphasis will be placed on establishing a sound coaching philosophy, selecting a coaching style, desirable qualities of a coach, ethics and the coach, roles of the head coach, planning and organizing for games and practices, coaching pedagogy, off-season planning, final preparations for the season, and issues and problems related to coaching and recruiting athletes.

SMGT 421. Legal Aspects in Recreation and Sport Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SMGT 214 with a grade of C- or better. This course presents an overview of the increasing effect the law is having on amateur athletics, professional sports and recreation programs.

SMGT 425. Facility Management and Design. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: PRTS 211 or permission of the instructor. An examination of the principles and practices of facility management in recreation. Focus is geared toward the planning and design of indoor and outdoor recreation facilities as well as how to review and develop effective maintenance and risk management programs. (cross-listed with PRTS 425).

SMGT 432. Sport Facility and Event Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course provides an examination of the principles and practices of sport facility and event management. Special emphasis will be placed on management functions related to facility planning and supervision, financing, site design, public relations, security, operations, maintenance, programming, box office operations and concessions. This course is designed to introduce students to principles and practices of planning, budgeting, operating, scheduling, managing, and evaluating events in the sport industry. Students will acquire an in-depth knowledge about the specialized field of event management and become familiar with management techniques and strategies required for successful promotion, implementation and evaluation of special events within a sport context.

SMGT 450W. Ethics and Morality in Sport. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SMGT 214 with a grade of C- or better, and a grade of C or better in ENGL 211C or ENGL 221C or ENGL 231C. This course is designed to provide students with an understanding of ethics and morals and how each applies to sport management settings. The course will include the study of theoretical models of moral development. In addition, teleological and deontological theories of ethics will be examined with special application made to the sports environment. Models of ethical analysis, codes of ethics in sport organizations and the development of a personal and administrative philosophy will be emphasized. The case study approach will be used to examine ethical issues. (This is a writing intensive course.).

SMGT 452. Sport Facility Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C- or better in SMGT 214 and Senior standing. An examination of the principles and practices of sport facility management. Special emphasis will be placed on management functions related to facility supervision, financing, marketing, public relations, risk management, security, operations, maintenance, programming, scheduling, event planning, box office operations and concessions.

SMGT 453. Event Management and Sport Sponsorship. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing and a grade of C- or better in SMGT 214. This course is designed to provide a detailed examination of the relationship between sport and corporate sponsorship. Topics will include sport sponsorship background and history, reasons for sponsorship, benefits of sponsorship, types of sport sponsorship, strategic communication through sponsorship, sponsorship valuation, and evaluation of sponsorship packages. Special emphasis will be placed on the relationship between sport sponsorship development, event planning and fund-raising strategies.

SMGT 455. Sport in Contemporary Society. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing and a grade of C- or better in SMGT 214. Discusses the phenomenon of sport as it represents one of the most pervasive social institutions today. The major theme of this course is to demonstrate how sport reflects and enforces the beliefs, values, and ideologies of society. Emphasis is placed on changing attitudes and current trends in the world of sport. The course will be taught from sociological and philosophical perspectives.
SMGT 456/556. Sport Psychology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: senior standing and a grade of C- or better in SMGT 214. Study of the psychological bases of coaching strategies and methodologies. Emphasis is placed on applying knowledge in field settings. (cross-listed with EXSC 456/556).

SMGT 495. Topics in Sport Management. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. This course provides an opportunity for in-depth study of selected topics in sport management.

SMGT 497/597. Independent Study in Sport Management. 1-3 Credits.
3 credits. Prerequisite: permission of the instructor. Individualized instruction to include research, specialized studies, or other scholarly writing.

SOC - Sociology

SOCIIOLOGY Courses

SOC 201S. Introduction to Sociology. 3 Credits.
Lecture 3 hours; 3 credits. An introduction to the discipline and methods of sociology. Major topics include socialization, social inequality, family, education, gender roles, ethnic and minority relations.

SOC 226S. Honors: Introduction to Sociology. 3 Credits.
Lecture 3 hours; 3 credits. Open only to students in the Honors College. A special honors section of SOC 201S.

SOC 300. Social Problems. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or permission of the instructor. An analysis of the major social problems confronting groups and individuals in a society marked by rapid change. Emphasis is given to the study of social phenomena including both historical and comparative perspectives.

SOC 303. Introduction to Marriage and the Family. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or permission of the instructor. A wide variety of topics are covered, including gender-role socialization, dating, premarital sex, power, negotiation, conflict and violence as well as satisfaction in relationships, singleness, cohabitation, commuter and dual-career relationships, and relationship dissolution.

SOC 306. Religion and Society. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or permission of the instructor. Sociological analysis of religion as a social institution, of the functions of religion and its relationship to other institutions and to social change, and of the religious behavior of individuals.

SOC 309. Population and Society. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: six semester hours in the social sciences or permission of the instructor. This course offers an introduction to the field of population and its interconnection to broader societal changes. It introduces students to the concepts, issues and concerns in population studies and examines the interaction between population processes and economic development, social changes and environment. Topics include theories, fertility, mortality, migration, distribution and composition, population and development, population and environment, and policy. Emphasis is given to a critical assessment of population processes as both causes and consequences of development and societal changes with a focus on comparative patterns between developing countries and the more developed countries.

SOC 316. Juvenile Delinquency. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or SOC 201S or permission of instructor. A study of juvenile misbehavior in the contemporary community, its nature, extent, treatment, and control, including juvenile court procedure and philosophy. (cross-listed with CRJS 316).

SOC 320. Social Inequality. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or permission of the instructor. An analysis of social differentiation, stratification, and social class. Emphasis is placed upon modern American society, with some comparison with historical and contemporary systems of other societies.

SOC 322. Sociology of Minority Families. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or permission of the instructor. Examination and explanation of minority families’ lives in relationship to other societal institutions and historical developments. The course focuses on issues of minority families and places these issues in a sociological framework, e.g., stratification, poverty and gender.

SOC 325. Social Welfare. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or permission of the instructor. Social psychological theory and research on current topics of interest on the relationship of the individual to society.

SOC 337. Introduction to Social Research. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: CRJS 215S or SOC 201S. An overview of the scientific approach to the study of social phenomena. Includes the application of descriptive measures, graphic techniques, survey and experimental analysis to the study of these phenomena and techniques for making qualitative judgements about such research.

SOC 340. Sociology of Women. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or six credits in social sciences or permission of the instructor. An exploration of the role and status of women in contemporary American society from a feminist sociological perspective.

SOC 342. Feminist Research Methods. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: WMST 201S and an introductory social science research methods course or permission of the instructor. An introduction to feminist critiques of mainstream social science research methods and to feminist approaches to social science research as applied to current issues pertaining to women.

SOC 343. Sociology of Sexuality. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S. Study of the sociological research and theory on sexuality. Wide range of issues covered including childhood sexuality and arousal, premarital sex, adult erotic behavior, response to pornography, rape and incest.

SOC 352. War and Peace. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours of social science courses or permission of the instructor. An introduction to the nature and implications of nuclear weapons. Focus on sociological and psychological dimensions of the nuclear threat.

SOC 353. Sociology of the Middle East. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or six hours of social science or permission of the instructor. A comparative survey of population and culture and other sociological characteristics of Middle Eastern and Arab League States.
SOC 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval of the department and Career Management, in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and Career Management prior to the semester in which the work experience is to take place. (qualifies as a CAP experience).

SOC 368. Internship. 1-6 Credits.
1-6 credits. Prerequisite: permission of the department. This course allows students to volunteer in an agency related to their major for pass/fail credit. Students must volunteer for 50 hours per course credit. Internships for less than 3 credits require prior approval by the Internship Faculty Director. (qualifies as a CAP experience).

SOC 369. Practicum. 3-6 Credits.
3-6 credits. Prerequisite: permission of the department. This course is for students participating in the Career Advantage Program (CAP). (qualifies as a CAP experience).

SOC 395. Topics in Sociology. 3 Credits.
3 credits each semester. Prerequisite: SOC 201S or permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

SOC 396. Topics in Sociology. 1-3 Credits.
3 credits each semester. Prerequisite: SOC 201S or permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

SOC 400/500. War and Gender. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. In this course students will grapple with issues concerning war, gender roles, and gender inequality. The course will address gender roles in war throughout history, globally and across cultures. However, the United States military and military involvement in the 20th and 21st century will remain the primary focus. Discussion will include how social norms and ideals of masculinity and femininity shape, and in turn are shaped by, images and realities of war, including gendered aspects of nationalism and just war theories. The military involvement of men, women (and children) in war and in peacetime, as participants and observers, perpetrators and victims, supporters and opponents of war will also be discussed.

SOC 402/502. Sociology of Child Welfare. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S. A sociological analysis of the field of child welfare. Topics include social inequality as it applies to children as a group in the U.S. and globally; understanding violence against children within the global context of children’s rights; examining data on the degree to which policies, programs and research in the field fail to protect children and why; prevalence, causes and consequences of child sexual, physical and emotional abuse and neglect; evaluation of programs like “family preservation” and of placement in “substitute” care, i.e., foster care, adoption, institutionalization; changes that would protect and advance the interests and rights of children at the parent-child, agency, and societal level.

SOC 403. Violence in the World of Children. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours in the social science perspective or SOC 201S or CRJS 215S or permission of the instructor. This ‘child- centered’ course examines the interaction of adults in violent conflict with the world of children, children’s experience of violence and its meaning in the lives of children. Topics include: valuing children, violence toward children in culture, families, and schools; child physical and sexual abuse and neglect; gangs, violent communities, and children and war. The effects of childhood experiences of violence, children’s coping with violence, and alternatives to violence are also developed. (cross-listed with CRJS 403).

SOC 405/505. Social Change and Social Movements. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: SOC 201S or permission of the instructor. Analysis of the nature and causes of social change, major social movements, and their impact upon contemporary society.

SOC 409W. Sociological Theory. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S and a grade of C or better in ENGL 211C or 221C or 231C. The development of sociological thought during the nineteenth and twentieth centuries. Analysis of major contributions to the development of systematic thinking in contemporary sociology. (This is a writing intensive course.).

SOC 415. Sociology of Work and Occupations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or permission of the instructor. The study of the social processes involved in the production, distribution, and consumption of goods and services within various political economic systems. Includes the study of occupations and the nature of work.

SOC 421/521. Deviant Behavior. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S or permission of the instructor. A study of various definitions and forms of deviant behavior, theoretical explanations of causes of deviant behavior and the impact of deviant behavior on society and the individual. (cross-listed with CRJS 421/521).

SOC 423/523. Women, Health and Healing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours of human behavior way of knowing courses or permission of the instructor. An examination of women’s experiences with health and illness and women’s roles in the health-care system as patients and care providers from a feminist sociological perspective.

SOC 426/526. The Sociology of Minority Groups. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or permission of the instructor. The study of the process of and responses to the oppression of racial, religious, ethnic, and national minorities in a variety of countries within a historical and comparative perspective. Special emphasis given to American minorities and especially African Americans.

SOC 427/527. Violence Against Women. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S or completion of social science perspective or permission of the instructor. A critical analysis of violence against women as an institution of social control. Examines violence in the context of social and political inequality and feminist critique. Issues explored include pornography, prostitution, sexual harassment, incest, battering and rape. (cross-listed with CRJS 427).

SOC 436. Capstone Research Project. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SOC 337, STAT 130M and senior status. Students will work in groups to plan, design, and carry out a research project. Final papers which report the results of the study will be presented in a formal research seminar. The projects will reflect knowledge gained from undergraduate work and training received in STAT 130M and SOC 337.
SOC 438. Sociology of Education. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or permission of the instructor. Sociological theory and research investigating contemporary education as a social institution.

SOC 440/540. Health, Illness, and Society. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours in human behavior way of knowing courses or permission of the instructor. The study of social and social-psychological factors related to health, illness, and treatment with a focus on social epidemiology, the medical industry, and health, illness, and sick-role behavior.

SOC 441/541. Drugs and Society. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S or permission of the instructor. The study of sociological and social psychological explanations of drug-using behaviors and of legal and medical control of drugs. Topics include changes in the legal status of drugs, cross-cultural and historical variations in the control and use of drugs, and social epidemiology of drug use in contemporary society. (cross-listed with CRJS 441).

SOC 444. Community Justice. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S. This is a service learning course designed to study how the emerging field of community justice, a neighborhood-based strategy, can reduce crime and improve public safety by investing in social, human and cultural capital. (cross-listed with CRJS 444).

SOC 446. Social Issues Across the Life Cycle. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: 6 hours in sociology or permission of the instructor. This course focuses on age stratification across the life cycle. An analysis of social forces and issues affecting lives at various stages of the life cycle is offered.

SOC 452. Diversity in Criminal Justice Organizations. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SOC 201S or CRJS 215S or permission of instructor. This course examines the impact of diversity, culture, and ethnic origin in criminal justice organizations. The course is designed to better prepare students to meet the challenge of diversity in criminal justice organizations. (cross-listed with CRJS 452).

SOC 495/595. Topics in Sociology. 3 Credits.
3 credits each semester. Prerequisite: SOC 201S or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

SOC 496/596. Topics in Sociology. 3 Credits.
3 credits each semester. Prerequisite: SOC 201S or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in information distributed to all academic advisors.

SOC 497/597. Tutorial Work in Special Topics in Sociology. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

SOC 498/598. Tutorial Work in Special Topics in Sociology. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.
SPAN 295. Topics in Spanish. 1-3 Credits.
1-3 credits each semester. Prerequisite: none. A study of selected topics designed as electives for nonmajors. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

SPAN 296. Topics in Spanish. 1-3 Credits.
1-3 credits each semester. Prerequisite: none. A study of selected topics designed as electives for nonmajors. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

SPAN 300. Advanced Grammar Review. 3 Credits.
Lecture, 3 hours; 3 credits. Prerequisite: SPAN 312W. Objective of course is to improve the student’s knowledge of Spanish grammar and syntax through the review of grammatical rules and their application. The course is required for Majors or Minors of Spanish having received a C+ or lower in SPAN 202. All Spanish Majors and Minors may take the course for review.

SPAN 311. Communicative Competence: Speaking and Listening. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: a grade of C or better in SPAN 202 or advanced placement. Development of speaking and listening skills using a variety of task-oriented strategies enabling students to become full conversational partners. (Oral Communication Course).

SPAN 312W. Communicative Competence: Reading and Writing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in ENGL 211C or 221C or 231C; passing score on the Writing Sample Placement Test; and a grade of C or better in SPAN 202 or advanced placement. A functional approach to the development of reading and writing skills targeting a variety of subjects, styles, and audiences. (This is a writing intensive course.).

SPAN 320. Spanish Culture and Civilization. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SPAN 311 and 312W with a grade of C or better. A survey of Spanish civilization from the Roman occupation of the Iberian Peninsula to the present day with emphasis on the political and social development of Spain.

SPAN 321. Latin American Culture and Civilization. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SPAN 311 and 312W with a grade of C or better. A course designed to introduce the student to the basics of Latin American civilization through a close study of its politics, art, literature, film and other related areas.

SPAN 331. Introduction to Spanish Literature: Medieval to 1700. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SPAN 311 and 312W with a grade of C or better. This survey course introduces students to the literary tradition of medieval and Golden Age Spain. In addition to reading the prose, poetry and theater of the most prominent writers of this period, students will learn critical terminology for talking about literature. Course objectives are for students to be able to do the following: read, analyze, compare, and critically discuss works of literature in Spanish; characterize various literary periods and movements of the 13th-17th centuries; and relate the texts read in class to their corresponding historical contexts.

SPAN 332. Introduction to Spanish Literature: 1700 to Present. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SPAN 311 and 312W with a grade of C or better. The course offers an overview of the literature of Spain from the mid-1700s to the present. Students will read works of prose, poetry and theater of the most prominent writers of these centuries, along with background material in order to become familiar with literary periods and their historical contexts. Course objectives are for students to be able to do the following: read, analyze, compare, and critically discuss works of literature in Spanish; characterize various literary periods and movements of the 18th-20th centuries; and relate the texts read in class to their corresponding historical contexts.

SPAN 333. Introduction to Early Latin American Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SPAN 311 and 312W with a grade of C or better. A panoramic study of Spanish American literature from its origins in pre-Columbian indigenous literature through the essayists of the Spanish conquest, the colonial writers of the seventeenth and eighteenth centuries, the Romantics and Realists to the Modernists. Students will read works of prose, poetry and theater of the most prominent writers of these centuries, along with background material in order to become familiar with literary periods and their historical contexts. Course objectives are for students to be able to do the following: read, analyze, compare, and critically discuss works of literature in Spanish; characterize various literary periods and movements of the 16th-18th centuries; and relate the texts read in class to their corresponding historical contexts.

SPAN 334. Introduction to Modern Latin American Literature. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SPAN 311 and 312W with a grade of C or better. A panoramic study of Spanish American literature from Modernists to the post-Modernists to the contemporary novelists, short story writers, poets and dramatists. A panoramic study of Spanish American literature from Modernists to the post-Modernists to the contemporary novelists, short story writers, poets and dramatists. Students will read works of prose, poetry and theater of the most prominent writers of these centuries, along with background material in order to become familiar with literary periods and their historical contexts. Course objectives are for students to be able to do the following: read, analyze, compare, and critically discuss works of literature in Spanish; characterize various literary periods and movements of the 18th-20th centuries; and relate the texts read in class to their corresponding historical contexts.

SPAN 366. Business Spanish: Language and Culture. 3 Credits.
SPAN 366. Business Spanish: Language and Culture. Lecture 3 hours; 3 credits. Prerequisites: SPAN 311 and 312W or permission of instructor. A situation-based language course focusing on grammar, vocabulary, and conversation in culturally relevant business contexts.

SPAN 369. Practicum. 1-3 Credits.
1-3 credits. Prerequisite: nine credit hours at the 300 or 400 level. Internships in private and public organizations that provide an opportunity for students to apply and enhance language skills or cultural knowledge in a workplace setting. (Qualifies as a CAP experience).

SPAN 395. Topics in Spanish. 1-3 Credits.
1-3 credits each semester. Prerequisite: SPAN 202 or the equivalent. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

SPAN 396. Topics in Spanish. 1-3 Credits.
1-3 credits each semester. Prerequisite: SPAN 202 or the equivalent. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.
SPAN 407/507. Advanced Grammar and Syntax. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: 9 hours of 300-level Spanish courses. Designed to refine competence in grammar and style in the process of writing various types of essays.

SPAN 410/510. Spanish Applied Linguistics. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: 9 hours of 300-level Spanish courses. Course is an introduction to Spanish linguistics and its application to the teaching and learning of Spanish. Topics include Spanish syntax, semantics, phonetics, and pragmatics and their practical applications to language learning.

SPAN 415/515. Spanish Phonetics. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: 9 hours of 300-level Spanish courses. A study of the sound system of Spanish from both theoretical and applied perspectives. Intensive practice in pronunciation and contrastive analysis of Spanish and English.

SPAN 447/547. Drama of the Spanish Golden Age. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: 9 hours of 300-level Spanish courses. A study of selected works of the major playwrights of the Golden Age: Lope de Vega, Calderon de la Barca, Tirso de Molina, Ruiz de Alarcon.

SPAN 448/548. Contemporary Spanish Drama. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: 9 hours of 300-level Spanish courses. A study of contemporary Spanish playwrights since Federico Garcia Lorca.

SPAN 449/549. Contemporary Spanish-American Drama. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: 9 hours of 300-level Spanish courses. A study of contemporary Spanish-American drama through the reading of representative authors.

SPAN 450/550. Contemporary Peninsular Narrative. 3 Credits.  
Lecture, 3 hours; 3 credits. Prerequisites: SPAN 311, 312W and (SPAN 331 or 332 or 333 or 334). Study of contemporary peninsular narrative works (novel, essay and some short story) within the Spanish social, political and cultural context of the last 40 years (1970-2012).

SPAN 451/551. Contemporary Latin American Narrative. 3 Credits.  
Lecture, 3 hours, 3 credits. Prerequisites: SPAN 311, 312W and (SPAN 331 or 332 or 333 or 334). Study of contemporary Latin American narrative works (novel, essay and some short story) within the Spanish social, political and cultural context since the 1920’s.

SPAN 452/552. Latin American Policy. 3 Credits.  
Lecture, 3 hours. 3 credits. Prerequisite: SPAN 311, 312W, and one 300-level SPAN literature course. Basic comprehension about representative works of Spanish American poetry after Ruben Darío and their influences on contemporary culture.

SPAN 453/553. Border Culture and Literature. 3 Credits.  
Lecture, 3 hours. 3 credits. Prerequisites: SPAN 311, 312W and one from SPAN 331, 332, 333, or 334. Study of variety of current texts from the U.S. and Mexico, this course will explore the multiplicity of images that surround and define the highly contested and increasingly important area of the border. Course will focus on questions dealing with subaltern identities such as women, indigenous groups, immigrants, and the poor.

SPAN 469/569. Hispanic Film. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: 9 hours of 300-level Spanish courses. A topical study of the major works of Spanish and Latin American film from Buneul to the present. The course will explore many issues, including those related to gender, race, symbolism, and class struggle. (cross-listed with COMM 443/543).

SPAN 471/571. Hispanic Women Authors. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: 9 hours of 300-level Spanish courses. A study of fictional and non-fictional works by Spanish, Spanish-American, and U.S. Latina writers from the 16th to the 20th century. The course analyzes gender identity and roles and the interaction of gender, race, and class in literary representations of courtship and marriage, spirituality, nationalism, colonialism, and multiculturalism.

SPAN 473/573. Contemporary Latin American Literature: From Borders to Crossroads. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: 9 hours of 300-level Spanish courses. The course focuses on poetry, prose fiction and theater written by Chicana, Puerto Rican, Cuban-American, and Dominican-American women authors in the last twenty years. Attention will also be paid to the very influential theoretical work written by Chicanas.

SPAN 475W. Spanish Senior Research Seminar. 3 Credits.  
Seminar, 3 hours; 3 credits. Prerequisite: Senior standing and a grade of C or better in ENGL 211C or 221C or 231C. Course is designed to provide Spanish majors with a small group setting that facilitates in-depth discussion of key concepts of critical theory, literary studies, and the discipline. The seminar will encourage students to research and explore relevant topics related to Hispanic literature and the arts and experiment with the application of the different concepts under discussion. (This is a writing intensive course.).

SPAN 495/595. Topics in Spanish. 1-3 Credits.  
1-3 credits each semester. Prerequisite: 9 hours of 300-level Spanish courses. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

SPAN 496/596. Topics in Spanish. 1-3 Credits.  
1-3 credits each semester. Prerequisite: 9 hours of 300-level Spanish courses. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule booklet, and will be more fully described in a booklet distributed to all academic advisors.

SPAN 497. Tutorial Work in Special Topics in Spanish. 1-3 Credits.  
1-3 credits each semester. Prerequisites: 9 hours of 300-level Spanish courses. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

SPAN 498. Tutorial Work in Special Topics in Spanish. 1-3 Credits.  
1-3 credits each semester. Prerequisites: 9 hours of 300-level Spanish courses. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

SPED - Special Education

SPECIAL EDUCATION Courses

SPED 313. Fundamentals of Human Growth and Development: Birth through Adolescence. 3 Credits.  
Lecture 3 hours; 3 credits. Prerequisite: Junior standing. This course will contribute to an understanding of the physical, social, emotional, and intellectual development of children and adolescents and the ability to use this understanding in guiding learning experiences. The interaction of children and adolescents with economic, social, racial, ethnic, religious, physical and intellectual differences will be explored. Developmental issues related to giftedness or disability and the impact of family disruptions, child abuse and substance abuse are included.
SPED 400/500. Foundations of Special Education: Legal Aspects and Characteristics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. The course provides an introduction and overview of the field of special education from the perspective that it is a subsection of general education and that the field is in transition by virtue of philosophical, legislative and programmatic changes. Legal aspects, regulatory requirements, and critical analyses of research are addressed. This course includes a broad overview of the expectations associated with the identification, characteristics, and education of students with disabilities.

SPED 402/502. Instructional Design I: Learner Characteristics and Assessment. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SPED 400/500. The intent of this course is to provide pre-service teachers with: (a) knowledge of the characteristics of students with mild disabilities who are accessing the general curriculum, K-12, including, but not limited to, LD, BD, and EMR, and (b) the ability to develop knowledge and skill in the selection, administration, scoring and interpretation of standardized/norm-referenced assessments of exceptional learners. Administering formal and informal assessment tools and the development of an IEP are emphasized. The use of assessment data to improve instruction and student performance is discussed.

SPED 403/503. Directed Field Experience in Special Education. 2 Credits.
Lecture 2 hours; 2 credits. Practicum of 45 hours required. Prerequisites: SPED 400/500 and 402/502 and passing scores on PRAXIS I or equivalent. This course provides variable hours of direct participation in a community or educational setting with individuals with special needs. The course includes specific skills of program planning, implementation, evaluation and classroom management.

SPED 404/504. Medical Aspects of Disabling Conditions. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: SPED 400/500 and junior standing. This course reviews medical conditions present among individuals with disabilities and implications for classroom instruction.

SPED 406/506. Students with Diverse Learning Needs in the General Education Classroom. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: SPED 400/500 and junior standing. This course introduces general education teachers to the legal aspects and educational needs of at-risk students and those with disabilities. Emphasis is on characteristics of special needs children and procedures for effective academic, behavioral, and social integration of these children in the general education classroom.

SPED 411/511. Classroom and Behavioral Management Techniques for Students with Diverse Needs. 3 Credits.
Lecture 3 hours; 3 credits. Co- or prerequisite: SPED 400/500. This course will address classroom management techniques and individual interventions based upon behavioral, cognitive, affective, social, and ecological theory and practice. The course will focus on the field of applied behavior analysis, including best practices in the areas of data collection, program selection, program implementation, and data analysis. Positive behavior management and supports and functional behavioral assessment will be emphasized.

SPED 415/515. Instructional Design II: Curricular Procedures and Individualized Education Planning. 3 Credits.
Lecture 3 hours; 3 credits. Practicum of 45 hours is required. Prerequisites: SPED 400/500, 402/502, and passing scores on PRAXIS I or equivalent. The intent of this course is to provide preservice teachers with: (a) knowledge of research-based instruction for K-12 students with disabilities and those who are gifted; (b) knowledge and skill in using data collection to make decisions about student progress, instruction, program, accommodations and teaching methodology for exceptional learners, and (c) knowledge and skill in planning, developing and implementing individual educational plans and group instruction for diverse exceptional learners who are accessing the general education curriculum and the standards of learning.

SPED 417/517. Collaboration and Transitions. 3 Credits.
Lecture 3 hours; 3 credits. Co- or prerequisite: SPED 400/500. This course addresses the complex issues surrounding families and children with disabilities and transitions across the lifespan, as well as effective collaboration with families and professionals to support inclusion and/or effective early intervention services, educational programs and transition services for students at-risk and students with disabilities. Emphasis is on successful professional collaboration and effective relationships in educational, transition, and family settings.

SPED 432/532. Characteristics of Students with Visual Impairments. 1 Credit.
Lecture 1 hour; 1 credit. Prerequisite: SPED 400/500. Provides an overview of the characteristics of and services to persons with visual impairments, including the impact of visual impairment on infants’ and children’s growth and development, child and adolescent emotional and social development, and family interaction patterns. Considers the educational, conceptual, psycho-social, and physical implications of a visual impairment.

SPED 433/533. Braille Code. 3 Credits.
Lecture 3 hours; 3 credits. Co- or prerequisites: SPED 400/500 and 432/532. This course provides instruction in the development, use, and application of the Braille literary code and its implications for educational/literacy programs for students with visual disabilities. Students will develop the skills to read and write contracted and uncontracted Braille, while acquiring instructional methodologies for teaching children who are blind to read and write. Sources of Braille materials for educational purposes are identified.

SPED 434/534. Medical and Educational Implications of Visual Impairments. 3 Credits.
Lecture 3 hours; 3 credits. Co- or prerequisites: SPED 400/500 and 432/532. Practicum of 45 hours required. Provides an introduction to anatomy and physiology of the visual system and the educational implications of visual pathology. Topics include anatomy of the human eye, normal visual development, pathology of the eye, examination procedures for the identification of visual pathology, and the effects of pathology on visual learning and development.

SPED 435/535. Orientation and Mobility. 2 Credits.
Lecture 2 hours; 2 credits. Co- or prerequisites: SPED 400 or SPED 500 and SPED 432 or SPED 532. Practicum of 45 hours. Provides the foundation for understanding the components and essence of orientation and mobility. Establishes how the need for independent travel in the blind population created the field of O&M. Explores the philosophy and history of orientation and mobility including cane instruction, dog guides and methods of travel. Addresses techniques in developing orientation skills and basic mobility instruction. Motor and concept skill development are emphasized.

SPED 436/536. Curriculum and Assessment of Students with Visual Impairments. 3 Credits.
Lecture 3 hours; 3 credits. Co- or prerequisites: SPED 400/500 and 432/532. Practicum of 45 hours required. Provides students with knowledge and understanding of the educational assessment of students with visual impairments and additional disabilities including deaf-blindness. Students will practice assessing and planning educational programs for students with visual impairments. Addresses assessment of technology for students with visual impairments. Examines determination of learning needs and appropriate learning media, relationship of assessment, IEP development, and placement.
STAT - Statistics

STATISTICS Courses

STAT 306. Introductory Statistics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 102M or 162M. A general probability and statistics course designed specifically to accommodate the needs of school teachers and health professionals. Topics include: descriptive statistics, basic probability, discrete random variables, continuous random variables, interval estimation, regression and correlation, hypothesis testing, and applications. (May not be used to satisfy the upper-division elective requirement of the math major program.)

STAT 331. Theory of Probability. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 211. An introduction to probability theory including probability functions, continuous and discrete random variables, combinatorics, special probability distributions, moment generating functions, and limit laws.

STAT 332. Sampling Theory. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 331 or departmental permission. Topics include point and interval estimation, tests of hypotheses, introduction to linear models, likelihood techniques, and regression and correlation analysis.

STAT 335. Design and Analysis of Experiments. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 405 or STAT 505 and STAT 437 or STAT 537. Topics include analysis of variance with one or more factors, multiple comparisons, randomized blocks, Latin squares and related designs: multifactor factorial experiments; one-way analysis of variance; complete block designs; simple and multiple regression; correlation; measures of association for categorical data. Microsoft EXCEL will be used extensively as an aid in data analysis. Written interpretation of results will be a routine component of daily assignments.

STAT 336. Applied Regression Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 330 or MATH 211. Topics include measures of location, dispersion, and strength of relationship; parametric and nonparametric tests of location; one-way analysis of variance; complete block designs; simple and multiple regression; correlation; measures of association for categorical data. Microsoft EXCEL will be used extensively as an aid in data analysis. Written interpretation of results will be a routine component of daily assignments.

STAT 345. Analysis of Variance. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 336 or STAT 405 or STAT 505 and STAT 437 or STAT 537. Topics include analysis of variance with one or more factors, multiple comparisons, randomized blocks, Latin squares and related designs: multifactor factorial experiments; blocking and confounding in the 2(k) factorial design; two-level fractional factorial designs. Statistical software will be used to analyze real life data.

STAT 405/505. Introduction to Data Handling. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 306 or MATH 211. Topics include measures of location, dispersion, and strength of relationship; parametric and nonparametric tests of location; one-way analysis of variance; complete block designs; simple and multiple regression; correlation; measures of association for categorical data. Microsoft EXCEL will be used extensively as an aid in data analysis. Written interpretation of results will be a routine component of daily assignments.

STAT 432/532. Sampling Theory. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: STAT 331 or departmental permission. Topics include point and interval estimation, tests of hypotheses, introduction to linear models, likelihood techniques, and regression and correlation analysis.

STAT 433/533. Theory of Statistics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: STAT 331 or departmental permission. Topics include point and interval estimation, tests of hypotheses, introduction to linear models, likelihood techniques, and regression and correlation analysis.

STAT 434/534. Applied Regression Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 306 or STAT 405 or STAT 505 and STAT 437 or STAT 537. Topics include analysis of variance with one or more factors, multiple comparisons, randomized blocks, Latin squares and related designs: multifactor factorial experiments; blocking and confounding in the 2(k) factorial design; two-level fractional factorial designs. Statistical software will be used to analyze real life data.

STAT 435/535. Design and Analysis of Experiments. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in MATH 102M or 162M or STAT 335 or STAT 405 or STAT 505. Topics include randomization of blocks, Latin squares and related designs: multifactor factorial experiments; two-level fractional factorial designs. Statistical software will be used to analyze real life data.

STAT 436/536. Applied Regression Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 435 or 535. Topics include analysis of variance with one or more factors, multiple comparisons, randomized blocks, Latin squares and related designs: multifactor factorial experiments; blocking and confounding in the 2(k) factorial design; two-level fractional factorial designs. Statistical software will be used to analyze real life data.

STAT 437/537. Applied Regression Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 335 or 535. Topics include analysis of variance with one or more factors, multiple comparisons, randomized blocks, Latin squares and related designs: multifactor factorial experiments; blocking and confounding in the 2(k) factorial design; two-level fractional factorial designs. Statistical software will be used to analyze real life data.

STAT 440/540. Clinical Trials. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 437 or 537. An introduction to statistical methods used in the design, conduct, and analysis of clinical trials. Topics include: study designs, treatment allocation, sample size and power, clinical life tables, log rank test, crossover designs, and sequential methods of monitoring clinical trials.
STAT 442/542. Environmental Statistics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 310 or STAT 431 or permission of the instructor. Although not a prerequisite, the preferred background is STAT 437/537. Topics include nonlinear and generalized linear models, quantitative risk assessment, analysis of stimulus-response and spatially correlated data, methods of combining data from several independent studies. Regression settings are emphasized where one or more predictor variables are used to make inferences on an outcome variable of interest. Applications include modeling growth inhibition of organisms exposed to environmental toxins, spatial associations of like species, risk estimation, and spatial prediction. SAS is used extensively in the course.

STAT 447/547. Analysis of Longitudinal Data. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 431/531. Suggested corequisite: STAT 405/505. Topics include general linear models, weighted least squares (WLS), maximum likelihood (ML), restricted maximum likelihood (REML) methods of estimation, analysis of continuous response repeated measures data, parametric models for covariance structure, generalized estimating equations (GEE) and quasi least squares (QLS), models for discrete longitudinal data: marginal, random effects, and transition models. Limitations of existing approaches will be discussed. Emphasis will be on the application of these tools to data related to the biological and health sciences. Methods will be implemented using statistical software.

STAT 449/549. Nonparametric Statistics. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: STAT 330 or 331 or departmental permission. Topics include the theory and applications of binomial tests and rank tests, including the tests of McNemar, Mann-Whitney, Friedman, Kruskal-Wallis, and Smirnov.

STAT 450/550. Categorical Data Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: A grade of C or better in STAT 431/531. Suggested corequisite: STAT 405/505. Topics include relative risk and odds ratio measures for 2 x 2 tables, the chi-square and Mantel-Haenszel tests, Fisher’s exact test, analysis of sets of 2 x 2 tables using Cochran-Mantel-Haenszel methodology, analysis of 1 x J and sets of 1 x J tables for both nominal and ordinal data, logistic regression including the logit and probit models, and building and applying loglinear models. Emphasis will be on the application of these statistical tools to data related to the health and social sciences. Interpretation of computer output will be stressed.

STAT 460/560. Statistical Simulation/Programming Using Statistical Software Packages. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: A grade of C or better in STAT 405/505 and two of STAT 435/535, 437/537, 447/547 and 450/550. This course is a data-based tour of advanced statistical techniques using software packages, exploring a catalog of data sets (simulated or otherwise) spanning a variety of fields and applications, including data suitable for regression, ANOVA, time series modeling, longitudinal data analysis, and multivariate techniques. Approaches will include parametric, nonparametric, simulation, and bootstrapping. SAS and R (S-plus) will be used extensively, with some other specialized products. For writing actual (not packaged) code, PROC IML and R will be used. This is a finishing course for applied statisticians, highly recommended for students planning a career in statistical programming and simulation.

STAT 497/597. Topics in Statistics. 1-3 Credits.
1-3 credits. Prerequisite: permission of the instructor.

SCIENCE, TECH, ENGR, MATH EDUC Courses

STEM 110T. Technology and Your World. 3 Credits.
Lecture and application 3 hours; 3 credits. An overview of the resources and systems of technology. Emphasis is on impacts that technology has on individuals and their careers. Activities explore the evolution of technology, its major systems and their impact on individuals and their careers.

STEM 112. Communication Design. 3 Credits.
Lecture 1 hour; laboratory 5 hours; 3 credits. A course that explains communication design principles and product development techniques. Activities include traditional processes and computer aided design (CAD) techniques.

STEM 221. Industrial Materials. 3 Credits.
Lecture 1 hour; laboratory 5 hours; 3 credits. A study of materials used by industry to produce products. Emphasis is on the study of ceramics, plastics, composites, and biotechnological materials. Students learn materials identification, use and processing.

STEM 231. Materials and Processes Technology. 3 Credits.
Lecture 1 hour; laboratory 5 hours; 3 credits. A study of the production processes used with metallic and forest product materials. Industrial resources, their location, extraction, and processing into standard stocks are also covered. Students learn properties, uses and processing of metal and wood materials.

STEM 241. Energy Systems: Basic Electricity. 3 Credits.
Lecture 1 hour; laboratory 5 hours; 3 credits. A study of direct and alternating current and its use in contemporary technology. Activities include experiments and projects to supplement the theory of electricity.

STEM 242. Technological Systems Control. 3 Credits.
Lecture 1 hour; laboratory 5 hours; 3 credits. Students will develop an understanding of systems control technology for application to energy and power, manufacturing, processing and transportation systems. Emphasis will be placed on research and development, creativity and experimentation, and trouble shooting in designing control systems.

STEM 251G. Computer Literacy: Communication and Information. 3 Credits.
Lecture 3 hours , 3 credits. A guided review of communication technology and information sources to help students discern between reliable and unreliable sources and techniques. Students develop skills in computer applications, information retrieval, filtering and analyzing data, and formatting and presenting information.

STEM 301. STEMPS WRITING. 1 Credit.
Lecture 3 hours/week (5 weeks); 1 credit. Prerequisite: 58 total credit hours, completion of General Education Written Communication requirement, and declared major in STEM Education and Professional Studies. This course covers the elements of effective writing along with identifying editing strategies to correct errors.

STEM 305. Curriculum for Technology Education. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: STEM 251G and junior standing. National and state trends in instructional content are analyzed. Course content, activities, and facilities are planned. Competency-based and standards-based educational methods are stressed.

STEM 306. Methods for Technology Education. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisites: STEM 251G and junior standing. A practical study and application of recommended methods for teaching technology education. Students plan and present micro-lessons; videotaped micro-teaching demonstrations are included. They also learn to organize student organizations and plan for laboratory management.

STEM - Science, Tech, Engr, Math Educ
STEM 320. Manufacturing and Construction Technology. 3 Credits. Lecture 1 hour; laboratory 5 hours; 3 credits. Prerequisites: STEM 112. STEM 221, STEM 231 or permission of instructor. A study of the production processes used in manufacturing and construction systems. Students will research and design manufactured products for mass production and constructed products for building. The social, cultural, environmental and economic impacts of manufacturing and constructed products on society are discussed.

STEM 321. Manufacturing Technology. 3 Credits. Lecture 1 hour; laboratory 5 hours; 3 credits. Prerequisites: STEM 112, STEM 221, STEM 231 or permission of instructor. A study of the production processes used in manufacturing systems. Emphasis is placed upon planning, organizing and principles of manufacturing. Students research and design enterprise systems for mass production. Emphasis is on manufacturing design requirements and the social, cultural, and economic impacts of manufactured products on society and the environment.

STEM 322. Construction Technology. 3 Credits. Lecture 1 hour; laboratory 5 hours; 3 credits. Prerequisites: junior standing or permission of instructor. A study of the production processes used in construction systems. Emphasis is placed upon planning, organizing and constructing correlated projects and activities in the study of construction.

STEM 323. Production Technology. 3 Credits. Lecture 1 hour; laboratory 5 hours; 3 credits. Prerequisites: STEM 112, STEM 231, STEM 251D, or permission of instructor. A study of automated production processes used by industry. Emphasis is placed on equipment integration and system automation. Students learn to use computer, CAD, CAM, robotic and vision equipment to design, control, and monitor automated systems.

STEM 330. Medical, Agricultural, and Bio-Related Technologies. 3 Credits. Lecture 1 hour; laboratory 5 hours; 3 credits. Prerequisite: junior standing or permission of department. A course for technology education majors that studies technological systems related to medical and food processing technologies. Students learn the basis of these technologies and complete activities that integrate the content with processes and products found in our technological world.

STEM 343. Energy and Power Technology. 3 Credits. Lecture 1 hour; laboratory 5 hours; 3 credits. Prerequisite: permission of instructor. A study of applied energy systems that have a significant role as prime movers of sources of energy. Emphasis is placed on force, work, rate, resistance and energy for prospective teachers of Principles of Technology.

STEM 350. Communication Technology Processes. 3 Credits. Lecture 2 hours, laboratory 2 hours; 3 credits. Prerequisite: STEM 251G. The study of communication design principles and techniques for technology education. Emphasis is placed on the skills and equipment used in design, production, and distribution of communications. Print and electronic media are explored through technical illustration, video, audio, and other specialty processes of communications.

STEM 351. Communication Technology. 3 Credits. Lecture 1 hour; laboratory 5 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. A study of the development and impact of communication technology. Emphasis is placed on the integration of technical skills to produce information-based products such as print and telecommunications media.

STEM 355. STEM Education Grades 6 Through 8. 3 Credits. Lecture, 3 hours; 3 credits. This course prepares educators to use research-based methods for integrating science, technology, engineering, and mathematics (STEM) in the 6-8 classroom. Emphasis is placed on standards for the STEM disciplines, the development of contextual learning units, and classroom/laboratory instructional strategies. This course contains a 45-hour practicum experience at the middle school level.

STEM 360. Transportation Technology. 3 Credits. Lecture and discussion 1 hour; laboratory 5 hours; 3 credits. Prerequisite: junior standing or permission of the instructor. Study of the development of transportation and the application of its systems to the movement of people and cargos. Areas of concern include vehicle systems design and support systems.

STEM 367. Cooperative Education. 1-3 Credits. 1-3 credits (may be repeated for credit). Prerequisite: approval by the department and Career Management, in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria, and evaluative procedures as formally determined by the department and the Cooperative Education program prior to the semester in which the work experience is to take place. (qualifies as a CAP experience).

STEM 370T. Technology and Society. 3 Credits. Lecture 3 hours; 3 credits. Prerequisites: grade of C or better in ENGL 211C or 221C or 231C; junior standing or permission of the instructor. A multidisciplinary course designed to provide insight into the fundamental, historical, and contemporary nature of technology as an area of human knowledge. Attention is given to the positive and negative aspects of technology and how they affect society. (This is a writing intensive course.).

STEM 382. Industrial Design. 3 Credits. Lecture 3 hours; 3 credits. Prerequisites: junior standing. Students will analyze and design products representative of today’s industrial technological society. Emphasis will be placed upon design methodology, aesthetic value, and design thinking.

STEM 386. Architecture. 3 Credits. Lecture 3 hours; 3 credits. Prerequisite: junior standing. A course designed to apply principles of space planning, architectural construction techniques, and energy-efficient building methods as they apply to residential and commercial structures.

STEM 417. Exploring Technology and Modern Industry. 3 Credits. Lecture 3 hours, 3 credits. Prerequisites: STEM 251 and junior standing or permission of the instructor. A course designed to explore technological systems and new developments in technology education. Emphasis is on middle schools.

STEM 433/533. Developing Instructional Strategies PreK-6: Mathematics. 3 Credits. Lecture 3 hours; 3 credits. Prerequisites: TLED 301 or 290 and 430/530. Following a theory into practice philosophy, students explore, develop, and use instructional strategies, materials, technologies, and activities to promote children’s development of attitudes, behaviors, and concepts in mathematics in grades PreK-6 in support of NCTM national instructional standards and the Virginia Standards of Learning.

STEM 434/534. Developing Instructional Strategies PreK-6: Science. 3 Credits. Lecture 3 hours; 3 credits. Prerequisites: TLED 301 or TLED 290 and TLED 430/530. Following a theory into practice philosophy, students explore, develop, and use instructional strategies, materials, technologies, and activities to promote children’s development of attitudes, behaviors, and concepts in science in grades PreK-6 in support of AAAS national instructional standards and the Virginia Standards of Learning.
STEM 453/553. Developing Instructional Strategies for Teaching in the Middle/High School: Mathematics. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: TLED 483. Prerequisites: TLED 301 or TLED 290, TLED 430/530, SPED 313 or TLED 677, passing scores on PRAXIS I or equivalent SAT scores as established by VA Board of Education, a criminal background check, acceptance into teacher education, grade requirement in the specific content area and professional education core, minimum major and overall GPA of at least 2.75. Following a theory/research-into-practice philosophy, students explore, develop, and use instructional strategies, materials, technologies, and activities to promote the development of attitudes, behaviors, and concepts in mathematics, grades 6-12, in support of national instructional standards and the Virginia Standards of Learning; 35 hours of teaching practicum required. (Additional prerequisites for MCTP students are ECI 608 and 616.).

STEM 454/554. Developing Instructional Strategies for Teaching in the Middle/High School: Science. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: TLED 483. Prerequisites: TLED 301 or TLED 290 and TLED 430/530, SPED 313 or TLED 677, passing scores on PRAXIS I or equivalent SAT scores as established by VA Board of Education, a criminal background check, acceptance into teacher education, grade requirement in the specific content area and professional education core, minimum major and overall GPA of at least 2.75. Following a theory/research-into-practice philosophy, students explore, develop, and use instructional strategies, materials, technologies, and activities to promote the development of attitudes, behaviors, and concepts in science, grades 6-12, informed by national instructional standards and the Virginia Standards of Learning; 35 hours of teaching practicum required. (Additional prerequisites for MCTP students are TLED 608 and 616.).

STEM 455. STEM Education Grades 9 Through 12. 3 Credits.
Lecture, 3 hours; 3 credits. This course prepares educators to use research-based methods for integrating science, technology, engineering, and mathematics (STEM) in the 9-12 classroom. Emphasis is placed on Virginia’s Standards of Learning (SOLs), technology education competencies, and program planning. This course contains a 45-hour practicum experience at the high school level.

STEM 471/571. Communication Industries. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and industrial technology major for 471. A course designed to provide career and technical education teachers, industrial technologists, counselors, and administrators an opportunity to observe and enhance their knowledge of representative communication industries from the local region. (qualifies as a CAP experience).

STEM 472/572. Construction Industries. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and industrial technology major for 472. A course designed to provide career and technical education teachers, industrial technologists, counselors, and administrators an opportunity to observe and enhance their knowledge of representative construction industries from the local region. (qualifies as a CAP experience).

STEM 473/573. Manufacturing Industries. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and industrial technology major for 473. A course designed to provide career and technical education teachers, industrial technologists, counselors, and administrators an opportunity to observe and enhance their knowledge of representative manufacturing industries from the local region. (qualifies as a CAP experience).

STEM 474/574. Service Industries. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and industrial technology major for 474. A course designed to provide career and technical education teachers, industrial technologists, counselors, and administrators an opportunity to observe and enhance their knowledge of representative service industries from the local region. (qualifies as a CAP experience).

STEM 475/575. Transportation Industries. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing and industrial technology major for 475. A course designed to provide career and technical education teachers, industrial technologists, counselors, and administrators an opportunity to observe and enhance their knowledge of representative transportation industries from the local region. (qualifies as a CAP experience).

STEM 486/586. Middle School Student Teaching for Technology Education. 6 Credits.
6 credits. Prerequisites: STEM 305, 306; SEPS 408, SEPS 450; SPED 313; and TLED 408. Passing scores on PRAXIS I or State Board of Education-approved SAT or ACT scores and passing scores on the appropriate PRAXIS II content examination are required. Classroom placement for student teaching in a middle school technology laboratory. Students apply content and methodology under the supervision of a cooperating teacher and university faculty member. Available for pass/fail grading only. (Qualifies as a CAP experience.).

STEM 488. High School Student Teaching for Technology Education. 6 Credits.
6 credits. Prerequisites: STEM 305, 306; SEPS 408, SEPS 450; SPED 413; TLED 408 and passing scores on PRAXIS I or State Board of Education-approved SAT or ACT scores, and passing scores on the appropriate PRAXIS II content examination. Classroom placement for student teaching in a high school technology laboratory. Students apply content and methodology under the supervision of a cooperating teacher and university faculty member. Available for pass/fail grading only. (Qualifies as a CAP experience).

STEM 495/595. TOPICS. 1-3 Credits.

THEA - Theatre

THEATRE Courses

THEA 152. Acting One. 3 Credits.
Lecture 3 hours; 3 credits. Develops and explores creative potential through exercises, improvisations, performance games, and original performances created by class. Emphasis is on qualities of spontaneity, concentration, ensemble awareness, imagination, and rhythm and spatial form.

THEA 173+. Theatre Activities. 1 Credit.

THEA 174+. Theatre Activities. 1 Credit.
1 credit. Participation in University theatre activities as assigned by the instructor. May be repeated consecutively as THEA 174+, 273+, 274+, 373+, 374+, 473+, 474+. (qualifies as a CAP experience).

THEA 195. Topics in Theatre. 1-3 Credits.
1-3 credits each semester. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

THEA 196. Topics in Theatre. 1-3 Credits.
1-3 credits each semester. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

THEA 225. Introduction to Production Technology. 3 Credits.
Lecture 3 hours; 3 credits. Fundamentals of construction, lighting, and production techniques in contemporary theatre and film. Students will apply acquired skills to active productions for ODU Theatre and Film productions. (cross-listed with COMM 225).
THEA 227A. Honors: Film Appreciation. 3 Credits.
Lecture 2 hours; lab 2 hours; 3 credits. This class will focus on both contextual and close text analysis of masterworks as they have influenced film art and industry. Students in this course are expected to develop basic research, communication, viewing and critical thinking skills as they apply their knowledge to the analysis of the film experience. Open to students in the Honors Program only. (cross-listed with COMM 227A).

THEA 230. Drama for Production. 3 Credits.
Lecture 3 hours; 3 credits. A practitioner-oriented examination of drama from its origins to the present. Particular emphasis is placed on plays from around the world that are associated with changes in theatre practice. Required for majors.

THEA 241A. The Theatre Experience. 3 Credits.
Lecture and discussion 3 hours; 3 credits. An introductory audience-oriented examination of the elements of theatre and their historical development through study of plays and performances; emphasis will be directed to actually experiencing live theatre. Attendance at performances is required.

THEA 244. Introduction to Production Design. 3 Credits.
Lecture 3 hours; 3 credits. An introduction to principles, methods, and materials used in designing theatrical production.

THEA 246. Introduction to Stage Combat. 3 Credits.
Lecture 3 hours; 3 credits. This course trains performers in techniques for creating believable and safe stage combat. Techniques will involve falling, landing, hand-to-hand combat and various weapons, resulting in fully staged fights by the end of the course.

THEA 248. Introduction to Stage Makeup. 3 Credits.
Lecture 3 hours; 3 credits. Develops skills and techniques for design and application of stage makeup.

THEA 252. Acting Two. 3 Credits.
Lecture 3 hours; 3 credits. Basic introduction to principles of acting which may be applied to stage and media and application of various techniques through exercises, improvisations, and performances of short scenes.

THEA 270A. Film Appreciation. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. This class will focus on both contextual and close text analysis of masterworks as they have influenced film art and industry. Students in this course are expected to develop basic research, communication, viewing and critical thinking skills as they apply their knowledge to the analysis of the film experience. (cross-listed with COMM 270A).

THEA 271. Introduction to Digital Filmmaking. 3 Credits.
Lecture 3 hours; 3 credits. This course will introduce the beginning student to the elements of digital filmmaking from the script to the screen. Students will learn the basics of cameras, lights, sound, editing and post productions, as well as scripting and storyboarding. This is a hands-on production course. (cross-listed with COMM 271).

THEA 273+. Theatre Activities. 1 Credit.
1 credit. Participation in University theatre activities as assigned by the instructor. May be repeated consecutively as THEA 174+, 273+, 274+, 373+, 374+, 473+, 474+. (qualifies as a CAP experience).

THEA 274+. Theatre Activities. 1 Credit.
1 credit. Participation in University theatre activities as assigned by the instructor. May be repeated consecutively as THEA 174+, 273+, 274+, 373+, 374+, 473+, 474+. (qualifies as a CAP experience).

THEA 295. Topics in Theatre. 1-3 Credits.
1-3 credits each semester. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.
THEA 347. Movement for the Actor. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 252 or permission of the instructor. An examination through exercises and assignments of principles for developing a disciplined, flexible body for character creation.

THEA 348. Acting for the Camera. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 252. Course will examine the process of building characters for the camera, and the ways in which the conventions of the stage are adapted for the film or video audience. (cross-listed with COMM 348).

THEA 349. Costume Design for Stage and Camera. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 244. This course explores the design aesthetic, historical context, and contemporary impact on performance of the costume garment and its accessories. Students will explore the application of design principles in a practical experience. (cross-listed with COMM 349).

THEA 350. The Spoken Text. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 252 or permission of the instructor. An introduction to the basic structures of verbal style through performance of the works of a variety of classical and contemporary writers. Students will become comfortable with linguistic techniques suitable to a range of performance situations.

THEA 352. Acting Three. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: THEA 152 and THEA 252. Study of and experimentation with various theories concerning the preparation of roles and special performance characteristics of different styles and types of drama. Considerable attention is directed toward scene study.

THEA 360. Voice for the Stage I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 252. This course will explore facets of vocal production, speech and expression necessary for an engaging performance on stage. Through exercises and text work, the student will learn healthy vocal production, elements of clear speech and techniques for improving vocal range and expressiveness.

THEA 367. Cooperative Education. 1-3 Credits.
1-3 credits (may be repeated for credit). Prerequisite: approval of the department and the Career Management Center, in accordance with the policy for granting credit for Cooperative Education programs. Available for pass/fail grading only. Student participation for credit based on the academic relevance of the work experience, criteria and evaluative procedures as formally determined by the department and the Cooperative Education program prior to the semester in which the work experience takes place. (qualifies as a CAP experience).

THEA 368. Internship. 3 Credits.
3 credits. Prerequisite: approval of program director. Available for pass/fail grading only.

THEA 369. Internship for the BFA. 3 Credits.
1 credit. Prerequisite: approval of director of program, BFA Director. Available for pass/fail grading only. A structured work experience with or without remuneration; a paper, a log and portfolio of work time plus satisfactory evaluations by supervisor and cooperating faculty member are required. (qualifies as a CAP experience).

THEA 370. The Video Project. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 271 or COMM 271, or permission of the instructor. A studio course that presents an opportunity for the student to produce digital video content. This is a hands-on course which is organized to allow the student to experience the entire process of developing a project for the camera from scripting through filming to editing and finishing detail. (cross-listed with COMM 370).

THEA 371. History of Animation. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 271 or COMM 271. This course traces the evolution of the animated film worldwide, from the silent to the modern era. The purpose of the course is to provide students with a broad chronological and international overview of animated film masterworks. (cross-listed with COMM 371).

THEA 373+. Theatre Activities. 1 Credit.
1 credit. Participation in University theatre activities as assigned by the instructor. May be repeated consecutively as THEA 373+, 374+, 375+, 376+, 377+, 378+, 379+, 380+. (qualifies as a CAP experience).

THEA 374+. Theatre Activities. 1 Credit.
1 credit. Participation in University theatre activities as assigned by the instructor. May be repeated consecutively as THEA 374+, 375+, 376+, 377+, 378+, 379+, 380+. (qualifies as a CAP experience).

THEA 375. Television Production. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 271 or COMM 271. Permission of the instructor. The purpose of this course is to explore and understand the basic process of producing television from script to presentation.

THEA 380. The Video Documentary I. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 271 or COMM 271. This course offers the student an opportunity to explore the world of documentary filmmaking. By using the camera as a research tool in developing evidence in support of a thesis, the student is better able to understand documentary filmmaking. Students will develop projects leading toward the completion of a short documentary film or video. (cross-listed with COMM 380).

THEA 385. Cinematography. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA/COMM 370. Introduces students to the fundamentals of the videographed digital image. The course explores live-action photography, compositing, filters, digital formats, motion control, and grip equipment. The concepts of the course are applied to fiction and nonfiction cinema. (cross-listed with COMM 385).

THEA 395. Topics in Theatre. 1-3 Credits.
1-3 credits each semester. Prerequisites: junior standing and permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

THEA 396. Topics in Theatre. 1-3 Credits.
1-3 credits each semester. Prerequisites: junior standing and permission of the instructor. A study of selected topics designed for nonmajors, or for elective credit within a major. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

THEA 441/541. American Theatre. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 230, junior standing, or permission of the instructor. A study of dramatic theories and theatre practices as they relate to the development and growth of theatrical art in the United States.

THEA 442/542. Principles of Directing. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: THEA 230, 244 and 252 or permission of the instructor. An examination and practical application of principles of stage direction as influenced by play script, acting talent, set and lighting design, and the technical facilities of production organizations.

THEA 445/545. Experimental Theatre. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 230 or permission of the instructor. An in-depth study of avant-garde theatre scripts and performance techniques from 1900 to the present.
THEA 446. Directing for the Camera. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 271 or COMM 271. This course seeks to provide students with fundamental principles and practical techniques of directing the narrative fiction film: script development and analysis, production planning, shot composition and framing, and working with actors and crew. (cross-listed with COMM 446).

THEA 447/547. Women in Theatre. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 230 or permission of the instructor. A study of the contributions women have made to the theatre as actresses, directors/managers, designers, and playwrights, and of their creative problems and methodologies.

THEA 449W/549. Script and Performance Analysis. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA 230, THEA 244, THEA 252, and a grade of C or better in ENGL 211C or 221C or 231C, or permission of the instructor. Approaches script analysis from a directorial perspective through the written examination of action, character, language, music, and spectacle, as well as the play’s production history and historical context, to discover how plays might be staged for the contemporary audience. Plays in production will be examined from a critical perspective with attention to artistic interpretation in the areas of direction, design, and performance. (This is a writing intensive course.).

THEA 452/552. Acting Four. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: THEA 152, THEA 252 and THEA 352. An advanced scene study class exploring issues of style and period pertinent to portraying characters on stage.

THEA 460. Voice for the Stage II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: THEA 252 and THEA 360. Course will continue the study of vocal production, speech and expression necessary for on stage performance of both classical and modern text. Techniques for producing effective dialects will be introduced as well as the application of dialect towards character development.

THEA 471W/571. International Film History. 3 Credits.
Lecture 2 hours; laboratory 2 hours; 3 credits. Prerequisite: COMM/THEA 270A, a grade of C or better in ENGL 211C or 221C or 231C, and junior standing or permission of the instructor. An examination of world cinema as a technology, a business, an institution, and an art form from its inception to the present. Emphasis is on the narrative fiction film, its technological and aesthetic development, economic organization, and socio-cultural context. Representative classic and contemporary works will be screened and analyzed. (This is a writing intensive course.).

THEA 472. Acting Five. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: THEA 152, THEA 252 and THEA 352. An examination and advanced study of techniques relevant to specialized theatre performance. This course will allow advanced students the opportunity to explore a variety of work including experimental theatre, avant garde works, mediated performance and visual based theatre.

THEA 473+. Theatre Activities. 1 Credit.
1 credit. Participation in University theatre activities as assigned by the instructor. May be repeated consecutively as THEA 174+, 273+, 274+, 373+, 374+, 473+, 474+. (qualifies as a CAP experience).

THEA 474+. Theatre Activities: Performance. 1 Credit.
1 credit. Participation in University Theatre activities as a performer. Available through audition only.

THEA 479W/579. American Film History. 3 Credits.
Lecture 2 hours, laboratory 2 hours; 3 credits. Prerequisite: A grade of C or better in ENGL 211C or 221C or 231C; THEA/COMM 270A; and junior standing or permission of the instructor. An examination of American motion pictures as an art form, a business and an institution from its inception to the present. Primary attention is accorded to the narrative fiction film, its aesthetic and technological development, economic organization and social impact. This course highlights the many connections between film history and American culture. (cross-listed with COMM 479W/579)(This is a writing intensive course.).

THEA 480/580. The Video Documentary II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: THEA/COMM 380. A production/studio course designed to complement the work developed in Theatre 380: The Video Documentary I. Discussion/presentation topics range from production field work to post-production editing. The final third of the semester will be devoted to compiling the rough footage in post production. (cross-listed with COMM 480/580).

THEA 482. Screenwriting II. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM/THEA 346. Students explore visual storytelling through the theories guiding character development, narrative construction, thematic layers, scene analysis, and many more. Students participate in a variety of critical and writing exercises to enhance their knowledge of the craft of screenwriting. (cross-listed with COMM 482).

THEA 483. Advanced Video Project. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: COMM/THEA 370. This course introduces students to the processes and techniques of a narrative film production. Students experience pre-production, production, and post-production phases in creating a product to be entered in regional and national competitions. (cross-listed with COMM 483).

THEA 485. Film and Television Genres. 3 Credits.
Lecture 3 hours. 3 credits. Prerequisite: COMM/THEA 270A or COMM 260. This course is designed to examine the conventions and meanings of various film and television genres within their broader aesthetic, socio-historical, cultural, and political contexts. Each time the class is offered it will focus in depth on a different genre, such as the gangster, the Western, the musical, the comedy, science fiction, among others.

THEA 486/586. Advanced Filmmaking. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: THEA 346, 370, 385, 446 and 483. Offers the advanced film/video maker an opportunity to produce a project beyond the scope of previous classroom projects. Students are permitted into the course solely by instructor approval and only after demonstration of superior skills in subordinate courses and acceptance of a submitted screenplay. (cross-listed with COMM 486/586).

THEA 489. Methods of Teaching Theatre. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: THEA 490. Prerequisite: junior standing. Focuses on conceptual foundations of theatre education including its history, and on methods and materials for classroom instruction and theatrical rehearsals and performances.

THEA 490. Theatre Education Practicum. 1 Credit.
1 credit. Corequisite: THEA 489. Prerequisite: junior standing and permission of the College of Education. Designed to be taken concurrently with THEA 489, this course provides students with an opportunity to further develop their understanding of theatre instruction by personal observation and participation in the classroom setting. Students will evaluate that practical experience in relation to theoretical issues and methods presented in THEA 489. (qualifies as a CAP experience).
152  COURSE DESCRIPTIONS

THEA 495/595. Topics in Theatre. 1-3 Credits.
1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

THEA 496/596. Topics in Theatre. 1-3 Credits.
1-3 credits each semester. Prerequisite: appropriate survey course or permission of the instructor. The advanced study of selected topics designed to permit small groups of qualified students to work on subjects of mutual interest which, due to their specialized nature, may not be offered regularly. These courses will appear in the course schedule, and will be more fully described in a booklet distributed to all academic advisors.

THEA 497/597. Tutorial Work in Special Topics in Theatre. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

THEA 498/598. Tutorial Work in Special Topics in Theatre. 1-3 Credits.
1-3 credits each semester. Prerequisites: senior standing and approval of the department chair. Independent reading and study on a topic to be selected under the direction of an instructor. Conferences and papers as appropriate.

THEA 499. Senior Project. 1 Credit.
1 credit. Prerequisite: senior standing as theatre major and approval of department chair. Completion of a paper during a student’s senior year related to a major project in the student’s interest area. Topic to be selected under the direction of an instructor with conferences as appropriate.

TLED - Teaching & Learning-Education

TEACHING LEARNING-EDUCATION Courses

TLED 290. Education for the 21stCentury. 3 Credits.
Lecture 3 hours; 3 credits. This course is designed for use with dual enrollment classes that are approved by the Darden College of Education and are using the Teachers for Tomorrow curriculum. The course introduces the historical, philosophical, and sociological foundations and contemporary issues of American public education, and includes the use and analysis of assessment data and the construction and interpretation of assessments. Students are expected to independently register for and take the Praxis I examination while enrolled in this course. Students in PreK-6 programs will complete a 15 hour observation/participation experience in a primary setting (preK-3) and 15 hour observation/participation experience in an upper elementary (4-6) setting; students in 6-12 or 6-8 programs will complete a 30 hour observation/participation experience in an appropriate 6-12 setting. (qualifies as a CAP experience).

TLED 301. Foundations and Introduction to Assessment of Education. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: sophomore standing. Introduces the historical, philosophical, and sociological foundations and contemporary issues of American public education. Includes the use and analysis of assessment data and the construction and interpretation of assessments. Students are expected independently to register for and take the Praxis I examination while enrolled in this course. Students in PreK-6 programs will complete a 15 hour observation/participation experience in a primary setting (preK-3) and a 15 hour observation/participation experience in an upper elementary (4-6) setting; students in 6-12 or 6-8 programs will complete a 30 hour observation/participation experience in an appropriate 6-12 setting. (qualifies as a CAP experience).

TLED 303. Orientation to Teacher Education. 0 Credits.
Prerequisite: junior standing or permission of instructor. Introduces students interested in teacher education to the University, College of Education, and the profession of teaching. (Learning Community students only).

TLED 360. Classroom Management and Discipline. 2 Credits.
Lecture 2 hours; 2 credits. Prerequisite: TLED 290 or 301. Examines theories, research, and practices involved in classroom management, motivation, and discipline. Explores techniques for organizing and arranging classroom environments that are most conducive to learning.

TLED 395. Topics in Education. 1-3 Credits.
Lecture 1-3 hours; 1-3 credits. Prerequisite: junior standing. Explores contemporary problems and trends in education. Emphasis is placed upon topics related to curriculum, instructional strategies, and evaluation.

TLED 406/506. Teaching in the Multicultural Classroom. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. Explores the teaching strategies, materials and understandings needed in developing responsive classroom environments for children from diverse cultural, ethnic, economic and linguistic backgrounds.

TLED 408. Reading and Writing in Content Areas. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: TLED 301, 430/530, SPED 313. Examines and promotes understanding and use of comprehension/composing skills in all content areas, including a repertoire of questioning strategies, summarizing and retelling strategies, and strategies in literal, interpretive, critical and evaluative comprehension/composing across the curriculum, grades 6-12.

TLED 430/530. PK-12 Instructional Technology. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: TLED 301. Classroom technology and learning strategies are explored through research and synthesized through projects and a research paper (530 students only). The course uses contemporary productivity tools and Internet resources to develop and evaluate classroom management techniques and K-12 standards-based curriculum materials. The course addresses the NETS Teachers Standards and the Technology Standards for Instructional Personnel (TSIP).

TLED 432/532. Developing Instructional Strategies PreK-6: Language Arts. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: TLED 301 or 290, 430/530 and 468/568. Following a theory into practice philosophy, students explore, develop, and use instructional strategies, materials, technologies, and activities to promote children’s development of attitudes, behaviors, and concepts in language arts in grades PreK-6 in support of NCTE national instructional standards and the Virginia Standards of Learning.

TLED 435/535. Developing Instructional Strategies PreK-6: Social Studies. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: TLED 301 or 290 and 430/530. Following a theory into practice philosophy, students explore, develop, and use instructional strategies, materials, technologies, and activities to promote children’s development of attitudes, behaviors, and concepts in social studies in grades PreK-6 in support of NCSS national instructional standards and the Virginia Standards of Learning.
TLED 451/551. Developing Instructional Strategies for Teaching in the Middle/High School: English. 3 Credits.
Lecture 3 credits. 3 credits. Corequisite: TLED 483. Prerequisites: TLED 301 or 290, 430/530, SPED 313 or TLED 677, passing scores on PRAXIS I or equivalent SAT scores as established by VA Board of Education, a criminal background check, acceptance into teacher education, no grade less than C- in content area and professional education core, minimum major and overall GPA of at least 2.75. Following a theory/research-into-practice philosophy, students explore, develop, and use instructional strategies, materials, technologies, and activities to promote the development of attitudes, behaviors, and concepts in English, grades 6-12, informed by national instructional standards and the Virginia Standards of Learning; 35 hours of teaching practicum required. (Additional prerequisites for MCTP students are TLED 608 and 616.)

TLED 455/555. Developing Instructional Strategies for Teaching in the Middle/High School: Social Studies. 3 Credits.
Lecture 3 hours; 3 credits. Corequisite: TLED 483. Prerequisites: TLED 301 or 290, 430/530, SPED 313 or TLED 677, passing scores on PRAXIS I or equivalent SAT scores as established by VA Board of Education, a criminal background check, acceptance into teacher education, no grade less than C- in content area and professional education core, minimum major and overall GPA of at least 2.75. Following a theory/research-into-practice philosophy, students explore, develop, and use instructional strategies, materials, technologies, and activities to promote the development of attitudes, behaviors, and concepts in social studies, grades 6-12, informed by national instructional standards and the Virginia Standards of Learning; 35 hours of teaching practicum required. (Additional prerequisites for MCTP students are TLED 608 and 616.)

TLED 468/568. Language Acquisition and Reading for Students with Diverse Learning Needs. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course provides an overview of normal language development and language disorders which impact the acquisition of language based curriculum skills such as listening, speaking, reading, and written expression. Emphasis is on instructional techniques to assist students with diverse learning needs to achieve reading and comprehension skills. Effective reading strategies and curricula for individuals with disabilities will also be reviewed.

TLED 474/574. Foundations and Contemporary Issues in Early Childhood Education. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course introduces students to objectives, curricula, and organization of early childhood education as it is practiced throughout the United States and other countries. Foundations of education programs and current research and practices related to the education of young children will be addressed with an emphasis on sociological, cultural, historical, and philosophical factors.

TLED 476. Practical Applications in the World of Children. 3 Credits.
3 credits. Prerequisite: junior standing. This course is part of the Children’s Rights interdisciplinary minor. Supervised involvement of the student in Old Dominion University’s Child Study Center classrooms where the student observes and gains experience working with master’s-level teachers while planning and executing developmentally appropriate activities for young children from age six weeks to six years.

TLED 478/578. Integrating Instruction Across the Curriculum PreK-6. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: TLED 301 or TLED 290, passing scores on PRAXIS I or met equivalent scores as established by VA Board of Education, a criminal background check, acceptance into teacher education, no grade less than C in content area and professional education core, minimum major overall GPA of at least 2.8 and at least two of the following courses: TLED 432/532, TLED 435/535, TLED 478/578; STEM 433/533, and STEM 434/534. Following a theory into practice philosophy and building on the instructional strategies for specific disciplines, students explore, develop, and use advanced instructional materials, technologies, and activities to promote interdisciplinary and multidisciplinary instruction across the curriculum in grades PreK-6 in support of national standards and the Virginia Standards of Learning. The field experience component (40 hours) includes participation in PreK-3 and 4th-6th grade classrooms in an accredited public or non-public school, per program requirement.

TLED 479/579. Classroom Management and Practice PreK-3; PreK-6. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: TLED 301 or 290, passing scores on PRAXIS I or met equivalent scores as established by VA Board of Education, a criminal background check, acceptance into teacher education, no grade less than C in content area and professional education core, minimum major and overall GPA of at least 2.8 and at least two of the following courses: TLED 432/532, 435/535, 478/578; STEM 433/533, 434/534. Course prepares prospective PreK-3 and PreK-6 teachers to provide instruction and management addressing the intellectual, physical, emotional and social needs of PreK-6 learners founded in empirically based practice. The field based component (70 hours) includes participation in PreK-3 and 4th-6th grade classrooms in an accredited public or non-public school. Students in the PreK-3 program are required to complete 35 hours in the Child Development Center. Attendance at seminars and debriefing sessions is required.

TLED 483/583. Seminar in Teacher Education. 1 Credit.
Lecture 1 hour; 1 credit. Corequisite: TLED 451/551 or STEM 453/553 or 454/554 or TLED 455/555. Explores issues, problems, concerns, and processes related to teaching and to entering the profession of teaching. Passing score on PRAXIS II in licensure content area, passing scores on the Virginia Communication and Literacy Assessment (VCLA), and where appropriate passing scores on the Virginia Reading Assessment (VRA) are required to pass this course.

TLED 485. Teacher Candidate Internship. 12 Credits.
Five days per week; full semester; 12 credits. Prerequisites: completion of all course work in an approved program in teacher education, passing scores on PRAXIS I or equivalent SAT or ACT scores as established by VA Board of Education, passing scores on the appropriate PRAXIS II content examination, passing score on the Virginia Communication and Literacy Assessment, departmental approval, permission of the director of teacher education services, grade requirement in the specific content area and professional education core, minimum major and overall GPA of at least 2.75 and a criminal background check. Available for pass/fail grading only. Internship in school. (Qualifies as a CAP experience).

TLED 486/586. Student Teaching for Special Endorsement. 3-6 Credits.
Five days per week; 7-8 weeks; 3-6 credits. Prerequisites: Collegiate Professional Certificate and/or completion of an approved program in teacher education, passing scores on PRAXIS I or equivalent SAT or ACT scores as established by VA Board of Education, passing scores on the appropriate PRAXIS II content examination, passing score on the Virginia Communication and Literacy Assessment, departmental approval, permission of the director of teacher education services, meet grade requirement in the specific content area and professional education core, minimum major and overall GPA of at least 2.75, and a criminal background check. Available for pass/fail grading only. Internship in school. (Qualifies as a CAP experience).
TLED 492/592. Integrating Mathematics and Science Across the Curriculum, PK-3. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course has a theory-into-practice goal. The focus for this class will be to develop and use teaching strategies and techniques in the content area of mathematics and science, which are based on Piaget’s theory of constructivism and are compatible with the NCIM & NSE Standards and the Virginia SOLs. Practical ways of thinking about math and science by young children, PK-3, and the natural integration of these subjects across the early childhood curriculum will be emphasized.

TLED 493/593. Integrating Children’s Literature, Language Arts and Social Studies Across the ECE Curriculum. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: junior standing. This course offers a review of literary materials suitable for nursery, kindergarten and early elementary school children. Social issues affecting children and early childhood literature related to these issues, the use of teaching strategies and techniques in the content areas of history, geography, economics and civics which are based on Piaget’s theory of constructivism, the National Council of Teachers of English and the National Council for the Social Studies standards, and the Virginia SOLs are emphasized.

TLED 495/595. Topics in Education. 1-4 Credits.
Lecture 1-4 hours; 1-4 credits. Prerequisite: junior or graduate standing. Explores contemporary problems and trends in education. Emphasis is placed upon topics related to curriculum, instructional strategies, and evaluation.

TLED 496/596. Topics in Education. 1-3 Credits.
Lecture 1-3 hours; 1-3 credits. Prerequisite: junior or graduate standing. Cannot be applied to a Master of Science in Education degree in the Department of Teaching and Learning. Explores contemporary problems and trends in education. Emphasis is placed upon topics related to curriculum, instructional strategies, and evaluation.

TLED 497/597. Topics in Education. 1-3 Credits.
Hours to be arranged: 1-3 credits. Prerequisite: junior or graduate standing. Allows the student to engage in independent study of issues and trends in education. Emphasis is placed upon topics related to curriculum, instructional strategies, and evaluation.

TLED 498/598. Topics in Education. 1-3 Credits.
Hours to be arranged: 1-3 credits. Prerequisite: junior or graduate standing. Allows the student to engage in independent study of issues and trends in education. Emphasis is placed upon topics related to curriculum, instructional strategies, and evaluation.

UNIV - University

UNIVERSITY Courses

UNIV 100. University Orientation. 1 Credit.

UNIV 110. Academic Success. 0 Credits.

UNIV 111. Sophomore Seminar. 0 Credits.
This seminar provides resources and opportunities for students to build relationships with other sophomores and faculty and to explore individual strengths, values, skills, and interests.

UNIV 112. Transfer Seminar. 0 Credits.
This seminar provides resources and opportunities for students to build relationships with other transfer students and faculty and to explore individual strengths, values, skills, and interests.

UNIV 120. Career Exploration. 1 Credit.
Lecture 1 hour; 1 credit. A systematic exploration of individual interests and skills and career resources. Emphasis is placed on defining goals and developing strategies to achieve goals. Career testing and individual conferences are included.

UNIV 195. Topics in Career Management. 3 Credits.
1 credit. A study of selected career-related topics. Titles for specific course offerings will appear in the course schedule.

UNIV 200. Career Implementation. 1 Credit.
Lecture 1 hour; 1 credit. A practical examination and application of resume and cover letter writing, job search strategies, including electronic job search and networking, interview skills, and evaluating employment offers. Designed to prepare students for internships or cooperative education experiences and/or for post graduation employment.

UNIV 295. Topics in Career Management. 1 Credit.
1 credit. A study of selected career-related topics. Titles for specific course offerings will appear in the course schedule.

UNIV 395. Topics in Career Management. 1 Credit.
1 credit. A study of selected career-related topics. Titles for specific course offerings will appear in the course schedule.

UNIV 400. Career Engagement. 1 Credit.
Lecture 1 hour; 1 credit. A practical examination and application of resume and cover letter writing, job search strategies including the electronic job search, networking, interview skills, and negotiating a job offer. Topics will also include the transition to the world of work and professional development. Designed for students seeking post-graduation employment.

UNIV 495. Topics in Career Management. 1-3 Credits.
1 credit. A study of selected career-related topics. Titles for specific course offerings will appear in the course schedule.

WMST - Women's Studies

WOMEN’S STUDIES Courses

WMST 201S. Introduction to Women's Studies. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: Must qualify to enroll in ENGL 110C. An introduction to the interdisciplinary field of women’s studies, drawing on materials from the social sciences. Topics include the social construction of gender, cross-cultural variations in women’s lives, media representations, work, health, women’s roles in politics, and sexuality.

WMST 226S. Honors: Women in A Changing World. 3 Credits.
Lecture 3 hours; 3 credits. Co- or Prerequisite: ENGL 110C. Open only to students in the Honors College. A special honors version of WMST 201S.

WMST 302W. Dimensions of Diversity: Intersectionality Among Women. 3 Credits.
Lecture 3 hours, 3 credits. Prerequisites: a grade of C or better in ENGL 211C or 2221C or 231C and six semester hours in literature, history, social science and/or performing arts courses. This course explores women’s experiences at intersections of gender, race, and class within society, in general, and specifically within the various women’s movements that have taken place in the 19th and 20th Centuries, charting the development of feminism. Additionally, the course examines the need for the discipline of Women’s Studies to sponsor change for women. (This is a writing intensive course.).
WMST 368. Internship. 3-6 Credits.
3-6 credits. Prerequisites: at least one WMST course, junior standing and instructor approval required. Course provides an opportunity to gain experience working in organizations and government agencies. Students’ work should engage with women’s issues at the local, regional, national, and/or global levels. Students must work for at least 50 hours per course credit. (qualifies as a CAP experience).

WMST 377. Extracurricular Studies. 3 Credits.
Lecture 2 hours; discussion 1 hour; practicum 1 hour; 3 credits. Prerequisites: three semester hours in WMST or WMST crosslisted course and permission of the instructor. An undergraduate seminar on feminist pedagogical issues and theory offered in conjunction with a practicum providing experience in the facilitation of small sections of the introductory women’s studies course.

WMST 390T. Women and Technology Worldwide. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: three semester hours in the social sciences or history. An exploration of women as designers and users of technology and of the impact of technology on women’s lives across the world. Variations in women’s experiences by race, class, and culture will be stressed, along with particular focus on global developments that shape the context of women’s and men’s lives.

WMST 395. Topics in Women’s Studies. 1-3 Credits.
1-3 credits each semester. Prerequisite: sophomore standing or permission of the instructor. A study of selected women’s studies topics. These courses will usually be interdisciplinary. All topics will be described on the women’s studies website and will be more fully described in material distributed to all academic advisors.

WMST 396. Topics in Women’s Studies. 1-3 Credits.
1-3 credits each semester. Prerequisite: sophomore standing or permission of the instructor. A study of selected women’s studies topics. These courses will usually be interdisciplinary. All topics will be described on the women’s studies website and will be more fully described in material distributed to all academic advisors.

WMST 400/500. U.S. Women’s Activism. 3 Credits.
Lecture, 3 hours. 3 Credits. Prerequisite: WMST 201S. This course historicizes U.S.’s social, political, and rhetorical activism over the last 200 years, tracing their entry into and shaping force upon public life. The course examines the development of women’s activism in the nineteenth century, the twentieth century women’s (or feminist) movement, and its current status, particularly in relation to postfeminism and a “third” wave.

WMST 401W/S01. Women: A Global Perspective. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: WMST 201S and a grade of C or better in ENGL 211C or 221C or 231C. An analysis of the global forces that impact women’s lives throughout the world. Particular emphasis is placed on the status of women in the developing world, international institutions that protect women’s rights, and efforts to promote gender equality worldwide. (This is a writing intensive course.).

WMST 414/514. Motherhood: Texts and Images. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: ENGL 211C or equivalent. This course examines the role of the mother, the experience of mothering and the institution of motherhood through a number of disciplinary and theoretical lenses. It considers how motherhood functions to women’s advantage or disadvantage, in professional and economic areas as well as the mother’s ideological construction in public discourse, imagery, nonfiction, and film.

WMST 460W/S60. Feminist Theory. 3 Credits.
Lecture and discussion 3 hours; 3 credits. Prerequisite: WMST 201S or WMST 302W and a grade of C or better in ENGL 211C or 221C or 231C. A study of the renaissance in feminist thought since the 1960s through close readings of key documents and texts. The course covers a variety of feminist perspectives as expressed in both theory and practice. (This is a writing intensive course.).

WMST 470/570. Feminist Research Methods. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisite: WMST 460W/560. The course explores the ethics, practice, and multiple forms of conducting feminist research. Narrative research methods are practiced through hands-on oral herstory assignments. Throughout the course, the process of knowledge construction is interrogated from a feminist perspective.

WMST 490. Capstone Course. 3 Credits.
Lecture 3 hours; 3 credits. Prerequisites: WMST 201S or WMST 302W, WMST 460W, plus six semester hours of other WMST or cross-listed core courses. Seminar intended for women’s studies majors in the final semester(s) of study, consisting of an individualized or group senior project, such as a research paper, an oral history, an internship, or a service learning project.

WMST 495/595. Topics in Women’s Studies. 3 Credits.
3 credits each semester. Prerequisite: junior standing or permission of the instructor. Advanced seminars on selected topics. The subject matter will usually be interdisciplinary. These seminars will be more fully described on the women’s studies website and in material distributed each semester to all academic advisors.

WMST 496/596. Topics in Women’s Studies. 3 Credits.
3 credits each semester. Prerequisite: junior standing or permission of the instructor. Advanced seminars on selected topics. The subject matter will usually be interdisciplinary. These seminars will be more fully described on the women’s studies website and in material distributed each semester to all academic advisors.

WMST 497/597. Independent Study. 1-6 Credits.
1-6 credits. Prerequisite: at least one women’s studies course. Independent study of an interdisciplinary women’s studies topic, or a reading plus internship project to be selected under the direction of a women’s studies faculty member. Conferences and papers as appropriate. Tutorial work, either library-based or field work, must be approved by the instructor and the women’s studies chair before a student may enroll in the course. No more than three credits of tutorial work may be counted within the basic requirements for the women’s studies minor or major.

WMST 498/598. Independent Study. 1-6 Credits.
1-6 credits. Prerequisite: at least one women’s studies course. Independent study of an interdisciplinary women’s studies topic, or a reading plus internship project to be selected under the direction of a women’s studies faculty member. Conferences and papers as appropriate. Tutorial work, either library-based or field work, must be approved by the instructor and the women’s studies chair before a student may enroll in the course. No more than three credits of tutorial work may be counted within the basic requirements for the women’s studies minor or major.
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