299 Special Topics (3) Student or instructor-initiated course offered by department. Prereq: Consent of department. May be repeated. Maximum 12 hours.

300 Inter-area Portfolio Review (0) Review of prior studio work. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.

301 Fabric: Individual Class Projects (3-6) Prereq: 104, 201, 203 or consent of instructor. May be repeated. Maximum 6 hours.

302 Fiber: Individual Class Projects (3-6) Prereq: 105, 202, 204 or consent of instructor. May be repeated. Maximum 6 hours.

306 Silversmithing (4) Intensive metalsmithing techniques including forging, raising, shell forming, lathing, mokume, and lamination with individual studio problems to develop a personal style of expression. Prereq: 139, 205 or consent of instructor. May be repeated. Maximum 8 hours.

311 Drawing III (4) Development of personal drawing techniques and concepts through class problems. Prereq: 212 and 312 or consent of instructor. May be repeated. Maximum 8 hours.

312 Drawing Portfolio Review (0) Review of prior work in drawing. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.

313 Painting III (4) Individual expression with varied media on canvas. Prereq: 214 and 314 or consent of instructor. May be repeated. Maximum 8 hours.

312 Drawing Portfolio Review (0) Review of prior work in drawing. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.

315 Watercolor III (4) Individual expression with varied media on paper stressing individual concepts and personal approaches. Prereq: Consent of department. Satisfactory/No credit only.

320 Ceramics Portfolio Review (0) Review of prior work in ceramics. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.


331 Photography II (4) Individual expression in photographic medium. Prereq: 231. May be repeated. Maximum 8 hours.


334 Photographic Techniques Workshop (4) Theories and practices of film exposure and development. Introduction to zone system. Prereq: 331.

340 Sculpture Portfolio Review (0) Review of prior work in sculpture. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.

341 Sculpture II (3) Further exploration and development of sculptural concepts and materials. Prereq: 241 and 340 or consent of instructor. May be repeated. Maximum 6 hours.

342 Life Sculpture II (3) Advanced modeling techniques in clay and wax working from the figure. Includes casting a minimum of one piece. Prereq: 242 and 340 or consent of instructor. May be repeated. Maximum 6 hours.

343 Metal Casting II (3) Further exploration of casting methods. Prereq: 243 and 340 or consent of instructor.

344 Wood Sculpture II (3) Extension of skills and techniques begun in 244. Prereq: 244 and 340 or consent of instructor. May be repeated. Maximum 6 hours.

345 Steel Sculpture II (3) Further exploration of construction in steel and other metals. Prereq: 245 and 340 or consent of instructor.

346 Mixed Media Sculpture II (3) Further problems in the sculptural use of two or more distinctive materials. Prereq: 246 and 340 or consent of instructor.

350 Graphic Design/ Illustration Portfolio Review (0) Review of prior work in graphic design illustration. Successful completion required prior to registration for junior and senior courses. Prereq: 255 or consent of instructor. Satisfactory/No credit only.


352 Corporate Design (3) Concepts of corporate graphic. Problems include all areas of graphic design and illustration. Prereq: 351.

353 Black and White Illustration (3) Black and white media and techniques as applied to product and editorial illustration. Prereq: 350.

354 Color Illustration (3) Flat and process color media and techniques as applied to product and editorial illustration. Prereq: 353.


356 Introduction to Computer Enhanced Design (1) The computer as a graphic design tool. Prereq or Coreq: 356.

357 Printmaking Portfolio Review (0) Review of prior work in printmaking. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.

358 Intaglio II (4) Color intaglio printing from a single metal plate, including a la poupee, chine colle, and relief rolls. Prereq: 252 and 360. May be repeated. Maximum 8 hours.

359 Lithography II (4) Color lithography from stone and plates using mylar registration. Extra techniques; including xerox and monotype transfer, acid biting, rever- sials, chine colle' and photo-lithography. May be repeated. Maximum 8 hours.

364 Screen Printing II (4) Advanced work with basic screen printing techniques including photo screening. Emphasis upon studio problems to develop a personal style of expression. Prereq: 6 hours of metal-smithing or consent of instructor. May be repeated. Maximum 12 hours.

367 Early Christian and Byzantine Art, to 1350 (3) Art in Italy and the Eastern Empire from the beginnings of Christian art to c. 1350. Emphasis upon image development and personal approaches. Prereq: 361. May be repeated. Maximum 12 hours.

384 Art of Southern Europe: 1575-1700 (3) Concentrated study of Caravaggio, Bernini, and Italian Baroque developments in all media. Spanish Baroque painting and sculpture with special attention to Velazquez.

385 Chinese Art (3) Survey from pre-Shang Dynasty to contemporary movements in China, Taiwan, and Hong Kong. New discoveries are stressed. Writing-emphasis course. At least one in-class essay examination and 3000 words of writing outside the classroom.

386 Japanese Art (3) Survey from ancient Jomon art to the Nihonga painting style of today. Variety of media emphasized. Writing-emphasis course. At least one in-class essay examination and 3000 words of writing outside the classroom.

392 Advanced Film Design (3-6) Theory and practice of film making. Prereq: 292. (Same as Cinema Studies 392.)

395 Beginning Airbrush (3) Techniques of airbrush drawing; skills and creative applications emphasized. For art majors only.

401 Fiber: Advanced Projects (3-6) Prereq: 302 or consent of instructor. May be repeated. Maximum 12 hours.

402 Fabric: Advanced Projects (3-6) Prereq: 301 or consent of instructor. May be repeated. Maximum 12 hours.

404 Computer Enhanced Design (3) Prereq: 403 or consent of instructor. May be repeated. Maximum 6 hours.

406 Goldsmithing (3-6) Advanced metalsmithing techniques including granulation, electroforming, electro-plating, electroplating, anodizing, and photo processes. Prereq: 306 or consent of instructor. May be repeated. Maximum 12 hours.

409 Special Topics in Fiber/Fabric (3) Student or instructor-initiated course to be offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

411 Drawing IV (5) Individualized pursuit of personal drawing techniques and concepts, supplemented by individual and group critiques and weekly life drawing sessions. Prereq: 311. May be repeated. Maximum 12 hours.

413 Painting IV (6) Advanced painting stressing individual concepts and personal expression with varied media. Prereq: 412. May be repeated. Maximum 12 hours.


419 Special Topics in Drawing and Painting (3) Student or instructor-initiated course offered at convenience of department to enhance and expand the painting, drawing, and watercolor curriculum. Prereq: Determined by department. May be repeated for individual topic. May be repeated. Maximum 12 hours.

421 Ceramics: Individual Projects (3-6) Special topic each semester, e.g., low fire ceramics, alternative firing methods, specialized clay techniques. Individual direction stressed. Prereq: 321 and 322. May be repeated. Maximum 12 hours.

422 Ceramics: Advanced Projects (3-6) Each student is responsible for developing a thematic investigation of a specific concept using appropriate methods; materials and presentation. Prereq: 421. May be repeated. Maximum 12 hours.

423 Ceramics: Surface Design (3) High and low fire glaze techniques. Use of slips, stains, underglazes, airbrush, and lusters, etc. Relationship between form and surface emphasized. Individual direction expected. Prereq: 321 and 322.

424 Ceramics: Clay and Glasses (3) Clay chemistry, clay bodies, glaze theory, glaze calculation, intensive formulating, mixing and testing of clay bodies and glaze formulas. Prereq: 321 and 322.
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425 History of Ceramics Seminar (3) Survey of the history of ceramics from ancient to contemporary. Emphasis on ceramics sculpture, and the vessel aesthetic. Slide lectures and individual presentations. (Does not apply toward art history requirement.) Prereq.: 321 and 322.

426 Kinns: Design, Construction and Operation (3) Designing kilns, traditional and modern refractories, construction methods, and operation of wood, gas and electric kilns. Prereq.: 321 and 322.

429 Special Topics in Ceramics (3) Student or instructor-initiated course offered at convenience of department. Prereq.: Determined by department for individual topic. May be repeated. Maximum 12 hours.

431 Photography III (3-6) Individual development of photographic problems and techniques. Prereq.: 232 and 331. May be repeated. Maximum 12 hours.

439 Special Topics in Photography (3) Student or instructor-initiated course offered at convenience of department. Prereq.: Determined by department for individual topic. May be repeated. Maximum 12 hours.

441 Advanced Sculpture (3-6) Individual development of sculptural problems and techniques. Prereq.: 6 hours of 300 level sculpture. May be repeated. Maximum 12 hours.

449 Special Topics in Sculpture (3) Student or instructor-initiated course offered at convenience of department. Prereq.: Determined by department for individual topic. May be repeated. Maximum 12 hours.

451 Advanced Graphic Design (3) Advanced projects in conceptual and applied design for printed materials: publications, posters, advertisements. Prereq.: 352.


453 Advertising Illustration (3) Concepts of advertising illustration media and techniques as applied to project illustration. Prereq.: 354.

454 Editorial Illustration (3) Concepts of editorial illustration media and techniques as applied to book, magazine, and newspaper illustration. Prereq.: 453.

456 Senior Portfolio Seminar (3) Assembly, organization and editing the professional portfolio. Resume construction and design. Professional issues of politics, economics, and ethics for the designer. Prereq.: or Coreq.: 462 or 454.

458 Special Topics in Graphic Design/Illustration Practicum (1-12) Practical work experience in the design or illustration field. Only by prearrangement with the department. Prereq.: Senior standing and consent of instructor. May be repeated. Maximum 12 hours.

459 Special Topics in Graphic Design/Illustration (3) Student or instructor-initiated course offered at discretion of department. Prereq.: Determined by department for individual topic. May be repeated. Maximum 12 hours.

462 Intaglio III (3-6) Exploration of individual projects through advanced color etching methods from stones and aluminum plates. Prereq.: 363. May be repeated. Maximum 12 hours.

463 Lithography III (3-6) Exploration of individual projects through advanced color etching methods from stones and aluminum plates. Prereq.: 363. May be repeated. Maximum 12 hours.

464 Screen Printing III (3-6) Individual development of screen printing problems and techniques. Emphasis upon greater development of image and personal concept. Prereq.: 364. May be repeated. Maximum 12 hours.

469 Special Topics in Printmaking (3) Student or instructor-initiated course offered at convenience of department. Prereq.: Determined by department for individual topic. May be repeated. Maximum 12 hours.

471 History of North American Art (3) Survey of landmarks in painting, architecture, sculpture, and design from prehistory to 1900.

472 History of 20th Century American Art (3) Development in painting, architecture, sculpture, and design from 1900. 1911 Century American Painting (3) From West and Copley to emergence of "The Eight".


476 History of 20th-Century Painting in Europe and America (3) Fauvism, Die Brucke, Cubism, Der Blaue Reiter, Futurism, Dada and Surrealism, geometric abstraction, social commentary painting, Abstract Expressionism in the USA and parallels in Europe; Pop, Op, Minimal and Concept Art.

479 Special Topics in Art History (3) Student or instructor-initiated course offered at convenience of department. Prereq.: Determined by department for individual topic. May be repeated. Maximum 12 hours.

481 Meso-ology I: Museums, Purpose and Function (3) Purposes, functions and development of museums of art, history, and natural science. (Same as Anthropology 481.)

482 Meso-ology II: Exhibition Planning and Installation (3) Exposition planning, installation, exhibition design, and development of museums of art, history, and natural science. (Same as Anthropology 482.)

484 Meso-ology III: Field Projects (1-12) Special field projects including restoration, preservation, registra-


486 Art of Indian Asia (3) History of Indian art with consideration of the art of Central Asia and Southeast Asia. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

489 Studies in Art History (3) Concentration in individually selected area. Prereq.: 12 hours of art history and consent of instructor. May be repeated. Maximum 6 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

494 Individual Problems (3) Prereq.: Consent of instructor. May be repeated. Maximum 12 hours.

495 Visiting Artist Seminar (2) Study and discussion of contemporary art issues conducted by different visiting artists each semester. (Does not apply toward art history requirement.) May be repeated. Maximum 8 hours.

496 Advanced Airbrush (3) Advanced techniques of airbrush drawing; skills and use in illustrations emphasized. Prereq.: 396.

499 Special Topics (3) Student or instructor-initiated course offered at convenience of department. Prereq.: Determined by department for individual topic. May be repeated. Maximum 12 hours.

200 Special Topics (2-4) Student- or instructor-initiated course offered at convenience of department. May be repeated.

210 Drawing (2-4) Beginning to intermediate. May be repeated.

220 Ceramics (2-4) Beginning to intermediate. May be repeated.
Prereq: 410 and admission to Teacher Education Program. Prerequisite/No Credit only. F.
482 Internship II: Grades K-12 (3-6) Demonstration of professional competence in planning, instruction and classroom management. Internship is completed in local public schools. Prereq: 481 and admission to Teacher Education Program. Prerequisite/No Credit only. Sp.
490 Special Topics (3) May be repeated. Maximum 6 hours.
493 Independent Study (3) May be repeated. Maximum 9 hours.

ASIAN LANGUAGES (144)
131-132 Elementary Chinese I, II (5,5) Must be taken in sequence.
151-152 Elementary Japanese I, II (5,5) Must be taken in sequence.
161-162 Elementary Persian (4,4) Taped language program. Must be taken in sequence.
231-232 Intermediate Chinese I, II (5,5) Prereq: 131-132 or equivalent or consent of instructor. Must be taken in sequence.
251-252 Intermediate Japanese I, II (5,5) Prereq: 151-152 or consent of instructor. Must be taken in sequence.
311-312 Chinese Literature in English Translation (3,3) 311-Classic literature. 312-Vernacular and modern literature. Writing course: at least one in-class essay examination and 3000 words of writing outside the classroom.
322 Advance Modern Standard Arabic (4) Advanced Arabic language program. Prerequisite/Consent of instructor.
325 Readings in Islamic Literature (3) Selections from the Koran, classical Arabic and Persian poetry, modern poetry and Turkic prose, including history, philosophy, mysticism, and belles-lettres.
321 Spoken Lebanese-Palestinian Arabic (4) Informal Arabic for use in daily life. Emphasis on appropriate response and understanding of conversational Arabic. All work is oral, including exams, but grammatical analysis is based on standard (written) Arabic. Prereq: 121-122 or consent of instructor.
322 Advanced Modern Standard Arabic (4) Advanced Arabic language program. Prereq: 221-222 or consent of instructor.
421 Readings in Islamic Literature (3) Prereq: Mastery of intermediate-level of Arabic or consent of instructor. May be repeated. Maximum 9 hours.
471 Selected Topics in Asian Studies (3) Content varies. May be repeated. Maximum 9 hours.
491 Foreign Study (1-15)
492 Off-Campus Study (1-15)
493 Independent Study (1-15)

ASTRONOMY (150)
151-152 Introductory Astronomy (4,4) Survey of the composition, structure, and dynamics of the universe which introduces the basic vocabulary of astronomy and scientific method. Components of the solar system, including results from interplanetary exploration; hypothesis and theories of the origin and evolution of our solar system in light of current knowledge and scientific reasoning; stellar birth, evolution and death as a chain of events; characteristics of galaxies and the origin of the universe examined in light of modern astrophysics and particle physics. A major in mathematical analysis. Must be taken in sequence. 4 hours lecture-demonstration and star chart field work. Only one of the three sequences 151-152, 161-162, or 217-218 may be taken for credit.
161-162 Introductory Astronomy with Laboratory (4,4) Survey course, with accompanying laboratory, treating the composition, structure and dynamics of the universe and introducing the basic vocabulary of astronomy and principles of scientific method. Components of the solar system including results from planetary exploration spacecraft, hypothesis and theories of the origin and evolution of the solar system in light of current knowledge and scientific reasoning; stellar birth, evolution and death as a chain of events; characteristics of galaxies and of the beginning of the universe in light of modern astrophysics and particle physics. Principles for interpretation of astronomical observations are reinforced in laboratory. Must be taken in sequence. 3 hours lecture, 2 hour lab. Only one of three sequences 151-152, 161-162 or 217-218 may be taken for credit.
217-218 Honors: Introduction to Astronomy (4,4) Introduction to astronomy and astrophysics. Historical perspectives in understanding the celestial universe, with emphasis on the laws of physics as they apply to the changing conceptions of the universe; structure of the solar system and galaxies; cosmology; evolution and properties of stars, galactic structure and models of the universe; observational technique and interpretation of underlying physical laws in accompanying lab. 3 hours lecture, 2 hours lab. Coreq: Mathematics 141 or 150 or equivalent. Credit given for only one sequence of lower division astronomy. This sequence satisfies the liberal arts requirement for a natural science or laboratory course.
411 Astrophysics (3) Development of analytical physical models of the galactic structure of the universe, stellar and interstellar matter, and planetary systems. Topical and interdisciplinary approach includes consideration of quasars, pulsars, black holes and current developments in the field. Acceptable for major credit in physics. Prereq: Physics 232 and consent of instructor.
490 Special Topics in Astronomy (1-3) Topics of current interest in Astronomy and Astrophysics. May be repeated for credit with consent of department. Maximum 9 hours.

AUDIOLOGY AND SPEECH PATHOLOGY (160)
126 Speech for Foreign Students (3) Sounds and sound patterns of American English and relation of spelling to sound. Designed to improve students' ability to speak and understand English. Satisfactory/No credit.
304 Introduction to Communication Disorders (3) Nature, etiology, and incidence of speech, hearing and language disorders.
305 Speech Science I: Phonetics and Acoustics of Speech (3) Basic phonetics including recognition and production of spoken English sounds with analysis of their formation; acoustic characteristics of speech and speech perception.
306 Speech Science II: Anatomy and Physiology I (3) Anatomy, physiology and embryological development of the speech production mechanism. Prereq: 305.
320 Speech and Language Development (3) Speech and language development in the normal child.
331 Articulation Disorders (3) Etiology, diagnosis, and treatment of articulatory defects. Prereq: 304, 305, or consent of instructor. (Same as Special Education 331.)
371 Audiology I (3) Basic acoustics. Fundamental aspects of auditory anatomy and physiology. Introduction to disorders of hearing. Basic Psychoacoustics. (Same as Special Education 371.)
381 Stuttering (3) Nature, appraisal and treatment. Prereq: 304 or consent of instructor.
392 Clinical Practice in Speech-Language Pathology (1-4) Prereq: 320, or consent of instructor. Enrollment for fewer than 2 semester hours must have prior departmental approval. (Same as Special Education 433.)
393 Special Clinical Practice in Speech-Language Pathology (1-4) Prereq: 320, or consent of instructor. Enrollment for fewer than 2 semester hours must have prior departmental approval. May be repeated. Maximum 4 hours. (Same as Special Education 434.)
424 Voice Disorders (3) Etiology, diagnosis, and treatment of organic and functional voice disorders. Prereq: 304, 306, or consent of instructor. (Same as Speech Education 440.)
445 Clinical Practice in Audiology (4) Prereq: 473 and 494.
458 Problems in Speech Pathology (1-3) Prereq: Consent of instructor.
461 Introduction to Language Pathology in Children (3) Natural history and treatment of language retardation in children: observations of language therapy required. Prereq: 320 or consent of instructor.
465 Speech and Language of the Culturally Different Child (3) Speech and language differences of children of various minority groups, of different ethnic and class membership and from different geographic regions.
473 Audiology II (3) Basic principles of clinical audiology; pure tone, speech, masking and overview of special auditory tests. Prereq: 371. (Same as Special Education 473.)
491 Foreign Study (1-15)
492 Off-Campus Study (1-15)
493 Independent Study (1-15)

ASIAN STUDIES (145)
101-102 Asia Civilization (3,3) Comparative study of development of religion, social institutions, and high culture in India, China, Japan, and the Islamic world. 101-India and the Islamic World...102-China and Japan. Writing-exam course: at least one in-class essay examination and 3000 words of writing outside the classroom.
121-122 Elementary Modern Standard Arabic I, II (5,5) Literary Arabic, language of the press, broadcasting, literature and formal situations. Meets every day, three days with instructor and two with native informant in addition to language lab. Must be taken in sequence.
141-142 Elementary Modern Hebrew I, II (4,4) Taped language program. Must be taken in sequence.
161-162 Elementary Persian (4,4) Taped language program. Must be taken in sequence.
221-222 Intermediate Modern Standard Arabic I, II (5,5) Literature, commerce, technical, and everyday language of the press, broadcasting, literature, and formal situations. Meets every day, three days with instructor and two with native informant in addition to language lab. Must be taken in sequence. Prereq: 121-122 or equivalent or consent of instructor.
241-242 Intermediate Modern Hebrew I, II (4,4) Taped language program. Prereq: 141-142 or equivalent or consent of instructor. Must be taken in sequence.
261-262 Intermediate Persian (4,4) Taped language program. Prereq: 161-162 or equivalent or consent of instructor. Must be taken in sequence.
315 The Literature of India in English Translation (3) Major genres and masterpieces of Indian literature—epic poetry, drama, court poetry, modern novel. Concentration on ancient, classical and later periods of Indian literary history, 319-Islamic Literature in English Translation (3) Selections from the Koran, classical Arabic and Persian poetry, modern poetry and Turkic prose, including history, philosophy, mysticism, and belles-lettres.
321 Spoken Lebanese-Palestinian Arabic (4) Informal Arabic for use in daily life. Emphasis on appropriate response and understanding of conversational Arabic. All work is oral, including exams, but grammatical analysis is based on standard (written) Arabic. Prereq: 121-122 or consent of instructor.
322 Advanced Modern Standard Arabic (4) Advanced Arabic language program. Prereq: 221-222 or consent of instructor.
421 Readings in Islamic Literature (3) Prereq: Mastery of intermediate-level of Arabic or consent of instructor. May be repeated. Maximum 9 hours.
471 Selected Topics in Asian Studies (3) Content varies. May be repeated. Maximum 9 hours.
491 Foreign Study (1-15)
492 Off-Campus Study (1-15)
493 Independent Study (1-15)

494 Aural Habilitation/Rehabilitation of the Hearing Impaired (3) Introduction to psychosocial aspects, amplification equipment, components and characteristics, assistive devices, speech acoustics, speech perception, speechreading, parent-infant, preschool school years of children, communication impairments/handicaps/remediation of adults, effects of aging/remediation on the elderly, and case studies. Prereq: 305 and 473, or equivalent or consent of instructor. (Same as Special Education 494.)
499 Senior Seminar in Communication Sciences and Disorders (3) Capstone Experience: A writing emphasis course exploring the forces shaping the pro-
COMMUNICATION DISORDERS (86)
420 Advanced Topics in Communication Disorders (3) Advanced topics in the study of human communication disorders. Prereq: Consent of instructor.

BIOLOGY (190)
110-120 General Biology (4,4) Biology 110 - Biology of organisms: chemical basis of life; cell structure and function; energy metabolism; cell division; Mendelian and molecular genetics; kingdoms of monera, protista, and fungi. Biology 120 - Plant and animal anatomy (tissues, organs, and organ systems), physiology, growth, reproduction; ecology; population genetics; behavior; and evolution. Recommended. Prereq: Consent of instructor.

210 Cell Biology (4) Organization and function of the cell. Prereq: 110-120 or 150, Botany 110-120, or Honors Zoology 117-118. Two lectures and one additional class meeting. May be taken in any sequence or combination with 220 and 230.

220 General Genetics (4) Classical and modern principles of heredity. Prereq: 110-120 or 150, or Botany 110-120, or 118-126, or Honors Zoology 117-118 or the equivalent of 2 years of high school biology and satisfactory ACT scores. Chemistry 120-130, 3 hours lecture, 1 hour discussion each week. May be taken in any sequence or combination with 210 and 230.

230 General Ecology (4) Relations between organisms and their environment, including human environmental problems. Prereq: 110-120 or 150, or Botany 110-120 or 118-128, or Honors Zoology 117-118 or the equivalent of 2 years of high school biology and satisfactory ACT scores. Chemistry 120-130, 3 hours lecture, 1 hour discussion each week. May be taken in any sequence or combination with 210 and 220.
mental functions, cost and income analysis, leadership, and the development of an action plan.

BUSINESS ADMINISTRATION (205)

311 International Business (3) Survey of strategic implications of conducting business operations in an international context. Analysis of relevant cross-national environments, including cultural, political, economic and legal characteristics. Prereq: Economics 201.

320 Business Career Planning and Placement (1) Career opportunities in business. Making the career decision, preparing for and conducting a job campaign. Using the Cooperative Education/No-Credit only. Prereq: Satisfactory progression to upper-level division in Business or Liberal Arts Business Minor.

467 Honors: Corporate Executive in Residence Seminar (3) Interaction with top corporate executives from a wide spectrum of disciplines. Domestic and international strategic planning as it is applied in major U.S. Corporations. Executive presentations and small group discussion on goods and services in consumer and industrial settings. Prereq: Senior standing. Financial 301, Management 301, Marketing 301 and consent of instructor.

491 Foreign Study (1-15) Prereq: Consent of instructor. See page 57.

493 Honors Study (1-15) Prereq: Consent of instructor. See page 57.

495 Seminar in International Business Policy (3) Capstone course for students in the Language and World Business Program designed to integrate concepts covered in other business courses. For students with major concentrations in International Business only.

BUSINESS LAW (216)

301 The Legal Environment of Business (3) Introduction to legal system including legal ethics, jurisprudence, sources of law, steps in lawsuits, constitutional law related to business, administrative regulation, securities law, antitrust law, employer-employee relations, product liability, consumer protection, business associations, environmental law, international law, contracts, and white collar crimes and torts. Prereq: Junior standing.


CHEMISTRY (235)

100 Principles of Chemistry (4,4) Bonding and molecular structure, gas laws, liquid and solid state, solutions, colloids, acids and bases, oxidation and reduction, kinetics and equilibria. 3 hours and 1 lab. E

110 Introduction to Organic and Biochemistry (4) Organic chemistry: alkaloids, unsaturated and aromatic hydrocarbons, structures and reactions of various organic functional groups. Biochemistry: amino acids and proteins, carbohydrates, lipids, nucleic acids. 3 hours and 1 lab. Prereq: 120 or 130 or 131 or 138. E

120-130 General Chemistry (4,4) A general course in theoretical and descriptive chemistry. 120 - Modern atomic theory, chemical bonding, stoichiometry, quantitative treatment of gas laws, quantitative aspects of solution chemistry, kinetics. 130 - Chemical equilibria, thermochromy, descriptive chemistry of non-metallic and metallic elements, introduction to organic and biochemistry. Prereq for 120: 120, 3 hours and 1 lab. E

121-131 General Chemistry (4,4) For chemistry majors. Subject matter similar to Chemistry 120-130. Prereq for 131: 121. 3 hours and 1 lab. 121-F, 131-Sp.

125-136 Honors: General Chemistry (4,4) 3 hours and 1 lab. 125-F, 136-Sp.

140 Chemical Programming (3) Use of the computer in solving problems encountered in chemistry. Required of and limited to chemistry majors. Prereq or Coreq: 130 or 131 or 138. 1 hour and 1 lab. Sp.

200 Introduction to Chemical Research (1) Participation in an active research project with faculty. Prereq: 120 or 130 or 138. F, Sp.

210 Inorganic Chemistry (3) Periodicity, valence, bonding, and the descriptive chemistry of the elements; coordination compounds; nuclear chemistry; transition elements, inorganic reactions, and coordination agents. 2 hours and 1 lab. Prereq: 130 or 131 or 138. F

310 Analytical Chemistry (3) Principles and practices of quantitative measurements in chemical systems. Acid-base, complexometric, and redox equilibria; applications of titrimetric analysis; polarimetry; elementary spectrophotometry; chemical separations including chromatography, ion exchange, and solvent extraction. Prereq: 130 or 131 or 138.

319 Analytical Chemistry Laboratory (1) Experiments on topics covered in 310. Coreq: 310. E

320 Advanced Analytical Chemistry (3) Modern electroanalytical methods; mass spectrometry; optical spectroscopic techniques; magnetic resonance methods; advanced chromatographic theory. Prereq: 310. Sp.


350-360 Organic Chemistry (3,3) Compounds of carbon and their reactions. Introduction to mechanisms, organic reactions, applications of modern techniques for characterization of organic and inorganic compounds, with emphasis on independent study and use of chemical literature. Prereq: 350 or 360. 3 credits. F, Sp.

400 Research in Chemistry (3) Open to senior majors with consent of department head. Written reports are required. Advanced study, supervised laboratory work, with emphasis on independent study and use of chemical literature. Prereq: 350 or 360. 3 credits. F, Sp.

406 Senior Seminar (1) Discussions by faculty and students of current research and topics from recent literature. Prereq or Coreq: Senior standing in chemistry. May be repeated. Maximum 2 credits. Prereq: 360 or Coreq: 451 or 453.

471-481 Biophysical Chemistry (3,3) (Same as Biochemistry 471-481.)

473-483 Physical Chemistry (3,3) Students may not receive credit for both 471 and 473 nor for both 481 and 483. 473 - Waves of quantum mechanics, applications of quantum mechanics to physical problems. Coreq: 320. 483 - Waves of quantum mechanics, applications of quantum mechanics to physical problems. Coreq: 320. 473 or 483. 471 or 481.

479-489 Physical Chemistry Laboratory (2,2) Experiments on topics discussed in 471-481 or 473-483. Prereq or Coreq: Corresponding courses 471 or 473 for 479 and 481 or 483 for 489. 1 lab. E

484 Advanced Physical Chemistry (3) Topics from chemical dynamics, statistical thermodynamics, quantum mechanics of atomic and molecular systems, crystal structure and solid state. Prereq: 481 or 483.

490 Introductory Polymer Chemistry (3) Fundamental principles stressing the role of chemistry in the interdisciplinary field of polymer science. Relation of molecular structure to bulk properties of polymers. Prereq: 360. Prereq or Coreq: 451 or 453.

CHILD AND FAMILY STUDIES (245)

110 Introduction to Childhood Education (3) History, philosophy, current trends, issues, programs, program models. Includes observation. F

210 Human Development (3) Conception through adulthood and various social/developmental roles in the areas of parent/child relationships among various aspects of development: physical, cognitive, emotional, social, normative, nonnormative development. Prereq: F, Sp.

211 Development in Infancy and Early Childhood (3) Development from conception through early childhood; interrelationships among cognitive, emotional, social, physical aspects of ontogeny; normative and nonnormative development. Includes observation. F

213 Development in Middle Childhood and Adolescence (3) Development during middle childhood and adolescence; interrelationships among cognitive, emotional, social, physical aspects of ontogeny; normative and nonnormative development. Includes observation. Prereq: 211. Sp.

220 Marriage and Family: Roles and Relationships (3) Emerging, declining roles, changing relationships among family members across life cycle from various theoretical approaches; impact of gender roles on marital relationships, marital quality, power, decision-making, communications, conflict management, family roles. (Same as Women's Studies 230.) F, Sp.


300 Family Systems (3) Family systems as a component of human ecology; factors impacting on the nature of individuals, families, and environments. Prereq: NTR 100, RSC 330, GFS 216, and 6 hours in major. F
312 Adulthood and Aging (3) Adult life in society from youth through old age, adjustment to internal, environmental, and societal changes; interrelationships among various aspects of development: physical, cognitive, emotional, social. Includes observation. Prereq: 220 or consent of instructor. Sp

320 Parent Education (3) Factors in contemporary American families impacting on parent-child relations; review of programs for strengthening parenting skills. Prereq: 220 or consent of instructor. Sp

345 Family Resource Management (3) Theory and application of managerial functioning in family settings: analysis of goals, resource use, information systems, constraints, within families. Observation and analysis of diverse family practices. Prereq: 220 or consent of instructor. F

351 Early Childhood Education II: Curricula and Program Development for Young Children (4) Planning effective early learning programs for young children relating knowledge of children's growth and development to appropriate experiences in art, music, number, logic, media, physical knowledge; planning, implementing, evaluating curriculum activities. Laboratory participation included. Prereq: 110 and 211 or consent of instructor. F

360 Family Stress (3) Family's response to stressful circumstances; skills for intervention into family systems; violence, abuse, divorce, illness, death. Prereq: 220 or consent of instructor. Sp

380 Family Finance (3) Alternatives for meeting family financial responsibilities across the life-cycle. Prereq: 220 for CFS majors. F

400 Families: Ethnicity, Race, Class and Culture (3) Cultural, socioeconomic, ethnic variations; emerging needs and programs. Prereq: 220, 230, Junior standing or consent of instructor. (Same as Afro-American Studies 420.) F

421 History of Greek and Roman Mythology (3) Use of ancient Greece from Homer to Menander, with emphasis on the Greek mainland, Crete, and Cyprus ca. 3000-700 B.C. Rise and fall of the Minoan and Mycenaean civilizations and the fall of the Minoans. Prereq: Progression into the concentration and ends on the day before Summer commence-ment and includes observation. Sp


475 Day Care Administration (3) Theories, methods, and materials for administrators of early childhood education programs; writing funding proposals, staff selection, financial management, recruiting and enrolling children, supervision, evaluation, public relations, communication, conflict resolution. Includes participation experience. Prereq: 351 or consent of instructor. Sp

479 Preparation Seminar (1) Orientation to practicum placement, experiences and requirements. Must be completed term immediately preceding enrollment in 480. Prereq: Must meet progression requirements. Satisfactory/No Credit only. F, Sp

480 Practicum in Family Life Education (3) Supervised experiences in community-based family life education programs. Prereq: Progression into the concentration and 479. Satisfactory/No Credit only. F, Sp

481 Research in Child and Family Studies (3-6) Supervised research experiences. Prereq: 9 hours in Child and Family Studies, cumulative GPA of 3.0 or above, Junior standing, or consent of the instructor. May be repeated. Maximum 12 hours. F

486 Special Topics in Child and Family Studies I (1-9) Personal or professional interest in human development or family studies. Prereq: 9 hours in Child and Family Studies, Junior or Senior standing, or consent of instructor. May be repeated. Maximum 9 hours. F, Sp, Su

479 Honors: Child and Family Studies (3-6) Issues or topics affecting children and/or families, designed to meet particular interests of the student. Prereq: 15 hours in Child and Family Studies, overall GPA of 3.25 or greater, Junior standing, or consent of instructor. May be repeated. Maximum 6 hours. F, Sp, Su

CINEMA STUDIES

292 Film Design (3) (Same as Art 292.)
281 Introduction to Film Studies (3) (Same as English 281.)
312 Popular Culture and American Politics (3) (Same as Political Science 312.)
233 German Film (3) (Same as German 323.)
334 Film and American Culture (3) (Same as English 334 and American Studies 334.)
392 Advanced Film Design (3-6) (Same as Art 392.)
420 French Cinema (3) (Same as French 420.)
421 Topics in Italian Literature and Cinema (3) (Same as Italian 421.)
469 Sexuality and Cinema (3) (Same as Women's Studies 469.)
489 Special Topics in Film (3) (Same as English 489.)

CLASSICS (257)

221 Early Greek Mythology (3) Archaic Greek religion through comprehensive study of Greek myths with emphasis on the gods, their myths, the pan-Hellenic character of the universe and humanity's place in it. Origins and development of Greek myths and the rise of organized religion, from Bronze Age to about 450 B.C. Prereqs include Greek and Ancient History. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

222 Classical Greek and Roman Mythology (3) Use of myth in literature, history, and the philosophy of Greece and Rome from about 450 B.C. to about 350 A.D. Two foci are the latter half of the fifth century B.C. and the last quarter of the first century B.C. Includes Oriental influences and Romeincluding early Christianity. Readings include Sophocles, Euripides, Roman poetry, and modern scholarship. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

232 Archaeology and Art of Ancient Greece (3) Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric times emphasis on architecture and artifacts used to recreate the culture of the Minoan and Mycenaean civilizations and that of the following Dark Age. For Archaeology, art history, and art in the Roman period (ca. 3000-100 B.C.). Prereq: Consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

233 Archaeology and Art of Etruria and Rome (3) Survey of the archaeology of the Italian peninsula and the Roman World from prehistoric times to the fall of the Roman Empire and their effect on the Aegean. Prereq: Consent of instructor. Includes observation and study of the Etruscan culture from tombs, paintings, and artifacts, development of Roman architecture, and urban planning. Prereq: Consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

253-254 Greek and Roman Literature in English Translation (2-3,2-4) (Same as English 253, 254.) Major literature of ancient Greece from Homer to Menander, with emphasis on the sixth and fifth centuries B.C. 254: Roman literature emphasizing the later empire, from Plautus to Tacitus. Evidence for daily life, religion, trade, and foreign contacts. Architecture, wall paintings, and artifacts. Prereq: One of the following: 221, 231, 334, and American Studies 334.) (Same as English 253, 254.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

273 Medical and Scientific Terminology (3) Greek and Latin roots from which medical and scientific terminology is derived. Extensive practice in use of Latin nomenclature.

331 Archaeology of the Aegean Bronze Age and Early Greece (3) Includes Troy, the Cycladic islands, the Greek mainland, Crete, and Cyprus ca. 3000-700 B.C. Rise and fall of the Minoan and Mycenaean civilizations and the fall of the Minoans. Prereq: 281 Classical Greek and Roman Mythology (3) (Same as English 281.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

334 Cities and Sanctuaries of the Ancient Greek World (3) Archaeological survey of the development of the Greek city and sanctuary from prehistoric times through the Roman period (ca. 2000 B.C. - 200 A.D.). Includes topography and plans of major cities and sanctuaries, functions of buildings, development of city planning, quality of city life, religious rites and festivals including the Olympic games. Ancient sites include Mycenae, Athens, Priene, Alexandria, Pergamon, Olympia, Delphi. Students are recommended to have taken one of the following: 281, 291, 391, History 310. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

381 Greek Civilization (3) Major aspects of ancient Greek civilization: religion, fine arts, political, legal, and Mediterranean relations, the prominence of Athens; the role of modern archaeology in interpretation; emphasis on the role of Greece in the fifth century B.C. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

382 Roman Civilization (3) Major aspects of ancient Roman civilization: political institutions, art and architecture, the Roman culture and society during the late Republic and early Empire. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

383 Women in the Greek and Roman World (3) The condition of women in the apparently male-dominated
world of Classical Greece and Classical Rome. Evidence from literature, vase paintings, and other arts is examined in the age of Homer to the second century A.D., with emphasis on Athens in the fifth century B.C. and Roman Italy in the first and second centuries A.D. (Same as Women’s Studies 392.)

401 Greek Poetry (3) Epic, lyric, drama. Authors vary. May be repeated for credit. Maximum 9 hours. Prereq: 261.

402 Greek Prose (3) History, philosophy, and oratory. Authors vary. May be repeated for credit. Maximum 9 hours. Prereq: 261.

422 Seminar in Classical Studies (3) Field of Classical studies today: recent achievements in the areas of both philology and archaeology; impact of the decipherment of Linear B; new understandings of the culture and politics of the “golden age” of Pericles and Augustus; Classical studies and the academic profession on both the high school and college levels may be repeated. Maximum 8 hours. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

441 Special Topics in Classical Civilization (1-3) Topics in art, literature, religion, and society of Greece and Rome. May be repeated up to three times with consent of department.

461 Studies in Classical Archaeology (3) Variable content course offering subject matter not taught in an existing course, or concentration on one aspect of the existing survey. May be repeated. Maximum 9 hours. Prerequisites according to topic.

482 Roman Law (3) Development of Roman law through examination of cases from the writing of the Roman jurists, the world’s first legal professionals. Emphasis on understanding legal institutions in relationship to Roman society. Covers aspects of Roman property and contract law.

491 Foreign Study (1-15)

COLLEGE SCHOLARS HONORS

317-318 College Scholars Seminar (1, 1) Sequence in any order limited to and required of all College Scholars each year. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.

491 College Scholars Honors: Foreign Study (1-15) See Director of Special Programs. Primarily for College Scholar students.

492 College Honors: Off-Campus Study (1-15) See Director of Special Programs. Primarily for College Scholar students.

493 College Honors: Independent Study (1-15) See Director of Special Programs. Primarily for College Scholar students.

498 Honors: College Scholars Studies (2-12) Designed for College Scholars working on their senior thesis, project, or performance. May be repeated. Maximum 16 hours.

COMMUNICATIONS (259)

100 Introduction to Mass Communications (3) Overview of systems of mass communications, with emphasis on advertising, journalism, and public relations. May be repeated. Maximum 16 hours. Satisfactory/No Credit grading only.

200 Writing for Mass Communications (3) Information gathering and writing under deadline for print and broadcast media, including news and promotional copy. Preparation of news, advertising and persuasive text. Grammar, usage, and style examinations. Prerequisites: 100, English 152, and typing proficiency. E

300 Mass Communications Research Methods (3) Social science research methods, especially sample surveys, used by communications media. Applications to both internal decision-making and to external communication in media. Prereq: 200 or consent of instructor. F, Sp

400 Mass Communications Law and Ethics (3) Emphasis on legal issues directly affecting the mass media: libel, privacy, intellectual property, judicial controls, and constitutional regulations. Also includes ethical standards and practices of the mass media in America. Prereq: 200 or consent of instructor. F, Sp

COMPARATIVE LITERATURE (260)

201 Introduction to Comparative Literature (3) Basic knowledge, techniques, and sources necessary to compare literatures of various cultures, ages, and nations.

202-203 Cross-Cultural Perspectives in World Literature (3, 3) Literature perspectives and values in different time periods and cultures. Variable content. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

301 Computer Techniques for Literary Study (3) Computer research in literary study including writing programs in BASIC which have literary research applications. Projects include indexing and bibliography, concordances, syntactic analysis, content analysis, authorship attribution, textual editing, and stylistic analysis. No previous computer knowledge or background is assumed or required.

401-402 Special Topics in Comparative Literature (3, 3) Content varies. May be repeated. Maximum 9 hours.

COMPUTER SCIENCE (266)


111 Computer Organization (3) Number systems, internal representation of numbers in computers, hardware components, hardware organization, introduction to assembly language, microprogramming control units. Computing with register machines, introduction to digital circuits. Prereq: 102. 3 hour lab required.

112 Data Structures (3) Structured programming, data structures and applications, I/O techniques, lists, queues, trees, tables, streams, algorithms, files. 3 hour lab required. Prereq: 102.


291 Lower-Division Special Topics (1-3) Topics vary. Programming languages, software engineering, and application software packages. May be repeated. Maximum 9 hours.

311 Discrete Structures (3) Propositional and predicate calculus, algorithms, graphs, trees, trees. Prereq: Mathematics 222 and 102.

320 Problem Solving (3) General approaches to problem solving, with emphasis on formalizing intuitive heuristics. Structure of problems and goals, generation of alternatives, and dealing with incomplete information. Prereq: 111 and 112 and 311. 3 hour lab required.

340 Introduction to Information Systems Design (3) Principles of analysis and design of information systems (e.g. data processing, management information and decision support systems). Advanced data structures, concepts and techniques. Format: 2 lecture hours and 3 lab hours. Prereq: 111 and 112.

350 Systems Programming (3) Linkers, loaders, multitasking, I/O facilities, interrupt handling, monitors, editors. Prereq: 111 and 112. 3 hour lab required.

371 Numerical Algorithms (3) (Same as Mathematics 371)

380 Theory of Computation (3) Recursive functions, Turing machines, computability problems, Godel’s incompleteness theorem. Prereq: 111 and 112 and 311.

411 Senior Thesis I (3) Frontiers of computer science research and study. Students begin writing a senior thesis. Prereq: Senior standing. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

412 Senior Thesis II (3) Continuation of 411. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

420 Advanced Topics in Machine Intelligence (3) Topics such as search, learning, expert systems, neural networks, pattern recognition and natural language processing. Emphasis on research. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor.

430 Advanced Topics in Hardware Systems (3) Topics such as architecture, parallel processors, microprogramming, networks and communications. Emphasis on research. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor.

450 Advanced Topics in Software Systems (3) Topics such as operating systems, compilers, parallel computation, software engineering, database systems, and programming languages. Emphasis on research. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor.

470 Advanced Topics in Scientific Computation (3) Topics such as numerical methods, supercomputers and computer modeling and simulation of physical systems. Emphasis on research. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor.

493 Independent Study (1-15) Special project in area of student’s primary interest. Directed by a member of the Computer Science faculty, perhaps jointly with student’s faculty advisor. Intended for students with a specific project to pursue in conjunction with a faculty member. Project may be from a department other than Computer Science in which case a faculty member from the appropriate department will help oversee the project. May be repeated. Maximum 9 hours. Prereq: consent of instructor.

494 Special Topics in Computer Science (1-3) May be repeated. Maximum 9 hours.

DANCE (274)

101 Practicum: Dance Production (1) Supervised technical and promotional production aspects of university dance company. May be repeated. Maximum 2 hours.

201 Practicum: Dance Performance (1-2) Preparation and presentation of university dance company performances. Participation through audition only. May be repeated. Maximum 15 hours.

210 Ballet: Level I (2) Instruction and practice in elementary classical ballet techniques. May be repeated. Maximum 4 hours.

220 Jazz: Level I (2) Instruction and practice in elementary jazz dance styles and techniques. May be repeated. Maximum 4 hours.

230 Modern: Level I (2) Instruction and practice in elementary modern dance techniques. May be repeated. Maximum 4 hours.

250 Technical and promotional production aspects of university dance company. May be repeated. Maximum 16 hours.

310 Tap: Level I (2) Instruction and practice in elementary tap dance techniques. May be repeated. Maximum 4 hours.

330 Jazz: Level II (2) Instruction and practice in intermediate classical ballet techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 12 hours.

350 Modern: Level II (2) Instruction and practice in intermediate jazz dance styles and techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 12 hours.
ECONOMICS (283)

100 Survey of Economic Ideas (3) Ideas of major economists in context of socioeconomic conditions of their times. Emphasis on nontechnical treatment. May not be substituted for Economics 201.

201 Introductory Economics: A Survey course (4)
Theory of consumer behavior, theory of firms, supply and demand, costs of production, market models, national income and impolymcy theory, money and bank-
ing, monetary and fiscal policy, debt, and international economics.

207 Honors: Introductory Economics (4) Honors course for students of superior ability and interest. Students accepted on the basis of their records.

311 Intermediate Microeconomics (3) Theories of consumer behavior, of production and costs, and of behavior of firms in perfectly competitive, monopolistic and imperfectly competitive markets, input prices, income distribution, welfare and general equilibrium. Prereq: 201.

313 Intermediate Macroeconomics (3) Measurement of income and prices, aggregate demand, output, employment, price determination, inflation, business fluctuations, fiscal and monetary policies and growth. Pre-
req: 201.

321 International Economics (3) Balance of payments, exchange rate determination, monetary and fiscal poli-
cies, monetary arrangements, comparative advantage, tariff and nontariff trade distortions, protection argu-
ments, regional integration. Prereq: 201.

323 Economic Development (Third World) (3) Theo-
res of economic development and strategies used to promote economic improvement in less de-
veloped countries. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

324 Comparative Economic Systems (3) Economic processes under alternative strategies and allocations mechanisms. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

325 Economic History of the North Atlantic Commu-
nity (3) Origins of capitalism, mercantilism, Industrial Revolution, development of factory system, rise of or-
ganized business and labor, integration of the Atlantic economy. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

331 Government and Business (3) Antitrust and regu-
lation economic, problems in regulation and social control of business organization, oligopoly models. Prereq: 201.


342 Analytical Labor Economics (3) Problems con-

422 Analytical Labor Economics (3) Problems con-

471 Public Finance: Optimal Government Functions and Instrumentation (3) Problems of collective consumption, external effects, public investment, social decision making. Prereq: 201. Writing-emphasis course.

472 Public Finance: Taxation and Intergovernmental Rela-
tions (3) Individual taxes and tax system, non-
tax instruments, local federalism. Prereq: 251. Writing-emphasis course.

482 Introduction to Mathematical Economics (3) Application of algebra, matrix algebra, differential and integral calculus to micro and macroeconomics. Prereq: 201, Mathematics 141-142 or 147-148.

491 Honors Seminar (3) Topics vary. Senior paper required. Prereq: Senior standing, 3.0 or higher GPA in economics and consent of instructor.

493 Independent Study (1-3) Opportunity for qualified students to pursue topics of special interest. Prereq: Senior standing, 3.0 GPA in economics courses, and consent of instructor. Maximum total credit 3 hours.

EDUCATION (289)

100 Special Topics (1-3) Study in selected disciplinary or professional areas represented in the College of Education. Topics to be determined as needs/issues are identified and as resources are available to support the course.

102 Teaching and Helping Professions in Educa-
tion (3) Study in selected interdisciplinary/professional areas in the College of Education. The course is designed for students who are pursuing the College of Education or who are entry level students in the College. The course provides an opportunity to pursue the many and varied programs of study in the College.

302 School and American Society (3) (Same as Educational Policy and Practice 302)

400 Professional Studies: Teachers, School, and Society (2) Focus on roles and responsibilities of teachers, on how schools are organized and the rela-
tionship between the schools and the broader society. Prereq: 341 or approved psychology course. Pre-
req: CORE-200: Educational and Counseling Psychology 210; Prereq: Admission to Teacher Education.

401 Professional Studies: The Learner (3) Under-
standing of students from diverse cultures; study of learning principles; special needs of learners; behavior modification techniques; assessment. Prereq: 514 or 515; Pre-
req: CORE: Educational and Counseling Psychology 210 and Education 400; Prereq: Admission to Teacher Education.
403 Professional Studies: Teaching and Curriculum (2) Organizational patterns of curricula and classrooms. Field development of curriculum goals to instructional objectives, selection of appropriate instructional strategies and research tools. Prereq: or Coreq: Educational Counseling Psychology 210 and Education 400; Prereq: Admission to Teacher Education.

EDUCATIONAL AND COUNSELING PSYCHOLOGY (311)

210 Psychoeducational Issues in Human Development (3) Understanding and application of the psychology of human development to teaching/learning processes in education settings. Primarily for BS Education students only. Prereq: Admission to Teacher Education Program.

212 Career and Personal Development (3) Systematic approaches to facilitating career development and life planning. Pr, Sp, Su

215 Learning Skills and Study Systems (3) Approaches to enhancing academic performance through study skills, efficient reading and understanding of personal factors. Prereq: Admission to Teacher Education Program.

305 Laboratory in Educational and Counseling Psychology (1-3) Practice in acquiring knowledge and skill in areas such as interpersonal relations, career decision-making, communication and self-awareness, individual and small-group format. May be repeated. Maximum 9 semester hours. Satisfactory/No Credit or letter grade.

404 Special Topics (1-3) Instructor initiated course offered at convenience of the department on various topics of current interest. Contact department for listing of topics to be covered. May be repeated. Maximum 15 hours.

410 Sex Role Development: Implications for Education and Counseling (3) Theories and research concerning the development of sexual roles and its relevance in educational and counseling settings. (Same as Women's Studies 410.) F, Su

431 Personality and Mental Health (3) Perspectives of mental health. Applications to education and other social institutions. E

432 The Disadvantaged Student: Psychoeducational Perspectives (3) Theory and research regarding etiology, psychosocial behavior and appropriate interventions. Sp

450 Self-Management in the Helping Professions (3) Applications of self-management strategies to career, social, emotional and health domains for both helping professionals and their clientele. Prereq: Introductory course in psychology and research concerning development as an individual. May be repeated. Maximum 6 hours.

493 Independent Study (1-15) Independent investigation of problems in educational and counseling psychology. May be repeated. Maximum credit 15 hours.

EDUCATIONAL CURRICULUM AND INSTRUCTION (301)

141 Efficient Reading and Study Skills (2) Improvement of reading comprehension and rate, intensive vocabulary enrichment, study skills as they relate to content area subjects. Satisfactory/No Credit only. F, Sp

203 Field Study in Education (1-3) Problems of personalizing and active participation in instructional techniques of teaching, curriculum materials, school-community relationships and school organizations. May be repeated. Maximum 6 hours.

302 School and American Society (3) Historical, philosophical and social perspectives on contemporary educational issues. (Same as Education 302.) F, Su

324 Applications of Instructional Technology in Elementary and Middle School Teaching (1-3) Applications of instructional technology in the elementary and middle schools with an emphasis on computers. Exposure to and experience with using educational software. May be repeated. Maximum 3 hours. Prereq: Admission to Teacher Education Program.

325 Teaching Science and Social Studies in Elementary and Middle Schools (3) Methods and materials for teaching science and social studies in elementary and middle schools. Teaching approaches common to both fields including inquiry, multisensory activities and group approaches. For BS Education students only. Prereq: Admission to Teacher Education Program. F, Sp

326 Teaching Language Arts/Reading in Elementary and Middle Schools (3) Language and language development as applied to teaching of oracy (listening-speaking) and certain aspects of literacy (reading-process/redness and writing). Includes methods and materials. For BS Education students only. Prereq: Admission to Teacher Education Program.

329 Teaching Developmental Reading in the Elementary and Middle Schools (3) Methods and background on how to teach word recognition skills, comprehension, study skills and how to use materials. Includes units on phonics, vocabulary enrichment, study skills as they relate to educational and counseling settings. (Same as Education 329.) F, Sp

335 Teaching Elementary and Middle School Mathematics (3) Specific procedures for helping children learn mathematics. Unit planning, daily planning, grouping, classroom management are included. For BS Education students only. Prereq: Admission to Teacher Education Program.

337 Teaching Elementary and Middle School Mathematics (3) Specific procedures for helping children learn mathematics. Unit planning, daily planning, grouping, classroom management are included. For BS Education students only. Prereq: Admission to Teacher Education Program.

342 Field Experiences in Teaching: Secondary I (1) Field experiences in tasks related to teaching and teacher roles. Prereq: Admission to Teacher Education Program. F, Sp

352 Field Experiences in Teaching: Secondary II (1) Field experiences in tasks related to teaching and to teacher roles. Prereq: Admission to Teacher Education Program. F, Sp

355 Introduction to Secondary Schools (3) Aspects of teaching in grades 7-12, including curriculum programs and roles and responsibilities of secondary school teachers and administrators. Prereq: Admission to Teacher Education Program.

356 Elementary and Middle School Teaching Laboratory Experience (1) Simulation and micro-teaching experiences to develop planning skills and give feedback to students relative to their ability to apply learning to school settings. Prereq: Admission to Teacher Education Program. Coreq: 422.

364 Contemporary Issues in Afro-American Education (3) (Same as Afro-American Studies 364.) F

404 Problems in Improvement of Instruction (1-3) Special conferences, workshops or inservice programs designed for improving instruction. May be repeated. Maximum 6 hours. Satisfactory/No Credit.

410 Pre-Internship Seminar (1) Objectives and policies of the internship program. Must be completed the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. F

419 Teaching Laboratory (3) Learning and practicing research based effective teaching behaviors. Video taping in simulated school settings. F, Su

421 Elementary and Middle School Science and Social Studies Instruction (3) Methods and materials for teaching science and social studies in elementary and middle schools. Emphasis on functional relationships and individual entities of the two fields. Not open to students with recent course or background in The Teaching of Elementary School Science and/or Social Studies. Prereq: Admission to Teacher Education Program. F, Sp

422 Elementary and Middle School Teaching Methods I (6) Methods and materials (knowledge base) for teaching in the elementary and middle schools including content and curriculum overview. Emphasis will be given to unit planning, daily planning, evaluation, etc., as well as language and content connections. Prereq: Admission to Teacher Education Program.

424 Studies in Elementary Education (1-3) Variable topics on teaching in Early Elementary (K-3), Middle Elementary (4-8), and Skills (K-8). Prereq: Admission to Teacher Education Program. F

425 Language Arts/Reading Instruction in Elementary and Middle Schools (3) Language and language development as applied to teaching of oracy (listening-speaking) and aspects of literacy (reading-process/redness and writing). Includes methods and materials. Prereq: Admission to Teacher Education Program.

430 Elementary and Middle School Developmental Reading Instruction (3) Word recognition (including phonics), comprehension, evaluation, and materials

438 Topics in Reading Education (1-6) May be repeated. Maximum 3 hours. Prereq: Admission to Teacher Education Program and a course in Reading Education.

443 Elementary and Middle School Mathematics Instruction (3) Procedures for helping children learn mathematics. Unit planning, daily planning, grouping, general factors related to classroom management. Not open to students who have had recent course in reading methods. Prereq: Admission to Teacher Education Program.

447 Early Childhood Education: Program Development and Teaching in Kindergarten (3) Curriculum planning, classroom organization and management practices for helping young children achieve maximum growth in the kindergarden to total elementary school. Prereq: Admission to Teacher Education Program.

451 Education in Cultural Perspective (3) Contribution of anthropological concepts to understanding of educational processes; multicultural teaching frameworks; selected ethnographic research on process of schooling.

453 Adolescent Literature (3) Literature written or appropriate for adolescents.

454 Teaching Strategies and Issues in Social Studies Education (3) Goals, objectives, techniques, materials, and evaluation: directed observation in public schools; preparation of teaching plans and materials; simulated teaching experiences. Prereq: Admission to Teacher Education Program.

457 Teaching of Foreign Language, Grades 7-12 (3) Instructional methods, lesson planning, peer-teaching; materials for teaching Foreign Language and culture; evaluation techniques. Required for certification in modern foreign languages and Latin. Prereq: Completion or near completion of foreign language hours for certification and admission to Teacher Education Program.

458 Teaching Speech and Drama Grades 7-12 (3) Purposes, techniques, materials and evaluation for teaching Speech and Dramas in elementary school. Required for certification in Speech. Prereq: Admission to Teacher Education Program.

459 Teaching English in the Secondary School (3) Techniques of teaching composition, language, and literature. Prereq: Admission to Teacher Education Program.

460 Teaching Reading and Literature in the Secondary School (3) Teaching basic reading skills and literature.

461 Developing Reading Skills in Content Fields (3) Teaching reading and study skills in content areas of the school program. Extensive assessment of textbooks. Emphasis on middle school and high school. F, Sp

471 Internship I: Elementary (3-6) Methods and theories of teaching. Internship is completed in local public schools. Application for internship should be made upon admission to the Teacher Education Program. Prereq: 410 and admission to Teacher Education Program. F

472 Internship II: Elementary (3-6) Demonstration of practical competence in teaching, interaction, and classroom management. Internship is completed in local public schools. Prereq: 471 and admission to Teacher Education Program. Satisfactory/No Credit only.

473 Student Teaching in the Elementary School (3-10) Supervision by an experienced Teacher Education Program. Prereq: 410, 472, Internship I or 472, Internship II. Prereq: Admission to Teacher...
474 Student Teaching, Grades 7-12 (3-10) Semester equivalent to Educational Curriculum and Instruction 4710 or 4720. Intended for students in the four year program or equivalent. Not to be substituted for Educational Curriculum and Instruction 4710, Internship I or 482: Internship II. Prereq: Admission to Teacher Education Program, permission of Mentoring Team, and 203 (1). Satisfaction/No Credit only.

475 Utilization of Instructional Media (3) Basic communication process, need for instructional media, instructional development, selection and utilization of basic media, and basic software production techniques. Same as Library and Information Science 475.) F, Sp, Su

476 Instructional Media in Elementary Education (1) Basic operation of audiovisual hardware, selection and utilization of materials, and basic production skills needed for effective communication in the elementary classroom. Media Lab experience in production of AV software. F, Sp, Su

481 Internship I: Grades 7-12 (3-6) Methods and theories of teaching. Internship is completed in the local public schools. Prereq: 481 and admission to Teacher Education Program. F, Sp

482 Internship II: Grades 7-12 (3-6) Demonstration of professional competence in planning, instruction, and classroom management. Internship is completed in local public schools. Prereq: 481 and admission to Teacher Education Program. Satisfaction/No Credit only. F, Sp

485 Teaching of Mathematics, Grades 7-12 (3) Preparation of teaching plans, evaluation, materials for teaching mathematics, teaching simulation and directed observation in schools. Prereq: Admission to Teacher Education Program. F, Sp

486 Introduction to Instructional Computing (3) Classroom uses of computers, applications for teachers, overview of computer operation and software for teachers of all grades. F, Sp

493 Independent Study (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E

494 Supervised Readings (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E

495 Special Topics (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E

496 Teaching Science Grades 7-12 (3) Methods, materials, recent trends in science and environmental education programs for secondary schools. Prereq: Admission to Teacher Education Program. F, Sp

ENGINEERING AEROSPACE (218)

345 Aerospace Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems; standards; dynamic characteristics of instruments; statistical data treatment; transducers; signal conditioning; strain, pressure, temperature and flow measurements. Prereq: 305, ME 541, ECE 301.F, Sp

351 Compressible Flow (3) One-dimensional internal flow with shock waves and non-adiabatic conditions. Two-dimensional external flows. Prereq: Mech. E 332 and 341. Sp

362 Dynamics/Vibrations (3) Central force motion, transfer orbits, free and forced vibrations of single and multiple degree vibrating system. 481: Inter. Engr. ESM 251. F


401 Thesis (3) Problem investigation and report. Prereq: Senior standing, F, Sp

422 Aerodynamics (3) Theory and design of aerodynamic bodies for optimal characteristics. Potential flow theory, viscous effects, compressibility effects. Subsonic, transonic, and supersonic airfoils. Prereq: 370, F

423 Viscous Flow (3) Boundary layer theory; laminar and turbulent flow; compressibility effects; numerical solution methods. Prereq: 422 or ME 344 or consent of instructor. Sp


425 Propulsion (3) Principles of propulsion devices; turbojet, ram jet and rocket engines. Prereq: 351. F


429 Aerospace System Design (4) Synthesis and design of a complete aerospace system including economic and technical aspects. Participation in design and design effort including formal presentations and design report. Prereq: 425, 426. Sp

431 Mechanical Engineering/Aerospace Engineering (6) Propulsion including ethics. Formal oral presentations by students on engineering topics. Prereq: Senior standing. F

449 Aerospace Engineering Laboratory (3) Designing, conducting, and reporting results of experimental exercises. Test stand operations, analysis of data and formation of conclusions. 3 hours lab per week. Prereq: 345, 351. F

494-495 Selected Topics in Aerospace Science (1-4) Current problems and topics in aerospace science; topics in science and engineering for the several areas of aerospace science. Prereq: Consent of instructor. F, Sp

ENGINEERING BASIC (179)

100 Seminar (1) Overview of the College, engineering as a profession, engineering ethics. Consideration of each major and the various engineering disciplines. Satisfaction/No credit.


111 Fundamentals of Engineering Graphics (3) Technical sketching, geometrical construction with emphasis on plane surface analysis, presentation of engineering data, graphical solution of three dimensional space problems, primary and secondary auxiliary views. Application of Computer-Aided Design and Drafting (CAD) in solving engineering graphics problems. Two three-hour periods or three two-hour periods, including one hour of lecture per week.

121 Statics (3) Vectors, forces and moments; equivalent force systems; free body diagrams, equilibrium, trusses and friction. Coreq: Math 141.

131 Particle Dynamics (3) Kinematics, simple harmonic motion; kinetics, Newton's laws, work-energy, impulse-momentum; impact. Prereq: 121; Coreq: Math 142.


ENGINEERING CHEMICAL (226)


240 Fluid Flow and Heat Transfer (4) Force, energy and mechanical energy balances; flow in tubes, piping systems, packed and fluidized beds; pumping and metering; steady and unsteady state heat conduction; heat transfer in tubes and heat exchangers; radiation. Prereq: 200, Mathematics 231.


340 Mass Transfer and Separation Processes (3) Stagnation stage: application of analytical, graphical and computer methods to design of stagewise separatory operations. Differential operations-appliation of analytical and computer methods to the design of diffusor processes. Applications include gas absorption, distillation, extraction, humidification, ion exchange and membrane separations. Prereq: 330.


380 Seminar (1) Presentation and discussion of topics in the practice of chemical engineering. Satisfaction/No credit.

401 Chemical Engineering Data Analysis (3) Analysis of experimental data; identification of system extrema; statistical properties of samples; empirical modeling of processes; statistical process control; optimization techniques.

403 Introduction to Optimization (3) Principles and applications of optimization techniques to chemical processes; unconstrained and equality constrained optimizations, linear programming, dynamic programming, and geometric programming. Prereq: Math 241.

410 Chemical Engineering Laboratory II (3) Laboratory investigations of mass transfer and chemical reaction phenomena in chemical engineering. Prereq: 340, 360, 450.

415 Computer Applications in Chemical Engineering (3) Introduction to computer solution of chemical engineering problems. Primary focus on the application of personal computer programs. Includes flow sheet simulators, statistics, spreadsheets, graphics and process modeling.


440 Transport Phenomena (3) Overview of momentum, heat and mass transfer processes, the analogies, potential and macroscopic balances, applications involving molecular diffusion, including simultaneous mass transfer and chemical reaction. Prereq: 340.

445 Separation Process Technology (3) Multicomponent distillation, theory and computer simulations; humidification; specialized technologies, including membrane separation, crystallization, dialysis, adsorption, ion exchange, etc. Prereq: 340.

450 Chemical Reactor Fundamentals (3) Homogeneous and heterogeneous reaction kinetics; idealized homogeneous reactor models, both for closed and flow systems; corrections for non-ideal residence time distributions; identification of scaling parameters; catalyst effectiveness factors and conversion in fixed bed catalytic reactors. Prereq: 340, Chemistry 350.

461 Advanced Process Dynamics and Control (3) Process and control system simulation and advanced industrial process design. Case studies, emphasis on flow process, feedback, multivariable, deadtime, adaptive, and nonlinear control system design. Includes computer and laboratory work. Lab. Prereq: 360.

469 Engineering Internship in Process Control (4) Selected students work in small groups on industrial problems in process dynamics and control. Directed by faculty and engineers from host company. Prereq: 360 and consent of instructor.
475 Fundamentals of Bionaractor Design (3) Reactor modeling, analysis and design for microbial fermentations and cell culture, including batch, fed batch and continuous operation; suspension cultures and immobilized systems; factors affecting productivity and control.

476 Principles of Biochemical Separations (3) Selection and design of separation and purification processes; analysis of separation processes including chromatography, electrophoresis, centrifugation, membrane processes, and conventional and supercritical fluid extraction.


485 Hydrocarbon Processing (3) Chemical and physical properties of petroleum and processes utilized in conversion of raw material into various fuels and selected chemical feedstocks. Prereq: 340, Chem 350.

486 Coal Processing to Liquid Fuels (3) Characterization of various coals with respect to current gasification and liquefaction technologies; modeling of conversion processes and estimation of product yields and the associated water, oxygen, and energy requirements; catalytic hydrogenation and reactor design considerations; economic assessments. Prereq: 495.

489 Design Internship in Industrial Pollution Prevention (3) Selected students work in small groups to address the prevention of industrial pollution through improved process design. Directed by faculty and engineers from host companies. Prereq: 490 with departmental approval. Prereq: 480 and consent of instructor.


494 Special Problems in Chemical Engineering (3) Chemical engineering problems related to recent developments in industrial practice or engineering research. Prereq: Consent of instructor. May be repeated. Maximum credit 6 hours.

ENGINEERING CIVIL (254)

210 Engineering Surveys (3) Merasurement through application of principles of surveying; theodolite, theodolite theorems and their analysis; concepts of horizontal, vertical and angular measurements and control; construction surveys; and route surveys through vertical and horizontal curves. Prereq: Sophomore standing.

251 Transportation Engineering I (3) Transportation problems and perspectives, rural and urban; use of a systematic planning process; analysis of existing travel patterns, modeling and demand, development of alternatives and the evaluation of civil engineering projects. Civil engineering decision making and applications of economic analysis. Prereq: Sophomore standing.

261 Statical Analysis I (3) Reactions, shear and moment diagrams; forces in trusses; uniaxial strain and stress; area moments of inertia; torsion. Prereq: Basic Engr. 121.

305 Seminar (2) Selected topics including historical and modern civil engineering achievements, professional and ethical responsibilities. Prereq: Senior standing or completion of all junior level non-elective engineering courses.

310 Route Surveying (3) Basic principles and practical applications of horizontal and vertical alignment of transportation routes; design and analysis of curves and bollic spirals. Includes earthwork computations by micro-computer. Prereq: 210.


330 Introduction to Soil Behavior (4) Physical and mechanical properties of soils, theory of compaction, seepage, and effective stress. Consolidation theory, time rate and settlement of foundations; strength of sands and clays. 3 hours. 1 lab. Prereq: 261.

352 Transportation Engineering II (3) Introduction to design, construction, maintenance, and operation of various transportation modes, their guideways and terminals. Prereq: Lecture and lab. Prereq: Junior standing and 210.

361 Structural Analysis II (3) Stress and strain in beams and columns; Mohr's circle; influence lines; deflections and beams and trusses; analysis of indeterminate structures; moment distribution. Prereq: 261.

380 Water and Waste Treatment (3) Principles of unit operations employed in physical, chemical, and biological treatment of water, wastewater, and solid wastes. Prereq: Junior standing and 390.

390 Hydraulics (4) Basic laws and properties of incompressible fluids: Units and dimensional analysis; drag forces; continuity, energy, and momentum equations; pipe flow; flow measurement; open channel flow and culverts; pump characteristics. 3 hours, 1 lab. Prereq: ESM 231 and Basic Engr. 101.

396 Hydrology (3) Concept of hydrologic cycle; weather patterns; precipitation measurement and distribution, abstractions, and runoff; storm hydrograph and peak flow analyses, including design floods; reservoir and channel routing; run off; frequency analyses; groundwater flow. Prereq. 390.

400 Senior Design Project (3) Open-ended design projects including problem formulation, specifications, feasibility and various design components. Topics vary but include projects decided by design teams and CEE Engineering consulting firms. Prereq: Completion of all technical courses through junior year.

406 Legal and Ethical Aspects of Engineering (2) Legal principles underlying engineering work; laws of engineering practice. Prereq: Senior standing.

409 Special Topics (1-3) Recent developments and current practices in civil and environmental engineering through field internships. Prereq: Consent of Instructor and department head. May be repeated.

410 Land Surveying (3) Procedures of locating properties; evaluating evidence; procedures to describe property, to create land descriptions, and to prepare plots; laws of land surveying. Prereq: 210.

421 Portland Cement and Asphaltic Concrete (3) Aggregate properties and tests, tests of portland cement concrete, mix design methods for concrete and asphalt, concrete mixtures; concrete shrinkage; nondestructive and destructive testing. Two lectures and 1 lab. Prereq: 321.

433 Earthquake-Resistant Structures (3) (Same as Architecture 433.)

434 Elementary Structural Matrix Methods (3) (Same as Architecture 434.)

435 Foundation Engineering (3) Fundamentals of geotechnics applied to design and analysis of soil structures; subsurface investigation; design of shallow and deep foundations, foundation on rock. Lateral earth pressure and retaining structures. Analysis of homogeneous slopes. Prereq: 335.

440 Civil Engineering Systems Design and Management (3) Methods of data analysis and modeling of civil engineering systems to enhance resource allocation for specific application to problems of transportation, environment, water resources, structural analysis materials. Emphasis on micro-computer applications. Prereq: Junior standing or consent of instructor.

442 Construction Methods and Equipment (3) Functional operational aspects of construction and equipment selection and productivity; concrete and steel construction; and construction contracts and economics. Prereq: 330.

451 Highway Engineering (3) Design, construction, operation and maintenance of highway facilities; includes application of various engineering principles and techniques to process of planning, locating and design of highway facilities; covers both geometric and pavement design. Prereq: 210, 251, 321.

452 Traffic Engineering (3) Characteristics of driver, vehicle, roadway and their interrelationships; traffic studies; basic considerations of traffic circulation and control, lighting, capacity analysis, roadway safety analysis and design. Prereq: 210, 251, 352.

453 Airport/Railroad Planning and Design (3) Airport master planning and railroad etcetera: configuration, airfield capacity, geomechanics and terminal layout and design. Railroad capacity, geomechanics and system layout and design. Prereq: 210, 251, 352.

461 Analysis of Framed Structures (3) Maximum stresses due to moving loads; uses of influence lines; lateral forces due to earthquake and wind: analysis of portals, building frames, and space frames; matrix methods; use of computer in structural analysis. Prereq: 361.

471 Introduction to Structural Design (3) Selection of rolled or built steel beams, design of structural steel members for axial tension and compression loads, reinforced concrete beams; use of standard specifications. Prereq: 361.

472 Steel Design (3) Design of plate girders and composite steel and concrete beams and slabs subjected to combined stresses; design of a typical framed building including connections. Prereq: 461.

474 Reinforced Concrete Design (3) Reinforced concrete continuous beams and floor slabs; columns, walls, and beams; culverts; footings and retaining walls. Prereq: 461.

480 Water and Waste Transport (3) Theory and design of water distribution systems, wastewater collection systems and solid/waste collection systems. Prereq: 390, 395.

485 Principles of Geohydrology (3) (Same as Geology 485.)

490 Water Resources Project Design (3) Development of multipurpose reservoir and dam project, including data acquisition; spillway and outlet works design; system, gravity dam stability analyses; drains and filters; maintenance and operation principles; and dam safety concepts, including dam break analyses. Prereq: 390, 395.

494 Urban Drainage Engineering (3) Design and management of stormwater conveyance and control structures. Application of hydrologic and hydraulic principles to design of drainage systems for urban, strip mining, and highway development; design of inlet structures, ditches, culverts, and detention/retention basins, application of commonly-used computer runoff models; evaluation of urban use changes of streamflow quantity and quality. Prereq: 390, 395.

495 Water Resources Development and Management (3) Institutional framework including: water law, evaluation procedures for comparing and selecting among water resources development alternatives, multi-objective planning, principles of engineering economics, benefit-cost analysis, and cost allocation methods; environmental impact assessment procedures; decisions using risk-based methods; case studies. Prereq. Senior standing.

ENGINEERING ELECTRICAL AND COMPUTER (320)

201 Circuits I (3) Fundamental laws of circuit analysis. Ohm's Law, Kirchoff's current and voltage laws, the law of conservation of energy, circuits containing independent and dependent voltage and current sources, resistance, conductance, capacitance and inductance analyzed using mesh and nodal analysis, superposition and source transformations, and Norton's and Thevenin's Theorems. Steady state analysis of DC and AC circuits. Complete solution for transient analysis for circuits with one and two storage elements. Prereq: All course work in the freshman engineering curriculum. Coreq: Phys 231 and Mathematics 231.

202 Circuits II (4) Average complex, imaginary and real power; effective values of voltage and currents. Three phase circuits: delta and wye connections. Complex frequency, sinusoidal forced and damped response. Resonance: general case, special cases in series and parallel circuits. Scaling: magnitude and frequency. Mutual inductance: transmission line circuit elements; linear and ideal transformers; admittance, impedance and hybrid parameters; trigonometric and

205 Electrical and Computer Engineering Computations (3) Complex analysis and phasor calculus; linear algebra; algorithms for roots of equations; numerical integration; simulation and solution of ordinary differential equations; error analysis in C and the use of the application language MATLAB. Coreq: or Prereq: 201.


301 Circuits and Electro Mechanical Components (3) DC and AC Circuits, Transistors, Transformers, Motors, Generators. For non-majors only. Prereq: Preparatory Math 231, Physics 231.


311 Transient Analysis (3) Parallel treatment of continuous and discrete time dynamic systems; solution of linear constant coefficient differential/difference equations by transform methods. Frequency response techniques. Prereq: 301.

312 Linear System Analysis (3) Steady-state and transient analysis of continuous and discrete time systems, stability, block diagrams and signal flow graphs, introduction to feedback theory. Includes laboratory experiments and projects. Design content: 1 hour. Prereq: 311.


331 Electronic Devices (3) Fundamentals of energy bands, theory of p-n junctions; diodes, field effect transistors, and bipolar transistors; device applications, simple power supplies, and amplifiers. Includes laboratory experiments and projects. Design content: 1 hour. Prereq: 302.

332 Electronic Circuits (3) Multistage transistor amplifier biasing: gain stages, and output stages; frequency and transient response of open loop linear amplifiers; fundamental amplifier configurations, operational amplifier applications in basic feedback configurations; basic transistor switching circuits. Includes laboratory experiments and design projects. Design content: 2 hours. Prereq: 331.

341 Fields (3) Coulomb's law, Gauss's law, Ampere's law, Maxwell's equation for electrostatic and magnetostatic cases; Maxwell's equations for dynamic cases, dynamic potentials, transmission line wave propagation. Transmission line. Prereq: 301.

342 Communication Systems I (3) Systems analysis of communication systems. Topics include signal and system classification, Fourier and Hilbert Transform techniques, time domain analysis and evaluation, and sampling theory. Analog modulation techniques including linear, angle, and pulse modulation with applications. Introduction to random variables and stochastic processes. Includes laboratory experiments and projects. Prereq: 311.


361 Introduction to Plasma Engineering (3) Particle motion in electric and magnetic fields; collective motions of charged parlfades; plasma diagnostics and the Langmuir probe; plasma sources and plasma conditioning devices; radio waves in plasmas and the ionosphere; MHD generators and fusion energy, and plasma etching for microelectronics. Includes laboratory experiments and projects. Prereq: 302 for ECE majors; or Physics 232 or 234 for all others.

395 Junior Seminar (1) Presentations and discussions related to professional development, and current topics in electrical engineering. Prereq: 202. Satisfactory/No Credit.

405 Digital Signal Processing and Filter Design (3) Discrete-time signals and systems, sampling, discrete Fourier transforms, analog filter characteristics, nonrecursive and recursive filter design, and CAD tools for filter design. Includes experiments and projects. Design content: 1 hour.


412 Linear Control System Design (3) Classical and modern techniques for design and compensation of linear feedback control systems. Design content: 2 hours. Prereq: 312.

413 Passive and Active Network Synthesis (3) Network analysis techniques; passive network driving point synthesis, filter function synthesis, approximation theory, topics in active network synthesis. Design content: 3 hours. Prereq: 312.


422 Machines (4) Dynamic behavior of rotating machines. Electromagnetic torque calculation. Theory and operation of d.c. machines; response to different waveform inputs; design and simulation; costs and their numerical solutions. Includes laboratory experiments and projects. Design content: 1 hour. Prereq: 312.

423 Power Electronics (4) Principles and characteristics of power semiconductor devices, single-phase and three-phase static power converters, control strategies, pulse width modulation. Includes experimental circuits, control of dc-dc converter principles, industry applications. Includes laboratory experiments and projects. Design content: 1 hour. Prereq: 312.


425 Direct Electrical Energy Conversion (3) Principles and practices of energy conversion devices and interfacing them to loads. Includes photovoltaics, MHD, and fuel cells. Design content: 2 hours. Prereq: 312. 351.

431 Digital and Analog Integrated Electronics (4) Basic processing and fabrication of active and passive components for monolithic and hybrid circuits: characteristics of bipolar, MOS and JFET transistors in typical applications and digital circuit designs; standard logic circuits: TTL, ECL, Schottky, NMOS, CMOS, and GaAs gates and arrays; design concepts for op-amps, comparators, references, regulators, and other linear circuits. Includes laboratory experiments and design projects. Design content: 2 hours. Prereq: 312.

432 Analog Signal Processing Electronics (4) Transducer signal and interface characteristics; analog integrators, filters, instrumentation amplifiers, and isolation amplifiers, rms and logarithmic amplifiers, multipliers, and function generators; integrated circuit applications including active filters, level and phase detection, multiplexers, modulation and demodulation, sample and hold, and comparators. Includes laboratory experiments and design projects. Design content: 2 hours. Prereq: 425.

433 Electronic Amplifiers (4) Feedback amplifier principles; wideband linear amplifier design; radio frequency and audio power amplifier design; linear regulated power supply design; switching regulator principles; oscillator principles. Includes laboratory experiments and design projects. Design content: 2 hours. Prereq: 332.

441 Communication Systems II (3) Probability, random variables, and random processes as applied to communication systems. Analog modulation in the presence of noise. Digital communication concepts including binary and M-ary signaling, synchronization, multiplexing and equalization. Includes experiments in the presence of noise and matched filtering. Information and Coding Theory: Includes laboratory experiments and projects. Design content: 1 hour. Prereq: 341.


443 Microwave Circuits and Electronics (3) Scattering, design of circuits to include isolators and amplifiers, couplers and power dividers, circulators, phase shifters and phase shifter systems. Power generation and amplification by vacuum and solid state (bulk and junction) devices. Microwave switching, filters, multiplexing devices. Transmission line and waveguide components. Includes laboratory experiments and projects. Design content: 1 hour. Prereq: 341.


451 Microprocessors in Computer Engineering (4) Project oriented using a microcomputer kit having a monitor program and development system with cross-assessment and management capability. Interfacing and hardware/software trade-offs in interrupt driver applications. Grade is dependent upon number of programs written, homework solutions, and designing notebook. Includes laboratory experiments and design projects. Design content: 3 hours. Prereq: 351.

452 Organization and Design of Digital Systems and Computers (4) Considerations for hardware organization of digital and computer systems. Includes U and CPU structures, control unit organization, storage systems, and the I/O channels. Microprogramming the control unit and different interrupt structures, includes laboratory experiments and design projects. Design content: 3 hours. Prereq: 351.

454 Data Acquisition Systems (4) Digital-to-analog conversion techniques; quad and R-2R ladder networks; error analysis of D/A converters; sample/clock circuits; analog-to-digital conversion techniques; open loop systems; direct and matrix converters; closed loop systems; dual slope and successive approximation; encoder readouts of A/D converters; automation development. Design content: 3 hours. Prereq: 312. 351.

455 Design of Computer Systems (3) Memory management, virtual memory, operating system structure and implementation, process scheduling, file systems, and user interface. Design content: 3 hours. Prereq: 351 or consent of instructor.


461 Plasma Magnetohydrodynamics (3) The MHD approximation; MHD waves and instabilities; MHD in static and dynamic systems; MHD in pulsed and steady power generation; MHD in fusion energy, industry, and astrophysics. Design content: 1 hour. Prereq: 361.

462 Plasma Kinetic Theory Engineering (3) Introduction to kinetic theory, beam-plasma systems; driven waves in a plasma; transition from multiple beams to a continuum; Vlasov and Landau theory; microwave generation in plasmas and traveling wave tubes; free electron guns for circular geometry, the gyrotrode and the gyrontron. Design content: 1 hour. Prereq: 361; 461 or consent of instructor.

463 Introduction to Fusion Energy (3) High temperature plasma physics relevant to fusion plasmas, prin-
ciples of fusion reactors, and engineering and physics constraints, and reactor design. Prereq: 361 for ECE majors, or consent of instructor. (Same as Nuclear Engineering 463.)

464 Introduction to Fusion Energy (II) (Continuation of 463. Includes principles and phenomenology of tokamak reactor operation, advanced fusion fuels, fusion technology, plasma engineering, and fusion reactor design studies. Includes design project which integrates material in 463 and 464. Design content: 2 hours. Prereq: 463 or consent of instructor. (Same as Nuclear Engineering 464.)

469 Plasma Laboratory (1) Experiments and design project illustrating material covered in 461 and 462. Design content: 1 hour.


481 Electro-Optics I (4) Fourier Optics. Diffraction, lenses, coherent and incoherent light, and laser applications. Includes laboratory experiments and projects. Design content: 1 hour. Prereq: Senior standing or consent of instructor.


493 Special Topics in Electrical and Computer Engineering (1-3) Topics relating to recent developments and current practice. May be repeated. Prereq: Consent of instructor.

494 Special Problems in Electrical Engineering (1-3) Problems in Electrical Engineering involving library and experimental research. May be repeated. Maximum nine hours. Prereq: Consent of instructor.

495 Senior Seminar (1) Topics vary. May be repeated once. Prereq: Senior standing or consent of instructor. Satisfactory/No Credit or letter grade.

ENGINEERING AND INDUSTRIAL (556)

200 Fundamental Computer Applications in Industrial Engineering (3) Applications of modern computer hardware and software to enhance professional productivity. Spreadsheets, word processing, graphics, and database management systems applied to industrial engineering. Includes FORTRAN programming and numerical analysis. Prereq: Basic Engr. 101.


301 Operations Research (3) Introduction to mathe- matical programming, optimization theory, linear programming (simplex method, transportation and assignment problems) and dynamic programming. Prereq: Mathematics 231 and 202.

302 Work Methods and Measurement (3) Job analysis, job evaluation, evaluation of wage structures, design of workplace layout, flow charts, activity charts and methods improvement. Work measurement tools such as time study, predetermined time systems, work sampling, data analysis, development of standard time data, learning curves and wage incentive systems. Prereq: Statistics 251.

304 Introduction to Human Factors Engineering (3) Human capabilities and limitations affecting work, work place, and work environment design. Emphasis on human factors methodology, human input requirements, human machine interface design. Includes subject experimental designs, classical experimental design methods, and time series models of experi- ments. Validity and reliability concepts as related to measurement and collection of data. Strategies to control ral hypothyroidism such as randomization, matching, yoking, fixing variables, and building extraneous vari- ables into the experiment. Motion of appropriate ex- perimental designs for given research situations and to analysis of messy data. Prereq: 300 and senior standing, Statistics 251.

414 Laboratory and Methodology in Human Factors Engineering (3) Problems relating to the collection, analysis, and interpretation of human factors data. Inductive_procedures for the investiga- tion of human factors problems. instrumentation and measurement of human capabilities and limitations, environmental factors that affect work such as temperature, humidity, lighting and noise. Measurement of task loading effects and effects of interface design on human performance. Prereq: Experimental psychology 301, and senior standing.

421 Informational Systems I (3) Systems engineering approach to design, development, implementation, and evaluation of systems of information. Emphasizes infor- mational aspects of IE systems. Study of data structures and database management systems. Prereq: 200 and senior standing.

422 Senior Industrial Engineering Problems Analysis (3) Application of Industrial Engineering to field assignments in local organizations, including problem definitions, analyses and presentation. Prereq: 402, 403 and 405.


440 Total Quality Management (3) The philosophy of continuous improvement in organizations including management and implementation issues; definition, identifi- cation and analysis of systems as compared to process analysis and improvement; flowcharts, pareto dia- grams, cause and effect diagrams and the seven new tools; data collection and control strategies, capability analysis; design of experiments and controlled experi- ments; measurement systems; measurement models; problem identification; total quality management and related techniques. Prereq: 403 and 405.

494-495 Special Topics in Industrial Engineering (3-3) Recent developments in Industrial Engineering including new areas of application, new research tech- niques and new methodologies. May be repeated once. Prereq: Senior standing and consent of instructor.

ENGINEERING MATERIALS SCIENCE (638)

201 Introduction to Materials Science and Engineering (3) Correlation of atomic structure, crystal structure and microstructure of solids with mechanical, physical and chemical properties of engineering significance. Prereq: Chemistry 130, E.

300 Materials Laboratory Procedures (1) Thermome- try, sample preparation for microscopic examination; word processing and graphics usage, data analysis, report writing. Prereq: 201.


302 Mechanical Behavior of Materials I (3) Tensile testing of metals, ceramics and polymers; deformation mechanisms in the various materials, incl. crystalline and non-crystalline forms; rubber elasticity, viscoelastic behavior of polymers; fatigue. Prereq: 201, 303, or consent of instructor. (Same as Engineering Science and Mechanics 323.)

303 Thermodynamics of Solids (3) Applications to solids of free energy, activity, Raoult's and Henry's laws; gas transport in solids; gas chromatography; phase rule, multicomponent systems. Prereq: Chem. Engr. 200. Sp

310 Theory and Processing of Electronic Materials (3) The quantum theory of electrons in solids; the free
electron approximation, Brillouin zones for matter waves and acoustic waves in periodic media. Lattice and electronic contributions to infinite and finite bearings; analytical and numerical solutions; applications to design. Prereq: 332, 344.


458 Introduction to Solar Energy Collection and Use (3) Vapor compression and absorption cycles; heat pipe systems; psychrometric processes; air washers; cooling towers; solar radiation; building heat transmission. Prereq: 352, 544.

471 Solar Energy Utilization (3) Nature and availability of solar radiation; review of heat transfer topics pertinent to solar energy collection and use; design analysis of solar energy collectors and method of storage; selected applications. Prereq: 332, 344. Recommended for chemical engineering, mechanical engineering, civil engineering and engineering science and mechanics majors. F

475 Thermal Engineering (3) Thermal systems with emphasis on turbocharging, heat exchangers, combustion and system analysis and design including second law and economic analysis. Prereq: 332, 344, F, Sp.

479 Thermal Engineering Design (4) Design of a complete thermal-fluid system including economic, technical, and optimization aspects. Participation in team design effort including formal presentations and design report. Prereq: 456, 475, Sp.

481 Internal Combustion Engines (3) Thermomechanical principles in combustion engines; flow in engines. Combustion, detonation; equilibrium; dissociation; Analysis of internal combustion engines using ideal and real fluids. Prereq: 332, 344.

484-485 Selected Topics in Mechanical Engineering (1-4) Problems and topics related to developments and practices in mechanical engineering. Prereq: Consent of instructor. F, Sp.
ENGINEERING NUCLEAR (716)

201-202 Seminar (1,1) Topics related to nuclear engineering. Satisfactory/No credit.


204 Thermodynamics II (3) Second law, development of entropy concept and availability. Various power plants and cycles. Prereq: 203.

301 Introduction to Nuclear Engineering (3) Nuclear systems, radioactive decay, cross sections, flux, health physics, reactor theory. Prereq: Physics 232, Mathematics 231.

304 Nuclear Engineering Laboratory (3) Radiation detection and counting instrumentation, counting statistics, half-life and decay schemes, gamma spectrometry, heat transfer experiments. Prereq: 305. Coreq: 470.

305 Energy Transport (3) Development of differential and integral energy conservation; conduction and convection heat transfer including numerical methods; application to nuclear reactor fuel elements, reactor cores, and heat exchangers. Prereq: 204.

306 Designing for Energy Transport (3) Radiation heat transport; hydromechanics and heat transport in boiling and condensing systems. Liquid and gas flow, heat transfer, and heat exchanger thermal design; steam generator design. Prereq: 305.

342 Thermal Science (3) Fluid statics; conservation equations of mass, momentum, and energy; applications to fluid flow and heat transfer processes. Conduction, convection, radiation, free and forced convection. For non-departmental majors only.

303 Nuclear Engineering Laboratory (3) Cross-section measurement, diffusion properties of neutrons, critical loading experiments. Applications to fuel loading and heat exchanger thermal design; steam generator design. Prereq: 305.

205 Control Theory (3) Stability and robustness; frequency response, stability analysis; various control techniques. Prereq: 301.

308 Nuclear Reactor Theory I (3) Fundamentals of nuclear criticality safety; criticality accidents; safety standards; overview of experiments, demonstrations/labs. Prereq: 231, Mathematics 241.

309 Nuclear Reactor Theory II (3) Thermal spectrum; design and analysis of reactors. Prereq: 308.

310 Nuclear Reactor Physics (3) Reactor systems, neutronic concepts, reactor systems, and nuclear data. Analytical and numerical methods applicable to general criticality problems, eigenvalue methods, reactor systems, and nuclear data. Prereq: 308.

311 Nuclear Reactor Physics Laboratory (3) Reactor physics experiments. Prereq: 310.


322 Mechanics of Materials II (3) Analysis and design of beams, singularly functions, energy methods, thick-walled pressure vessels, inelastic bending and torsion, theories of failure and fatigue. Prereq: 321.


351 Computational Mechanics I (3) Integration of computational methods and numerical mathematics of analysis with emphasis on numerical analysis and digital computer solutions of engineering problems. Prereq: 321, 341, and Mathematics 241.


403 Nuclear System Dynamics and Control (3) Overview of biomedical engineering: anatomy, physiology, biochemistry, biology, medical instrumentation, and biomechanics. Coreq: Mathematics 241 or consent of instructor.

301 Seminar (1) Engineering professionalism and career planning; seminars on current topics. Satisfactory/No credit. Prereq: Junior standing in ES&M.

421 Biomechanics (3) Mechanical properties of living tissues, biomechanics of injury; mechanics of prostheses; material compatibility of prosthetic devices; biomechanical problems related to impact. Prereq: 321.

471 Clinical Engineering and Bioinstrumentation (3) Function and characteristics of health care delivery systems including hospital organization and health care economics. Development and management principles for a hospital-based clinical engineering program. Biomedical instrumentation system operational characteristics: function and design, data readout and storage devices, evaluation of commercially available systems, selection and procurement methods, custom-designed systems, equipment maintenance and control programs for hospitals. Ethical issues and professionalism in clinical engineering. Prereq: 271, ECE 301.

473 Biomass Utilization (3) Mechanical properties of living tissues, biomechanics of injury; mechanics of prostheses; material compatibility of prosthetic devices; biomechanical problems related to impact. Prereq: 321.


494 Special Topics in Nuclear Engineering (3) Problems related to recent developments and practice. Prereq: Senior standing, consent of instructor. May be repeated.

498 Special Topics in Engineering (3) Topics related to recent developments and practice. Prereq: Senior standing, consent of instructor. May be repeated.

542 Computational Mechanics (3) Integration of fundamental physical laws, mathematical methods and computational techniques necessary to develop engineering analyses and design capabilities. Prereq: 321, BE 201, Coreq: 341.

543 Projects in Design (3) Conceptualization, analysis, design, and preparation of engineering projects. Prereq: Senior standing in ESM; 301, BE 201; a minimum of C average in 231, 321, and 341. Coreq: ME 344.

545 Computational Mechanics in Design (3) Computational techniques applied to engineering design problems. Prereq: 431, 452, 453.

461 Experimental Stress Analysis (3) Theory, techniques, and instrumentation of resistance strain gauges; theory and techniques of brittle coating method; introduction to other strain measuring devices. 2 hours and laboratory. Prereq: 321, ECE 301.

463 Photomechanics (3) Photoelasticity, photoelastic coating method, Moire' method, interferometry, and holography. 2 hours and laboratory. Prereq: 321, Physics 232.

465 Dynamic Data Acquisition (3) Use and calibration of instrumentation for measuring and recording dynamic events; Fourier analysis, transfer function analysis, digital signal processing, transduction, experimental parameters with applications to modal vibration analysis. 2 hours and laboratory. Prereq: 431, ECE 301.

101 English Composition I (3) Expressive, informative, and persuasive writing, with emphasis on invention, organization, style, and revision; practice in writing journals, letters, and reports, as well as expository and persuasive essays; intensive study of prose for meaning and ways of expressing meaning; conferences on individual writing problems. A,B,C,NC grading.

102 English Composition II (3) Analytical writing based on intensive study of literature and the study and practice of research writing; individual conferences. Prereq: 101. A,B,C,NC grading.

301 Seminar (1) Engineering professionalism and career planning; seminars on current topics. Satisfactory/No credit. Prereq: Junior or senior standing, consent of instructor.

ENGLISH (339)

101 English Composition I (3) Expressive, informal, and persuasive writing, with emphasis on invention, organization, style, and revision; practice in writing journals, letters, and reports, as well as expository and persuasive essays; intensive study of prose for meaning and ways of expressing meaning; conferences on individual writing problems. A,B,C,NC grading.

102 English Composition II (3) Analytical writing based on intensive study of literature and the study and practice of research writing; individual conferences. Prereq: 101. A,B,C,NC grading.

301 Seminar (1) Engineering professionalism and career planning; seminars on current topics. Satisfactory/No credit. Prereq: Junior or senior standing, consent of instructor.
pass the 101 class in which he or she is currently enrolled. S/N grading.

104 Writing Workshop II (1) Self-paced Writing Center course for students remediated to it at the beginning of the semester by their English 102 instructors. Individual instruction in writing and in developing and documenting the research paper. To receive credit, students must participate at least two hours per week and must also pass the 102 class in which they are enrolled. Prerequisite: English 101. S/N only.

118 Honors English Composition (3) No open enrollment. Students will be automatically enrolled on the basis of placement scores and performance on the placement exam taken at registration. Grading scale and workload the same as regular sequence. Expository and analytical writing based on the study of literature and on-fiction prose. Emphasis on research writing and individual conferences. Students receiving a grade below B in 118 will complete a year's work in English Composition by taking 102. Students receiving a grade of A or B will complete their freshman English requirements by choosing 102, a sophomore literature course in the English Department, or 355. A, B, C, NC grading.

121 English Grammar Review for Non-Native Speakers (4) Comprehensive review of English grammatical structures. Extensive practice in reading and writing. Required during their first semester in the University of all non-native English speaking students who demonstrate on the English Placement Exam a need for work in English structures, reading, or writing. Admission to this course is by the English Placement Exam only. Meets four hours a week. A/B/C grading.

131 Composition for Non-Native Speakers of English I (3) Paragraph organization and development with emphasis on informative and persuasive writing. Includes grammar and mechanics. Individual conferences. Admission to this course is by the English Placement Exam only. A/B/C grading.

132 Composition for Non-Native Speakers of English II (3) Writing based on reading and discussion. Analysis of works of literature. Emphasis on research techniques and research papers. Individual conferences. Admission to this course is by the English Placement Exam only. A/B/C grading.

201 British Literature I: Beowulf through Johnson (3) Major literary works from three periods: Middle Ages, Renaissance, and Restoration and Eighteenth Century. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

202 British Literature II: Wordsworth to the Present (3) Major literary works from four periods: Romantic, Victorian, and the Twentieth Century. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

207 Honors British Literature I (3) Enriched section of 201 designed for students with a 3.25 or higher GPA.

208 Honors British Literature II (3) Enriched section of 202 designed for students with a 3.25 or higher GPA.

221 Literature of the Western World I: Ancient, Medieval, and Renaissance (3) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

222 Literature of the Western World II: Enlightenment, Romantic, and Modern (3) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

227 Honors Literature of the Western World I (3) Enriched section of 221 designed for students with a 3.25 or higher GPA.

228 Honors Literature of the Western World II (3) Enriched section of 222 designed for students with a 3.25 or higher GPA.

231 American Literature I: Colonial Era to the Civil War (3) Development of American literature from its beginnings to the Civil War. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

232 American Literature II: Civil War to the Present (3) Development of American literature from the Civil War to the present. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

233 Major Black Writers (3) Major American literature as a literary tradition. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

237 Honors American Literature I: Colonial Era to the Civil War (3) Enriched section of 231 designed for students with a 3.25 or higher GPA.

238 Honors American Literature II: Civil War to the Present (3) Enriched section of 232 designed for students with a 3.25 or higher GPA.

248 Honors Introduction to Poetry (3) Enriched section of 251 designed for students with a 3.25 or higher GPA.

251 Introduction to Poetry (3) Poetry as a distinct mode of artistic expression. Critical tools for perception and reading of poems. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

252 Introduction to Drama (3) Critical tools for perceptive reading of plays. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

253 Introduction to Fiction (3) Fiction from the eighteenth through the twentieth centuries, emphasis on the novel. Critical tools necessary for judging varieties of fiction. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

258 Honors Introduction to Drama (3) Enriched section of 252 designed for students with a 3.25 or higher GPA.

268 Honors Introduction to Fiction (3) Enriched section of 253 designed for students with a 3.25 or higher GPA.

271 Introduction to Poetry (3) Poetry as a distinct mode of artistic expression. Critical tools for perception reading of poems. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

272 Introduction to Creative Writing (3) Practice in writing poetry and fiction combined with study of models and techniques. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

273 Introduction to Fiction (3) Fiction from the eighteenth through the twentieth centuries, emphasis on the novel. Critical tools necessary for judging varieties of fiction. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

275 Business and Technical Writing (3) Principles of business and technical writing outside the classroom.

276 Business and Technical Writing (3) Principles of business and technical writing outside the classroom.

281 British Culture to 1660 (3) English literature in the context of parallel developments in art, architecture, music, and social and intellectual history. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

302 British Culture: 1660 to present (3) English literature in the context of parallel developments in art, architecture, music, and social and intellectual history. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

303 British Culture: 1660 to present (3) English literature in the context of parallel developments in art, architecture, music, and social and intellectual history. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

304 Shakespeare I: Early Plays (3) Shakespeare's dramatic achievement before 1601. Selected plays from the romantic comedies (e.g., Twelfth Night), the English histories (e.g., 1 Henry IV) and early tragedy (e.g., Hamlet).

305 Shakespeare II: Later Plays (3) Shakespeare's dramatic achievement between 1601 and 1613. Selected plays from the great tragedies (e.g., Othello), the problem plays (e.g., Measure for Measure), and the dramatic romances (e.g., The Tempest).

306 Renaissance Drama (3) English theatre between 1580 and 1640. Representative plays by Shakespeare's contemporaries (e.g., Marlowe, Webster, Jonson).

307 Spanish and his Contemporaries (3) Major achievements in prose and poetry of the sixteenth-century authors such as Cervantes, de Quevedo, Lope de Vega, and Calderon.

308 Milton, Donne and their Contemporaries (3) Major achievements in prose and poetry of the sixteenth-century authors such as Spenser, Wyatt, Marlowe, More, Sidney and Bacon.

309 Restoration and Eighteenth-Century Poetry and Prose (3) Dryden, Swift, Pope, Johnson, and their contemporaries with emphasis on major works such as Macflecknoe, Rape of the Lock, Gulliver's Travels, and Rasselas.

310 English Drama from 1660 to 1800 (3) Playwrights from the Restoration (e.g., Dryden, Wycherley) to Goldsmith and Sheridan, including formal developments such as heroic play, cyclical comedy, affective tragedy, and exemplary drama.

311 The Eighteenth-Century British Novel (3) Selected British novels of Defoe and Austen.

312 Romantic Poetry and Prose I (3) Emphasis on Wordsworth, Coleridge, and Blake, with readings from Lamb, De Quincey, and other prose writers.
FOOD SCIENCE AND TECHNOLOGY (390)

140 The Food Industry (3) Role of the food industry in providing an adequate, safe food supply for the United States and international markets. Interaction of the food industry with governmental agencies and consumers. 2 hours and 1 lab. Sp

269 Meat Evaluation and Grading (2) Grading standards for quality and yield; principles for evaluation of beef, pork, and lamb, and application of standards for institutional meat cuts. Practice grading, judging carcasses and cuts, and application of purchase specifications. F

350 Dairy Products (3) Preconformation, processing and distribution of fluid milk. Evaluation and scoring of milk, dairy products, quality attributes and utility. 3 hours and 1 lab. A, F

400 Meat Products Technology (4) Processing methods for making cured, smoked, fresh, frozen, and formed products. Effect of processing methods on protein characteristics. Prereq: 360 or consent of instructor. 3 hours and 1 lab. A, F

470 Food Crop Products (3) Food products from plants emphasizing types, methods of production, quality attributes and utility. 3 hours and 1 lab. Science Biology, 2 hours and 1 lab. A, Sp

480 Cereal Science and Bakery Products (3) Chemistry and technology of processing cereal grains; interactions of ingredients during production and storage of baked products. Prereq: 410 or 411 or equivalent. 2 hours and 1 lab. A, Sp

493 Independent Study (1-12) Specialized research in an area of interest under faculty direction. Field experience in supervised internship in the food industry. May be repeated; maximum 12 hours. Prereq: Consent of instructor. E

FORESTRY (396)

301 Forest and Wildland Resource Economics (3) Production functions, supply-demand and market analysis; non-market and market determination of supply and demand functions. 3 hours and 1 lab. A

321 Forest Recreation (3) Philosophical foundation of recreation; planning, development, and management of forest recreation resources; interpretation of forest resources. Overnight weekend field trips may be required. F

322 Applied Silviculture (3) Application of silvicultural theories; tree improvement; use of herbicides; fire management. Prereq: Forestry, Wildlife and Fisheries 312, Coreq: 323, 324, 325, and Entomology and Plant Pathology 306. Sp


324 Forest Resource Analysis (3) Growth and yield prediction; harvest determination; goal setting under multiple use concepts; approaches to regulation; financial aspects of forestry with computer simulation. Prereq: Forestry, Wildlife and Fisheries 312, Coreq: 322, 324, 325 and Entomology and Plant Pathology 306. Sp

325 Forest Resource Inventory and Surveying (3) Volume and growth estimation; timber appraisal; surveying techniques; road layout and construction as appropriate to the needs of the area. Timber harvest techniques. Prereq: Forestry, Wildlife and Fisheries 313. Coreq: 322, 323, 324 and Entomology and Plant Pathology 306. Sp

331 Wood Properties and Uses (2) Wood as a biological material; detailed examination of the woody cell wall; influence of environmental and site conditions on wood formation; physical and mechanical properties of wood and the relationship of the woody cell wall to these properties; wood use in important commercial products; day field trip may be required. Prereq: Botany or Biology. 2 hours and 2 labs. F

332 Wood Identification (2) Cell structure and arrangement as a tool for species identification; microscopic and hand methods for identification of important commercial softwoods, hardwoods and foreign woods, laboratory procedures for making temporary slides for microscopic examination; student use of reference collection of wood samples. Sp

333 Forest Ecology (3) Forest ecosystems and ecological communities; historical development, management, and current status of forest communities. Prereq: Coreq: 332 for Forestry majors. Sp

340 Sensory Evaluation of Food (3) Principles and methods of sensory evaluation of foods. Prereq: Basic statistics. 2 hours and 1 lab. F


350 Preservation of Wood (3) Prevention of deterioration and spoilage of foods. Methods of preservation. Prereq: Agricultural Engineering Technology 422. 2 hours and 1 lab. Sp

422 Forest and Wildland Resource Policy (3) Policy formulation; criteria for policy determination; forest and wildland resource use; theory of conflict resolution and informal and formal resolution. Prereq: Senior standing. F

423 Forest Recreation Planning and Management (3) Planning processes, master and site planning, site development, planning and management, methods of visitor and recreation site management; case studies. Weekend field trips may be required. Prereq: 321, 323, Ornamental Horticulture and Landscape Design 280, or consent of instructor. 2 hours and 1 lab. Sp

431 Solid Wood Processing (5) Production processes for solid wood products including sawmilling; secondary materials, drying and preservation. Prereq: 331 and 332, or consent of instructor. 2 hours and 1 lab. Sp

432 Practicum in Wood Products (2) Standard laboratory procedures used in the evaluation of wood and wood products. Plant visitations including sawmills, pulp, plywood, flooring, furniture, composite panel, and wood treatment. Prereq: Senior standing in Wood Utilization or consent of instructor.

433 Wood Composites and Gluing (3) Principles of adhesion; wood adhesives; fundamentals of plywood and composite panel fabrication. Evaluating resin properties; bonding strength and durability. Prereq: 331 and 332, or consent of instructor. 2 hours and 1 lab. F

434 Measurement and Marketing of Wood Products (3) Measurement systems used for sale and transfer of wood products. Application of market principles and analysis to wood products markets and economic structure of wood products industry. Prereq: 431, 438 and Forestry, Wildlife and Fisheries 313, or consent of instructor. F

492 Off-Campus Internship in Forestry (1-6) Supervised experience at departmental-approved internship site. Prereq: Juniors and Seniors. Satisfactory/No credit only. E

493 Independent Study in Forestry (1-15) Special research or individual problem in forestry. E

494 Independent Study in Wood Utilization (1-15) Special research or individual problem in wood utilization. E

FORESTRY, WILDLIFE AND FISHERIES (398)

211 Introduction to Forestry, Wildlife and Fisheries (3) Historical and natural resource policies and practices; social perspectives and attitudes concerning natural resources and their use; techniques of integrated natural resources management, ecological principles, current policies, social trends, and forest and wildlife resource use. Day-long field trips may be required. Sp

259 Conservation (3) Use and abuse of wildland resources. Historical perspectives and current management of forests, wildlife, and fish of North America including aspects of outdoor recreation and pollution problems.

310 Current Issues in Renewable Natural Resources (1) Current resource issues presented by invited guest speakers each week; student discussion and interaction with speaker; some written work required; topics and speakers change each offering; attendance required at all class meetings. May be repeated. Maximum 3 hours. Satisfactory/No credit only. F

311 Endoecology/Ecology/Silvics (4) Principles of plant identification; ecological principles; characteristics of forest and associated ecosystems. Prereq: 1 year of Botany or Biology. 2 hours and 2 labs. F

312 Silviculture (2) Principles for treating forest stands to achieve selected objectives. Prereq: 311, Coreq: 313, 315. 1 hour and 1 lab. F

313 Measurements and Sampling (2) Measurement techniques and sampling methods for vegetation; estimation of animal populations; map and aerial photo use. Prereq: Statistics 201. Coreq: 312, 315. 1 hour and 1 lab. F

315 Forest Soils and Watershed Management (3) Soil information, properties, water relations and the basis for catchment exchange. Nutrient cycling. Classification and management of forest and wildlife soils and management of water in the forest ecosystem. Overnight weekend field trips may be required. Coreq: 312, 313, 2 hours and 1 lab. F

316 Managing Natural Resource Organizations (3) Evolution of natural resource professions and practices; organization and management of natural resource organizations. Culture and structure of natural resource organizations. Organizational and managerial functions. Operations and strategic issues including case studies. Prereq: 211. 2 hours and 1 lab. Sp
**FRENCH (405)**

111-122 Elementary French (3,3) Introduction to French. Must be taken in sequence. Language Laboratory required.

199 The French Language and World Business (1) The course will examine the importance of foreign trade at the local, state, and national levels. An interdisciplinary team of experts from the College of Business and Liberal Arts will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students majoring in the program in Language and World Business. See the Director for further information.

210 Intermediate French Transition (3) A thorough study of the fundamentals of French language for those who have completed two or more years of high school study but whose students indicate that they are not prepared for the 211-212 sequence. Special emphasis on developing communicative proficiency in French. The course will meet five hours per week and will not count toward the College of Liberal Arts intermediate-level foreign language requirement. For elective credit only.

211-212 Intermediate French (3,3) Sequence stresses the reading, writing, listening, and speaking of French to prepare for upper division courses in the language. Must be taken in sequence. Language Laboratory required.

217-218 Honors: Intermediate French (3,3) For students of superior ability in French. Formerly known as French 212. Open to students desiring reading knowledge of the language. Prereq: 212, 218 or equivalent.

300 French Transition (2) Development of linguistic skills necessary for satisfactory work in courses above 300. Recommended for students who would benefit from additional training beyond 212 in basic skills of reading, speaking, and writing French. May not be counted toward the major or minor.

301-302 Elements of French for Upper Division and Graduate Students (3,3) Elements of language, elementary and advanced readings. Open to graduate students preparing for work in French. May not be counted toward the major or minor.

310 History of French Literature (3,3) Chronological overview of French literature in relation to the specific historical developments that have influenced it. Prereq: 212, 218 or equivalent.

313 Aspects of French Literature (3) Study of masterpieces from the great literary movements and counter-movements. Prereq: 212, 218 or equivalent.

324 Women in French Culture (3) Role of women in shaping French history and culture. Feminists (George Sand), royal mistresses (Mme de Maintenon), intellectuals (Mme de Stael), actresses (Sarah Bernhardt), scientists (Marie Curie), Toulouse-Lautrec, and Charlotte Casimir. Prereq: 212, 218 or equivalent.

341-342 Intermediate Composition and Conversation (3,3) Grammatical analysis of modern French prose; review of grammatical principles and their application in translation from English to French, both written and oral; exercises in free composition. Prereq: 212, 218 or equivalent. Either 342 or 345 may be applied toward the major, but not both.

345 French for Business (3) Contemporary French language as it applies to business transactions. Understanding and composing business letters; oral communication and elements of French culture related to good business practices. Prereq: 212 or 218 or equivalent. Either 342 or 345 may be applied toward the major but not both. Prereq: 341 or consent of instructor.

400-401 Consecutive and Simultaneous French-English and English-French Translation (3,3) Consecutive Translation of individual units to and from English, fifteen hours of upper division courses in the language as it applies to business transactions. Undergraduate translation of 20th century French literature. Prereq: 212, 218 or equivalent. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

411 French Literature of the 16th Century (3) Highpoints of French literature. Excerpts from Rabelais and Montaigne; readings of poems from the writers from Lyon and members of the Pleiade. Prereq: 212, 218 or equivalent.


413 French Literature of the 18th Century (3,3) Major works of the Enlightenment. Prereq: 212, 218 or equivalent.


416 History of Francophone Literature (3) Introduction to writing in French outside of France. Prereq: 212, 218 or equivalent.

417 Readings in French Literature (3)

420 French Cinema (3) The French cinema from its earliest days through the New Wave directors. Prereq: 212, 218 or equivalent. Either 342 or 345 may be applied toward the major or minor.

423-424 Advanced Conversation (1,1) Informal conversation with native speaker on contemporary topics. Prereq: 212, 218 or equivalent.

424 Literary Portraits of French Women (3) This course is designed to acquaint students with a variety of French literary masterpieces dealing with women of different social backgrounds and of complex personalities. Not for major or minor credit in French. (Same as Women's Studies 433.)

430 Theatrical French (2-3) Performance in one or more French plays. Prereq: 212, 218 or equivalent.

431 Highlights of French Civilization (3) Survey of French Civilization from the Gauls to World War II. Historical events, daily life, arts of all forms. Prereq: 212, 218 or equivalent. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

432 Contemporary French Culture (3) French contemporary civilization and culture since World War II. Problems, trends and organization of French society today. Prereq: 212, 218 or equivalent.

**GEOGRAPHY (415)**

101-102 World Geography (3,3) Selected topics and world regions, especially those with problems or situations of contemporary interest, to illustrate geographical points of view, concepts, and techniques. Must be taken in sequence.

107 Honors: World Geography (3) Designed for freshman and sophomore students of superior ability who are interested in exploring geographical aspects of various world problems and issues. Enrollment limited. Prereq: Open to freshman with a score of 25 or better on the SAT, and to sophomores with a cumulative GPA of 3.2 or higher. Geography 107 may be substituted for Geography 101 in the 101-102 sequence. Students may not receive credit for both Geography 101 and 107.

121-122 Geography of the Natural Environment (4,4) Characteristics and processes of the earth's surface and lower atmosphere; their interaction to produce a world pattern of distinctive environments significant to humans. Either 342 or 345 may be applied toward the major or minor.

141 Introduction to Economic Geography (3) Location; occupational patterns of the world's major types of economies: agriculture, energy and mineral production, manufacturing, transportation, trade, and services.

310 Introduction to Maps, Aerial Photographs, and Cartography (3) Properties, sources, uses and design of maps, aerial photos, and other forms of spatial images as tools for geographical analysis. 2 hours lecture and 2 hours lab per week.

320 Cultural Geography: Core Concepts (3) Background and method of cultural geography; basic concepts and theories focusing on cultural regions, cultural ecology, cognition and diffusion, cultural integration, and world patterns of cultural phenomena. (Same as German 425, Russian 423, Spanish 426 and Linguistics 425.)

425 Methods of Historical Linguistics (3) (Same as Russian 426, German 426, Spanish 426 and Linguistics 425.)

428 Romance Linguistics (3) Development of Classical Latin through Vulgar Latin and Romance languages. (Same as Spanish 428 and Linguistics 429.)

430 Theatrical French (2-3) Performance in one or more French plays. Prereq: 212, 218 or equivalent and consent of instructor. Can be applied to major.

433 Linear Approaches to Functional French (3) Functional approach to structure and use of vocabulary and grammar of contemporary French. Prereq: Open to students receiving a grade of A or better on the ACT or a verbal score of 540 or better on the SAT, and to sophomores with a cumulative GPA of 3.2 or higher. Geography 107 may be substituted for Geography 101 in the 101-102 sequence. Students may not receive credit for both Geography 101 and 107.

430 Theatrical French (2-3) Performance in one or more French plays. Prereq: 212, 218 or equivalent and consent of instructor. Can be applied to major.

431 Highlights of French Civilization (3) Survey of French Civilization from the Gauls to World War II. Historical events, daily life, arts of all forms. Prereq: 212, 218 or equivalent. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

432 Contemporary French Culture (3) French contemporary civilization and culture since World War II. Problems, trends and organization of French society today. Prereq: 212, 218 or equivalent.

433 Literary Portraits of French Women (3) This course is designed to acquaint students with a variety of French literary masterpieces dealing with women of different social backgrounds and of complex personalities. Not for major or minor credit in French. (Same as Women's Studies 433.)
23 Behavioral Geography (3) Types of human behavior, such as shopping, territoriality, commuting, residential mobility, and regional consciousness as they relate to disturbance of the environment, and culture. (Same as Urban Studies 323.)

334 Meteorology (3) Dynamic atmosphere and resulting weather events. Nature of individual weather elements, their measurement and analysis over time and space.


361 Regional Geography of the United States and Canada (3) Physical, economic, and social distributions as they interrelate to give distinctive character to regions of the United States and Canada. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

363 Geography of the American South (3) Geographical appraisal of the southeastern United States, including physical environment and human resources. Origin and development of contemporary economic and cultural traits of the area. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

365 Geography of Appalachia (3) Interrelation of physical, economic, and social patterns that give distinctive character to the region and its parts, especially in southern Appalachia. Appalachia in perspective in the current American scene. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

372 Geography of Middle America (3) Physical, cultural, and economic characteristics of Mexico, Central America, and the West Indies. (Same as Latin American Studies 372.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

373 Geography of South America (3) Physical, cultural, and economic characteristics of the countries of South America with emphasis on their economic and international relationships. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

375 Geography of the Soviet Union (3) Geographical appraisal of the Soviet Union, including physical environment, economic patterns, and human resources. (Same as Russian and East European Studies 375.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

379 Geography of Africa (3) Physical, cultural, and economic characteristics of Africa, with particular emphasis on the areas of the Sahara and the southern Sahara. (Same as Afro-American Studies 379.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

411 Computer Mapping and Geographic Information Systems (3) Concepts, management, and presentation of digital data for spatial analysis, with emphasis on cartographic data structures. 2 hours lecture and 2 hours lab per week. Prereq: 310 and knowledge of a computer language or consent of instructor.

412 Cartography (3) Cartographic techniques applied to the design, compilation, and reproduction of maps and other graphic materials. 2 hours lecture and 2 hours lab per week. Prereq: 310 or consent of instructor.

413 Remote Sensing: Types and Applications (3) Principles and uses of remote sensing imagery, digital data, and spectral data, with particular emphasis on geographic interpretation and mapping techniques. Prereq: 310 or consent of instructor.

415 Quantitative Methods in Geography (3) Geographical application of statistical techniques, point pattern analysis, and analysis of areal units. Prereq: Mathematics 115 or two semesters of calculus or consent of instructor.

419 Practicum in Cartography/Remote Sensing (2-6) Supervised training in the preparation of maps and other graphic materials in the Cartographic Services Laboratory or a similar organization. Prereq: Written consent of department prior to registration. S/N or letter grade.

421 Geography of Folk Societies (3) Geographical study of folk culture, emphasizing traditional material culture and rural settlement, with examples drawn from eastern North America and selected foreign areas. Prereq: 101-102 or 330 or consent of instructor.

425 Historical Geography of the United States (3) Survey of the changing human geography of the United States during four centuries of settlement and development. Emphasis on changing population patterns, development of agricultural regions, and patterns of urban-industrial development. Prereq: 361 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

433 The Land-Surface System (3) Characteristics of surface form, water, vegetation, and surface materials, and regional interrelationships. People as evaluators and agents of change. Prereq: 131-132 or consent of instructor.

436 Biogeography (3) Study of the changing distribution patterns of plants and animals on a variety of spatial and temporal scales. The effects of continental drift, Pleistocene climate change, and human activity on earth biota is emphasized. Prereq: 131-132 or 330 or consent of instructor.

438 Water Resources (3) Global water resources and hydrologic processes, including water availability, flooding, and groundwater movement from physical and geographic perspectives. Prerequisite: 131-132 or 330 or consent of instructor.

441 Urban Geography (3) Concepts and theories concerning development and significance of systems of cities and internal morphology of cities. Prereq: 101-102 or 141 or 340 or consent of instructor. (Same as Urban Studies 441.)

443 Rural Geography (3) Geographical appraisal of rural areas of the United States, including small towns and villages, agricultural regions, and urban fringes. Problems and potentials of rural areas of the United States, including small towns and villages, agricultural regions, and urban fringes. Prereq: 101-102 or 141 or 340 or consent of instructor.

445 Geography of Resources (3) Factors related to variations in resource availability from time to time and place to place, with particular emphasis upon energy and metallic resources. Prereq: 101-102 or 141 or 340 or consent of instructor.

449 Geography of Transportation (3) Examination of transportation systems, emphasizing their effects on trade patterns, land use, and location of settlements, and development. Prereq: 141 or 340 or consent of instructor.

450 Process Geomorphology (3) Same as Geology 450.

451 Foreign Study (1-15) Prereq: Written consent of department required prior to registration. S/N or letter grade.

452 Off-Campus Study (1-15) Prereq: Written consent of department required prior to registration. S/N or letter grade.

453 Independent Study (1-15) Prereq: Written consent of department required prior to registration. S/N or letter grade.

459 Proseminar in Geography (3) Major themes in geography, especially trends over the past 40 years. Required for majors. Not open to graduate students. Prereq: Senior standing and completion of at least 12 hours of major or minor requirements in geography. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

499 Proseminar in Geography (3) Geographical study of folk culture, emphasizing traditional material culture and rural settlement, with examples drawn from eastern North America and selected foreign areas. Prereq: 101-102 or 330 or consent of instructor.

102 Earth, Life and Time (4) Fossils, evolution and ancient environments, plus a review of 4.5 billion years of earth history. Must be taken in sequence. 3 lecture hours and one 2-hour lab or field period.

103 Environmental Geology (4) Contemporary problems related to human disturbance of the environment; topics include global climate change, pollution, resource depletion. Prereq: 101. Fulfills laboratory science sequence requirement for College of Liberal Arts.

107 Honors: The Dynamic Earth (4) Laboratory and field emphasis to understanding physical processes, including the formation of rocks, plate tectonics, earthquake hazards, and landscapes. Must be taken in sequence. 3 lecture hours and one 2-hour lab or field period.

201 Darwin, Dinosaurs, and Extinctions: An Introduction to Evolution (3) Theories and evidence of evolution presented in a novel manner, with emphasis on its relevance to modern society. Topics include origin of life, mass extinctions, evolutionary trends. Opportunity to examine and collect fossils. May not be applied toward the Geology major.

202 Earth as an Ecosystem: Modern Problems and Solutions (3) Study of the earth as an integrated system between physical and biological processes. Focus is on human disturbances such as habitat destruction and pollution. No prerequisite. May not be applied toward the Geology major.

203 Geology of National Parks (3) Geologically spectacular landscapes and geologic history of national parks of the world. Hike to examine the Earth’s geologic heritage. 3 lecture hours, plus a field trip during the term. May not be applied toward the Geology major.

210 Basic Geology for Engineers (2) Materials and structures of the earth. For College of Engineering students only, 2 lecture hours and one 2-hour lab or field period.

310 Mineralogy (4) Introduction of crystallography, crystal chemistry, x-ray diffraction, optical mineralogy, and the structures of inorganic, igneous, sedimentary, and metamorphic rocks. Includes identification of rocks and minerals. Students may not receive credit for both Geology 102 and 108.

320 Paleobiology (3) Fossils and their uses in functional morphology, paleoecology, biogeography, biostatigraphy, and evolution. Prereq: 102 or consent of instructor. 2 lecture hours and one 2-hour lab or field period.

328 Geologic History of Life Organisms (3) Origin and development of terrestrial organisms in space and time with emphasis on the fossil and present record of land plants and vertebrates. Prereq: Elementary biology or consent of instructor. (Same as Zoology 328.) 3 lecture hours and one 2-hour lab or field period.

330 Igneous and Metamorphic Petrology (3) Classification and properties of igneous and metamorphic rocks, including tectonic environments in which they form. Prereq: 101, 2 lecture hours and one 2-hour lab.

340 Stratigraphy and Sedimentation (3) Stratigraphic principles and practices, including principles of reconstructing facies and depositional environments. Prereq: 101, 102 and 310. 2 lecture hours and one 2- hour lab or field work.

345 Geology of East Tennessee (3) Geology of the Southern Appalachian landscapes. 2 lecture hours and one 2-hour lab of core courses or consent of instructor. 1 lecture hour plus field trips.

409 Introduction to Oceanography (4) Physical, chemical, biological, and geological processes of the oceans, including tides, waves, standing bodies of water, coastal processes, marine sedimentation, biogeochemical
cycles, and food webs. Prereq: Chemistry 120-130; recommended: 101-102. 3 lecture hours and one 2-hour lab. (Same as Botany 346.)

370 Structural Geology (4) Common geologic structures (folds, faults, cleavage) and their genesis. Laboratory includes map interpretation, cross-section constructions, stereonets. Prereq: 101-102, Mathematics 141-142. 3 lecture hours and one 2-hour lab.

380 Resources Crises - Minerals and Energy (3) World and United States resources of minerals and energy, price and production trends, future supply of minerals and energy, national mineral and energy policies. Emphasis on appraisal of conventional and alternate energy resources. 3 lecture hours.

410 Advanced Mineralogy (3) Crystal chemistry of the rock-forming minerals. Interaction of electromagnetic radiation and crystalline solids. Optical properties of minerals, visible and infrared spectroscopy, and x-ray diffraction. Laboratory exercises emphasize thin section and x-ray diffractometer methods of mineralogy. Prereq: 310. 2 lectures, one 2-hour lab.

420 Paleocology (4) Principles of ecological analysis as applied to fossils and fossil assemblages with emphasis on data collection and interpretation. Laboratory is designed around preparation of scientific reports based on field and laboratory analysis. Writing emphasis course. 3 lecture hours and one 2-hour lab.

421 Invertebrate Paleontology I (3) Preservational processes and geologically important representatives of Protista, Porifera, Cnidaria, Bryozoa, and Brachiopoda. Emphasis is on functional morphology, skeletal structures, ecology, and stratigraphic distribution. Prereq: 350 or consent of instructor. 2 lecture hours and one 2-hour lab.

422 Invertebrate Paleontology II (3) "Higher invertebrates": Annelida and other worms, Mollusca, Arthropoda, Echinodermata, Graptolida, Conodonts, Chordata. Emphasis is on functional morphology, skeletal structures, ecology, and stratigraphic distribution. Prereq: 350 or consent of instructor. 2 lecture hours and one 2-hour lab.

425 Evolution and the Geologic Record (3) Evolution of life viewed from the fossil record. Includes mass extinctions, macroevolution, and evolutionary rates. Prereq: 320. 2 lecture hours and 1 seminar.

426 Paleobotany and Palynology (3) Evolutionary history of terrestrial plant life through examination of the fossil record of macrobotanical remains, spores, and pollen grains. Origin and diversification of Gymnosperms and Angiosperms; changes in floristic provinces through geologic time. Prereq: 101-102, Botany 310-320 or consent of instructor. 3 lecture hours and one 2-hour lab. (Same as Botany 426.)

440 Field Geology (6) Summer field course for advanced undergraduate geology majors and first-year graduate students. Must be taken after completion of 101-102 or Botany 310-320 or consent of instructor. 3 lecture hours and one 2-hour lab. (Same as Botany 440.)

450 Process Geomorphology (3) Integrative approach to the development of the surface of the Earth based upon case histories, maps, remote sensing imagery, 2 lecture hours and one 2-hour lab. Prereq: 101-102. (Same as Geography 450.)

455 Basic Environmental Geology (3) Applications of the geologic sciences toward a comprehension of the effects of geologic processes on humans and the effects of human activities on the earth's environments. Prereq: 12 hours of geology courses. 2 lecture hours and one 3-hour lab or field period.

460 Principles of Geochemistry (3) Application of chemical principles to geologic problems. Emphasis on crystal chemistry and relation between basic atomic structure and the physical and chemical behavior of elements in the Earth's crust. Prereq: Chemistry 120-130; recommended Geology 330. 2 lecture hours and one 2-hour lab.
HEALTH (449)

110 Personal Health and Wellness (3) Information and behavior necessary for a sound, healthful lifestyle and for the development of health and wellness skills.

200 Seminar in Human Sexuality (2) Problems and responsibilities of being male and female as they relate to health and wellness. Satisfactory/No Credit only. F, Sp

225 Alcohol/Drugs and the College Student (2) Problems related to use and abuse of substances potentially harmful to health and wellness. Covers alcohol, drugs, tobacco and other substances. Satisfactory/No Credit only. F, Sp

230 Cardiopulmonary Resuscitation (2) Theory and skills to implement basic cardiopulmonary resuscitation for cardiac arrest due to such conditions as heart attack, drowning, electrocution, poisoning, drug intoxication, vehicular and other accidents. Educational and preventive aspects of controlling cardiovascular disease. Leads to basic life support certification. F, Sp

300 Health Education, Promotion, and Behavior (3) Health education goals, roles, target populations in school, community, and health care settings: health careers and occupations; behavior change; intervention techniques; health appraisal techniques; health promotion strategies. F

305 The School in Community Health (2) Roles and responsibilities of teachers in school health programs with emphasis upon: health problems of the school child, recognition and methods of handling them; healthful school environment; school health services; and community resources, health personnel, voluntary and official health agencies. May not be taken for credit by health majors. F, Sp

306 Health Instruction in Elementary Grades (3) School health program for the child in elementary grades. Teachers become familiar with organizing and presenting health, the study of plays, the historical writings, the poetry of ancient Greece in the original Greek. May be repeated for credit. Maximum 9 hours. Prereq: 401-402 or consent of instructor.

325 Health Education Program Planning (3) Emphasis on interpersonal relationships, public relations, leadership, small group processes, health teams, and effective use of media. F

380 Research and Grant Writing (2) Study and application of research methods and grant writing techniques for health education programs. Skills for reading and interpreting journal and research articles. Exercises and student projects to develop a research or grant proposal. Emphasis on development and review processes.

400 Consumer Health (3) Major consumer health care providers and health care services; selecting, purchasing, evaluating and financing medical and health care services/products. (Same as Public Health 400.) Sp

405 Alcoholism and Alcohol Education (3) Factors which increase alcoholism, its severity and related problems. Various types of instructional/educational and intervention programs. F

406 Death, Dying and Bereavement (3) Aspects of dying, death and handling the trauma of loss. Medical, financial, physical, legal and social implications of death. F, Sp

410 Pre-Internship Seminar (1) Objectives and policies of the internship program. Must be completed the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. Sp, Su

414 Fitness Testing and Exercise Prescription (3) (Same as HPS 414.)

420 Sex Education As It Relates to Human Sexuality (3) Science of human sexuality. Emphasis on the trends, issues, content of sex education. F, Su

425 Women’s Health (3) Factors influencing women’s health and women as consumers in nation’s health service delivery systems. Study of health problems/concerns of women and techniques for prevention, maintenance and/or correction. (Same as Women’s Studies 425.) E

430 Suicide and Crisis Intervention (3) Factors which make suicide a serious health problem. Assessment, intervention, and prevention techniques. Sp

435 Substance Use and Abuse (3) Drug and alcohol abuse problems and suspected causes pharmacology of drugs and affects; society, strategies for intervention and education. Sp, Su

455 Aging and Health (3) Aging process in a health perspective as it relates to promotion and wellness of the aged. F, Sp

470 Special Topics (1-3) For advanced students, teachers, social administrators, nurses and other para-medical personnel. Lectures, demonstrations, films, field trips, and supervised research in special health/wellness or health promotion issues. May be repeated. Maximum 12 hours.

475 Directed Independent Studies (1-3) Individual identification and study of a health/wellness or health promotion problem/issue. Prereq: Consent of instructor. May be repeated. Maximum 12 hours. E

481 Internship I: Grades 7-12 (3-6) Methods and theories of teaching. Internship is completed in local public schools. Application for internship should be made upon admission to Teacher Education Program. Prereq: 410 and admission to Teacher Education Program. Satisfactory/No Credit only.

482 Internship II: Grades 7-12 (3-6) Demonstration of professional competence in planning, instruction, and classroom management. Internship is completed in local public schools. Prereq: 481 and admission to Teacher Education Program. Satisfactory/No Credit only. Sp

483 Field Practice (10) Off-campus health internship or field practice in an educational or other agency with qualified professional. Prereq: Consent of instructor. Satisfactory/No Credit only. E

HISTORY (462)

151-152 Development of Western Civilization (3,3) Historical survey of the civilization of the western world. 151-Ancient world to 1715. 152-1715 to present. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

157-158 Honors: Development of Western Civilization (3,3) Consent of department required. 157-F, 158-S. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

161-162 A History of World Civilization (3,3) Historical survey of world civilization. 161-Origins to 1500. 162-1500 to present. 161-F, 162-S. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

185-196 African-American History: An Introduction (3,3) African-American experience to 1890. Traditional African societies from which Afri-Americans emerged; evolution of prejudice and racism in America; institutionalization of slavocracy; Neo-French colonialism; African-American experience from 1890. The Afro-American struggle for political, civil and social equality; leadership of the struggle and responses of Black community institutions to the challenges of the 20th century; the rise of the urban ghetto; the Civil Rights and Black Power movements.

202 The City in Europe, 1000-1500 (3) Urban growth, emphasizing the relationship between the economic and social foundation of the cities, their political and cultural development and their physical structure.

251-252 History of the United States (3,3) 251-Settlement to 1877. 252-1877 to present. E

253-254 United States History for International Students (3,3) 253-Settlement to 1865. 254-1865 to present. 253-F, 254-S.

257-258 Honors: History of the United States (3,3) Prereq: Consent of department. 257-F, 258-S

307 Honors: Introduction/Historical Problems (3) Historical analysis, philosophy of history, principles and techniques of research emphasizing the roles of climatic and human factors and how they affected the problems of evidence, interpretation, and objectivity. Required of students working for honors in history. Prereq: Consent of the department.

310-311 The Ancient World (3,3) 310 Development of Athenian democracy: its successes and failures; collapse of the fourth century B.C.; emergence of Hellenistic civilization. 311 Origins of Roman imperialism and its consequences: militarism, slavery, socioeconomic changes, constitutional crises, emergence of military and political autonomy.

312-313 Medieval History (3,3) 312-1100. Formation of medieval society and institutions. Peoples of the Middle Ages (1100-1400). Height of medieval civilization, and its waning in the fourteenth century. (Same as Medieval Studies 312-313.)

314 Renaissance Europe (3) The period traditionally seen as a transition from the Middle Ages to the modern world. Interrelationship of cultural, social, economic, political and intellectual developments, with an emphasis upon historical interpretation.

315 Reformations Europe, 1500-1650 (3) The period during which Europe witnessed religious disunity, economic dislocation and insecurity, political centralization, intellectual skepticism, the origins of modern science, war and the witch craze. (Same as Religious Studies 315.)

316 Early Modern Europe, 1650-1800 (3) Dynamic conflict of a search for order in an age of revolutions, seen in the continued push for political centralization, the impact of the scientific revolution, the intellectual flowering known as the "Enlightenment", and the English and French revolutions.

319 Modern Europe, 1750-1914 (3) Political, industrial and intellectual revolutions against traditions. Topics such as the modern population explosion, urbanization, the political emergence of the middle class and the masses, nationalism, imperialism, rationalism and Romanticism in social thought and politics. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

320 Contemporary Europe, 1900-Present (3) The transformation from industrial to post-industrial society and the transformation of the European nation-state. Topics such as war and depression and the consequent political and social instability: totalitarian control; decolonization; the impact of Freud, Einstein and existentialism; welfare states; and the problems of European unification. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

321 New Testament Origins (3) (Same as Religious Studies 321.)

322 Christian Thought (3) (Same as Religious Studies 322.)

330-331 History of England (3,3) 330 to 1688. 331-1688 to the present. Medieval state, church, and society; origins of Anglo-American law, the monarchy and parliamentary government, the Reformation, 17th Century
revolutions, commercial, agricultural and industrial revo-
lutions; class conflict, the empire, the welfare state, world
wars, economic crisis.
332-333 History of France (3,3) 332-The emergence of modern France from the Renaissance to 1789. 333-
France since the Revolution, 1789 to present.
334-335 History of Germany (3,3) 334-Germany I, to
1815. The first Reich's Fortune and Failure. The devel-
OPMENT of Bismarck's Second Reich, to the Weimar
republic to Hitler's Third Reich, to Adenauer's Federal
Republic and the present nation of two states.
336 A History of Austria and Central Europe: Fron-
tier and Civilization Center (3) Austria's development, as
part of the Habsburg collection of states, and its search for identity as it underwent drastic changes, from
a multi-national empire and great power status to an
unstable truncated republic, to an exploited Third Reich,
province, to a four-fold Allied occupation zone, to —
finally—an independent neutral nation at the cross-
roads of Europe. Major themes include balance of power
politics, relationships with neighboring peoples, cultural
achievements, economic integration and disintegration,
and the problems of centralization versus national diver-
sity.
340-341 History of Russia (3,3) 340-To the middle of
the 19th century. 341-From the middle of the 19th
century. (Same as Russian and East European Studies
340-341.)
350-351 Early Modern America, 1607-1815 (3,3) A
thematic approach to early American history in the
formative years; 350-to 1776; 351-1776 to 1815.
352 The United States during the Jacksonian Era,
1815-1860 (3) An examination of the major economic
and political developments in antebellum America within
the framework of the struggles between nationalism and
sectionalism.
353 The Civil War and Reconstruction Eras, 1860-
1877 (3) An examination of the major political, eco-
onomic, and social developments in the United States
during the Civil War and Reconstruction era.
354 United States, 1877-1933 (3) America's political,
economic, and social development from the Gilded Age
through the Great Depression.
355 United States, 1933 to the Present (3) American experience from Roosevelt's New Deal through World
War II and the Civil Rights Era. American domes-
tic history but includes military and foreign policy.
360-361 History of Latin America (3,3) 360-Colonial-
ism and Independence, 1500-1825. 361-National De-
velopment, 1825 to present. (Same as Latin American
Studies 360-361.) Writing-emphasis course: at least
one in-class essay examination and 3000 words of
writing outside the classroom.
362-363 History of East Asia (3,3) 362-East Asia: His-
tory and Culture to 1600. Chiefly China and Japan;
Korea and Vietnam are included. Confucianism, Bud-
dhism, social structure, political tradition, and Japanese
feudalism. Comparison and contrast with Western his-
tory and other civilizations is central. 363-Chinese history,
China, Japan, Korea and Vietnam. Comparative mod-
ernization; Western impact, cultural transformation,
communist movement, and capitalist and post-war econo-
ic success. Writing-emphasis course: at least one
in-class essay examination and 3000 words of
writing outside the classroom.
364 History of China (3) Changes and continuities of
the world's longest uninterrupted civilization with a quar-
ter of the human population. Cross-cultural similarities and differences between China and Western civilizations; Chinese revolu-
tions in historical context.
365 History of Japan (3) Japanese history from mytho-
logical origins to the present with emphasis on domestic
politics and the social, cultural, economic and political impact of the West on Japanese society.
366 Ancient Near Eastern Civilization (3) Bronze and
Iron Ages. Origin of civilization; institutional structures; interstate warfare; cultural diffusion; the early
emergence of early modern and modern warfare, culminating in the
Wars of the 20th Century.
433 War and Society in Europe from Medieval to
Modern Times (3) Relationship between the nature of
war in Europe and development of European society from early
modernity to the present. Impact of war on social structures as
well as the intellectual mythology which informed those
directions. Emphasis is on changing war, status, and conse-
quences of social reform. (Same as American Studies
440.)
434 The American Frontier and Westward Move-
ment, From the Atlantic to the Trans-Mississippi
West (3) Settlement and development of the "West"
throughout American history.
435 Indian-West Relations in United States History
(3) Delineation of two cultures, politically, socially, and
technologically and the consequences of relocation, culmi-

ing in the destruction of the American Indian way of life.
436-444 History of South (3,3) 436-Old South from
colonial period through the Civil War. 437-New South
from Reconstruction through the Second Reconstruc-
tion.
437 The Afro-American Experience from the Colo-
nial Period to the Present (3) Topics in 19th and 20th
Century African-American History, such as Pan-Africanism
and the effect of education on the status of Blacks.
(Same as African Studies 445.)
438 History of American Culture (3) Topical examina-
tion of the development of American cultural values, attitudes and beliefs from the formation of
the nation to the present. Illustrative topics: creation of
a national culture; Civil War as cultural conflict; challenge
of capitalism; urbanization, industrialization, and mass
consumption; pre-1950's; post-1950's; current state of
culture. Writing-emphasis course: at least one in-class
essay examination and 3000 words of writing outside
the classroom.
439 History of the United States from Colonial Times
to the Present (3) (3) Colonial period to the present
with emphasis on social, political and economic events in
North and South America, Europe, and the
non-Western world. May satisfy history major require-
ments except those of geographical distribution. May be
repeated by non-majors. Maximum 6 hours.
440 America: The Society and its Social Record (3)
Chronological survey of major currents in American
social thought and social organization as well as the
interaction with its environment. May be repeated
by non-majors. Maximum 6 hours.
441-443 History of European Societies (3,3) 441-
Medieval Society to the Renaissance era; 442-Renaissance to
Relativism, 1750-Present. Emphasis on social, political, and economic structures and values, including
related institutions and ideas. Writing-emphasis course: at least one in-class essay examination
and 3000 words of writing outside the classroom.
444 History of Indian Societies (3,3) 444-Societies of
North America; 445-Societies of South America; 446-Societies
of Africa and Oceania; 447-Societies of Asia. Emphasis on
societies and their significance in American life from
contact to present. May be repeated by non-majors.
Maximum 6 hours.
445-448 History of Latin American Societies (3,3) 445-
The Spanish and Portuguese Empires to the Present; 446-
The Latin American Revolutions; 447-The Development of
Latin American States; 448-The Latin American Socio-
cultural system. Uses practical historical problems in
urban and rural areas of the Americas. May be
repeated by non-majors. Maximum 6 hours.
449 History of the United States (3) The United States
from Colonial Times to the Present (3) Colonial period
through the Civil War. May be repeated by non-

majors. Maximum 6 hours.
450 History of American Foreign Relations (3) Rise of
the United States from weak nation to global power, ideol-
gy of expansionism and United States response to challenges of autarchy, communism and third world
nationalism.
451 United States Military History, 1754 to the
Present (3) The nation's broad strategic aims and means
used to attain them, shifting strategy, tactics and weap-
onry involved in wars, and relationship between Ameri-
can society and its armed forces. (Same as Military
Science 450.)
452 The American Experience in World War II (3)
Diplomatic origins and development of America's cultural
values, attitudes and beliefs from the formation of
the nation to the present. Illustrative topics: creation of
a national culture; Civil War as cultural conflict; challenge
of capitalism; urbanization, industrialization, and mass
consumption; pre-1950's; post-1950's; current state of
culture. Writing-emphasis course: at least one in-class
essay examination and 3000 words of writing outside
the classroom.
453 Women in American History (3) Approaches of
432 American women to society, 433 to the American
(3) Social Science 430.)
454 Cities and Urbanization in American History (3)
Origins, growth, and influence of American cities in
development of the nation, from colonial era to present.
(See Urban Studies 454.)
455 Local and Regional History (3) History of the
region within which the student is living or working, as
well as the regional history of the United States regional models. (Same as American Studies 455.)
456 History of Sports in the United States (3) Develop-
ment of sports and their significance in American life
from colonial period to present, with emphasis on social,
cultural, economic and political impact of both spectator
and participatory sports in 20th century. (Same as
American Studies 456.)
457 Introduction to Quantitative Methods for Histori-
ans (3) Collecting, organizing, and analyzing machine-readable data with SAS (Statistical Analysis
System). Uses practical historical problems in urban and
rural perspectives.
458-459 Studies in British History (3) Variable content.
Selection of themes and issues in British history. May be
repeated. Maximum 9 hours.
471 Studies in Western European History (3) Variable content. Particular aspects of Western European history such as witchcraft, revolutions, or nationalism. May be repeated. Maximum 9 hours.

472 Studies in Central European History (3) Variable content. May be repeated. Maximum 9 hours.

473 Studies in Eastern European History (3) Variable content. Selected aspects of Eastern European history, especially on Russian and Polish history. May be repeated. Maximum 9 hours.

474 Studies in Medieval and Early Modern European History (3) Variable content. Particular aspects of medieval and early modern European history. May be repeated. Maximum 9 hours.

475 Studies in Latin American History (3) Variable content. Significant issues in Latin American history. May be repeated. Maximum 9 hours. (Same as Latin American Studies 475.)

476 Studies in Asian History (3) Variable content. Particular aspects of Middle Eastern and East Asian history such as modernization in the Middle East, Revolution in China, Japanese Feudalism, and others. May be repeated. Maximum 9 hours.

479 Studies in United States History (3) Variable content. May be repeated. Maximum 9 hours. (Same as American Studies 475.)

474 Studies in Medieval and Early Modern European History (3) Variable content. Different aspects of the continent and diverse aspects of the African experience such as African resistance movements, African political parties, the relationship of social and economic development under colonialism to social and economic conditions in modern African nations, and apartheid and resistance in South Africa. May be repeated. Maximum 9 hours.

481 Studies in History (3) Variable content. Subject matter not covered in other courses. May be repeated. Maximum 9 hours.

482 Colloquium in History (3) Historical theme or problem; emphasis on questions and skills, with special reference to historiography, including critical analysis of both primary and secondary sources. Recommended for seniors. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

HOME ECONOMICS EDUCATION (490)

210 Field Experience in Teaching Home Economics Education (1-3) May be repeated. Maximum 3 hours. Satisfactory/No Credit only.

220 Introduction to Home Economics Educational Programs (3) School-based and community-based home economics programs. Field experience included. Sp

320 Strategies of Teaching Home Economics (3) Teaching methods, techniques, use of media. Field experience included. Prereq: 220. F

420 Curriculum Development in Vocational Home Economics (3) Program planning, evaluation, design of instruction for classroom. Prereq: 320. Admission to Teacher Education Program. To be scheduled immediately preceding student teaching. Includes laboratory. Sp

421 Teaching Occupational Home Economics (1) Methods, organization, curriculum for Home Economics Related Occupational programs. Prereq. or Coreq: 420. Sp

430 Student Teaching in Vocational Home Economics (8-15) Prereq: 420. Satisfactory/No Credit only. F

440 Teaching in Community-Based Programs (3) Planning and implementing non-formal instructional programs; methods, techniques, delivery systems, evaluation. Includes field experience. Prereq: 420. Same as CFS 440. Sp

445 Field Experience in Community-Based Programs (1-15) Placement in Home Economics-related programs or businesses. Includes seminar. May be repeated. Maximum 15 hours. F, Sp, Su

497 Honors: Home Economics Education (3-6) Issues or topics affecting home economics education, designed to meet particular interests of the student. Prereq: Consent of instructor. Satisfactory/No Credit only. F, Sp, Su

HOTEL AND RESTAURANT ADMINISTRATION (551)

120 Introduction to Hotel and Restaurant Administration (2) History and place of industry in national economy, basic operating systems, organization structure; problems in the hotel industry. Prereq: Consent of instructor. F, Sp

125 Front Office Management (3) Front office procedures within context of overall operation of the hotel/motel; includes reservation systems, equipment, accounting procedures, settlement procedures, public relations, and management. F, Sp

220 Foodservice Systems Administration (3) Management concepts, processes, resources in foodservice industries; decision-making and problem solving principles. F, Sp

320 Quantity Food Procurement, Production and Service (2) Principles for determining needs, procuring, storing, producing, and serving foods in volume. Prereq: 120, 220, NTR 100 or 107, NTR 101, Micro 210 or PH 310; progress into HRA program or consent of the instructor. Coreq: 321 or 322. F, Sp

321 Quantity Food Procurement, Production and Service Laboratory (1) Application of principles in determining needs, procuring, storing, producing and serving foods in volume. Prereq: 120, 220, NTR 100 or 107, NTR 101, Micro 210 or PH 310; progress into HRA program or consent of the instructor. Coreq: 320. F, Sp

322 Quantity Food Procurement, Production and Service Observation (1) Application of principles in determining needs, procuring, storing, producing and serving foods in volume in the hotel/motel industry. Prereq: 120, 220, NTR 100 or 107, NTR 101, Micro 210 or PH 310; progress into HRA program or consent of the instructor. Coreq: 320. F, Sp

420 Field Experience in Hotel and Restaurant Administration (6) Supervised educational experiences in selected tourism, food and lodging operations followed by a two-day seminar. Students enrolled in this course must not enroll in any other courses. Prereq: 320, 321 or 322; Accounting 202; Economics 201; Marketing 301; Business Law 301; 100 hours of verifiable work experience. F, Sp

424 Advanced Hotel and Restaurant Administration (1-3) Senior project. Prereq: Senior standing, consent of the instructor. F

497 Honors: Hotel and Restaurant Administration (1-3) Senior project. Prereq: Consent of instructor. Satisfactory/No Credit only. May be repeated. Maximum 3 credits.

HUMAN ECOLOGY (520)

100 Special Topics in Human Ecology (1-3) Topics variable. Prereq: Consent of the instructor. Satisfactory/No Credit only. May be repeated. Maximum 3 credits.

210 Microcomputer Applications (3) Introduction to microcomputer use and five software programs; operating systems, word processing systems, data base systems, spreadsheet programs and graphics programs; design of a management information system. F, Sp

480 Directed Study: Human Ecology (1-3) Topic arranged for individual student under supervision of faculty. May be repeated with different topics. Maximum 6 hours. Prereq: Junior or Senior standing in a major in the College of Human Ecology and consent of instructor. E

HUMAN PERFORMANCE AND SPORT STUDIES (526)

100 Orientation to Physical Education (2) Overview of the professional and disciplinary areas in physical education with special emphasis on introductory field experiences. Prereq: Taken the first semester in the student's major.

102 PE Major: Basketball (1) Fundamentals of basketball, including individual and team skills with consideration of techniques for effective teaching of these fundamentals.

103 PE Major: Tennis (1) Development of skills, rules and game strategies in tennis applying skill analysis and various styles of teaching.

104 PE Education Major: Gymnastics I (1) Beginning skills in tumbling and on selected men's and women's gymnastics apparatus. Tumbling skills include forward, backward, and balance skills. Apparatus include vaulting, balance beam, and pommel horse. Special emphasis on teaching techniques, safety, progression, and spotting.

106 PE Major: Folk and Square Dance (1) Basic folk and square dance steps, patterns and designs with special emphasis on teaching techniques, safety, progression, and spotting.

107 PE Major: Track and Field (1) Basic skills of track and field and consideration of techniques for effective teaching.

260 Practicum I (1-3) First practicum experiences to support and clarify career goals. May be repeated. Prereq: Consent of instructors and approval of the major.

271 PE Major: Soccer/Softball (1) Basic fundamentals, including individual and team skills with consideration of techniques for effective teaching.
272 PE Major: Volleyball (1) Elementary and intermediate volleyball skills and rules; and strategy related to the game of volleyball with particular emphasis on teaching techniques and skill development.

273 PE Major: Golf (1) Fundamental skills, general rules, and strategies related to the game of golf with emphasis on skill development and teaching techniques.

274 PE Major: Gymnastics II (1) Beginning skills in tumbling and on selected men's and women's gymnastics apparatus. Tumbling skills will include twisting skills, kips, and combinations of previous skills. Apparatus will include uneven bars, horizontal bar, parallel bars, and still rings.

275 PE Major: Ballroom Dance (1) Basic ballroom dance patterns and designs, terminology and etiquette with application to the various techniques of teaching.

276 Fitness for Life (2) Evaluation and discussion of factors related to fitness, weight management, and strategies associated within the broad perspective of the sport enterprise. This course will deal primarily with the sport enterprise in the pre-professional setting.

286 Motor Development (3) Evolution of human motor behavior within the context of structural-functional changes, and with the respect to psychological, socio-cultural, and social-psychological factors related to and/or affecting motor performance/learning; analysis of changes in motor performance and underlying attributes across the lifespan with emphasis upon critical developmental periods. Prereq: Progression to major or consent of instructor.

372 Philosophy of Sport and Physical Education (3) Theories of reality and value as they apply to sport with emphasis on ethical issues. Prereq: Progression to major or consent of instructor.

380 Special Topics (1-3) Study in selected disciplinary areas of physical education. Prereq: Consent of instructor. May be repeated. Prereq: Progression to the major.

391 Psychology of Coaching (2) Major topics and theories dealing with social-psychological factors affecting and relating to sport performance, with practical implications and applications to teaching and coaching. Prereq: Progression to major or consent of instructor.

405 Sociology of Sport (3) Social meaning, organization and process of sport. Difference between sport and play and games, social stratification and sport, sport as an occupation, place of sport in mass culture, sport sub-cultures, and reciprocal influences of sport and cultural milieu. Prereq: 291 or Sociology 285, or permission of instructor. (Same as Sociology 291.)

409 Measurement and Evaluation of Physical Education (2) Relationship of measurement and evaluation in Physical Education. Critique, selection, and administration of appropriate affective, skill sport, and knowledge assessment instruments for children through adult age group. Prereq: Junior standing and admission to Teacher Education Program or progression to the major.

410 Pre-Internship Seminar (1) Objectives and policies of the internship. Must be completed the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. Sp, Su

411 Adapted Physical Education (3) Developmental disabilities, other physical handicaps and variants/invariants characteristics of special syndromes germane to motor development/programming for those with special education needs.

412 Practicum in Adapted Physical Education (1) Teaching those with special education needs. Observation and assistance to physical education teachers who teach in schools for the handicapped and/or in which many handicapped individuals are mainstreamed. Prereq: Progression to the major. Coreq: 411.

413 Special Practicum in Adapted Physical Education (1) Two sections including an on-campus lab program with one-one-one with a 2-5 year-old child who is a handicapped child. Must be completed the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. F

422 Applied Kinesiology (3) Study and emphasis of human movement with emphasis on biomechanical principles and their application to movement and neuromuscular fitness. Prereq: Consent of instructor.

423 Readings in Physical Education (2) Current and classic literature in physical education.

424 Program Planning in Physical Education (2) Curriculum theory, principles, practices and issues specific to physical education with opportunities to develop and evaluate K-12 physical education programs. Prereq: Admission to Teacher Education Program.

425 Administration and Evaluation in Physical Activity and Sport (3) Fundamental principles of organization, administration, and evaluation in the areas of physical activity and sport. Prereq: Admission to Teacher Education Program. Coreq: 450 for teacher education students.

426 Practicum II (1-3) Supervised experience in sport management or exercise/fitness areas. May be repeated for maximum 6 credits in Physical Education Majors activity and Sport Studies/Courses of Instruction 175

435 Approaches to Physical Education for Children (3) Contemporary approaches with emphasis upon movement education. Prereq: Admission to Teacher Education Program Prereq: Consent of instructor.

442 Administration of Physical Education and Athletics (2) Topics in organizational concepts and management strategies as related to physical education programs and athletics in the public schools. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. F

445, 465, 466.

465 Movement Education (2) Educational games/sports; dance and gymnastics for children. Prereq: 292, 356, 435, and admission to Teacher Education Program.

466 Motor Development Laboratory (3) Application of selected perceptual-motor development, movement education, and pedagogical concepts to performance assessment and motor instruction design and presentation to normally developing preschool or primary grade children. Participation in intra- or inter-disciplinary research projects. Prereq: Progression to major or consent of instructor.

480 Physiology of Exercise (3) Lecture and lab class dealing with functions of the body in muscular work. Topics include physiological aspects of fatigue, training and adaptation to environment. Prereq: Zoology 230 or 442, lectures and 1 lab. (Same as Zoology 480.)

481 Internship I: Grades K-12 (3-6) Methods and theories of teaching. Internship is completed in local public schools. Application for internship should be made upon admission to Teacher Education Program. Prereq: 410 and admission to Teacher Education Program. Satisfactory/No Credit only. F

482 Internship II: Grades K-12 (3-6) Demonstration of professional competencies in planning, instruction, and classroom management. Internship is completed in local public schools. Prereq: 481 and admission to Teacher Education Program. Satisfactory/No Credit only. Sp


493 Directed Independent Studies (1-3) Independent study in a specialized area with physical education. May
Courses of Instruction/Human Services

be repeated. Maximum 9 hours. Prereq: Consent of advisor and approval of the major. Satisfactory/No Credit or letter grade.

HUMAN SERVICES (532)

220 Introduction to Human Services (3) Focus on related societal values and contemporary issues in human services. Emphasis on the various professions, settings, and roles of human services. Develops specific helping skills; critical analysis and role playing of methods and skills that will be used during the field experience. Prereq: Progression to the major. F

320 Peoples and Problems of Appalachia (3) Exploration of life style and institutions from contemporary human services' point of view. Special emphasis placed on political and economic structures of region.

330 Thinking About People (3) Development of thoughtful, informed, and rational attitudes toward human beings—those providing services as well as those receiving service. Prereq: Progression to the major. F

380 Human Services Methodologies I (3) Basic helping skills essential to the effective delivery of Human Services. Prereq: Progression to the major or consent of instructor. F

390 Information Interpretation and Assessment (3) Information gathering and assessment for human services are examined in depth in relation to human services practice. Formulating questions, identifying relevant data, using related resources, interpreting information and applying this information in a practical setting. Prereq: Progression to the major. Sp

420 Human Services Methodologies II (3) Includes realistic therapy, self-realization, family systems, client-centered and rational emotive therapy. Discussion and role playing of methods and skills that will be used during the field experience. Prereq: Progression to the major, 220, 330. Coreq: 440. F

430 Working Within The System (3) Capstone Experience. Context within which the need for human services arises and analysis of the process through which such services are provided. Prereq: Progression to the major, 330; senior standing or consent of instructor. Sp

440 Human Services Field Work (6) Practical field experiences in appropriately organized and directed human service settings. Develops specific helping skills; involvement in roles and function of social services, and provides direct services in a supervised learning situation. For majors only. Prereq: Progression to the major or consent of instructor. Coreq: 420. Satisfactory/No Credit only. F

441 Human Services Field Work II (6) Practical field experiences in appropriately organized and directed human service settings. Develops specific helping skills; involvement in roles and function of social services, and provides direct services in a supervised learning situation. For majors only. Prereq: Progression to the major, 380, 420, 440. Satisfactory/No Credit only. Sp

450 Special Topics in Human Services (3) Issues, methods, values, and trends with implications for helping practitioners, such as art therapy, legal and ethical issues, and self-awareness education. May be repeated. Maximum 9 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

INTERDISCIPLINARY PROGRAMS (270)

100 Selected Topics (1-3) May be repeated. Maximum 6 hours.

400 Selected Interdisciplinary Cultural Topics (1-12) Acceptable for credit in any cultural studies concentration or minor with the consent of the director of cultural studies and the respective chairperson. May be repeated for credit for a maximum of 12 hours. Letter grade or S/N grading.

491 Foreign Study (1-15) Acceptable for credit in any cultural studies concentration or minor except Afro-American studies. Registration by consent of director of cultural studies and the respective chairperson.

492 Off-Campus Study (1-15) Acceptable for credit in any cultural studies concentration or minor except Afro-American studies. Registration by consent of director of cultural studies and the respective chairperson.

493 Independent Study (1-15) Acceptable for credit in any cultural studies concentration or minor except Afro-American studies. Registration by consent of director of cultural studies and the respective chairperson.

INTERIOR DESIGN (582)

140 Introduction to Interior Design I (Orientation) Introduction to the profession; relationship to allied fields; contemporary developments; philosophical approaches. Open only to majors in interior design and architecture.

150 Visual Studies (4) Classification of two and three-dimensional visual organization; design principles; visual and spatial elements within simple and complex visual systems; role of movement in experiencing scale and volumetric space. One hour lecture and three hour studio. Open only to majors in interior design and architecture. Coreq: 140. F

200 Human-Environment Systems (3) Role of culture in defining environment, physical, social and conceptual aspects. Study of environmental impact on human behavior, feelings and values; mutual-cultural properties of behavior-environment systems.

240 Fundamentals of Interior Design I (4) Principles of spatial organization; creative problem-solving and communication techniques for micro-environments; perspective drawing, modeling, experimentation with black and white materials. One hour lecture and three hour studio. Prereq: or coreq: 140, 150, 280, Art 172, Math 202. F


310 Survey of Interior Design (3) Planning and organizing interior spaces, rooms, apartments, residences; a mount of knowledge to make family and design decisions. Open only to Interior Design majors. Enrollment preference given to Home Economics Education and Hotel Restaurant Administration majors. A, Sp

315 Hospitality Interiors (3) Planning and organizing interiors of hotel and restaurant facilities. Prereq: 310 or consent of instructor. F

340 Intermediate Interior Design I (5) Studio problems of intermediate complexity with emphasis on program analysis, orientation and design. Analysis of current updating principles; integrates and extends previous knowledge of spatial organization and planning of micro and macro environments. Two hour lecture and three hour studio. Prereq: or coreq: 280, 340, 480, Physics 122. Sp

350 Intermediate Interior Design II (5) Studio problems of intermediate complexity; integrates and extends previous knowledge of working drawings, materials and sources, design methods, spatial organization and planning of micro and macro environments. Two hour lecture and three hour studio. Prereq: or coreq: 280, 340, 480, Physics 122. Sp


370 History of Interior Architecture II (4) Interior architecture and design and decorative arts within cultural context, nineteenth through twentieth centuries; design philosophies, influence of fine art movements, technological advances. Prereq: 270 or consent of instructor.

417 Honors: Interior Design I (1-4) Advanced research in interior design problems for juniors or seniors. May be repeated. Maximum 8 hours. Consent of Interior Design faculty.

420 Practicum in Interior Design (12) Supervised experience in a professional design firm; business practices, project management and design philosophy. Prereq: 360 and consent of instructor. Coreq: Fourth year standing in Interior Design. Sp

430 Computer-Aided-Design (3) Interaction between computer-aided-design process, data-base, spreadsheet software, output methods in the interior design process. Prereq: consent of instructor. Sp

440 Advanced Interior Design I (5) Non-residential studio problems of advanced complexity; integrates and extends previous experiences utilizing systematic design methodologies. Two hour lecture and three hour studio. Prereq: 380; Coreq: 400, or consent of the instructor.

450 Advanced Interior Design II (5) Comprehensive studio problems of advanced complexity; integrates and extends previous experiences utilizing systematic design methodologies. Two hour lecture and three hour studio. Prereq: 440 or consent of instructor.

460 Lighting for Interior Designers (3) Application of elements and principles of lighting and wiring to design of visual environment. Prereq: or coreq: 350, Physics 122 or consent of instructor.

475 History of American Interior Architecture (3) Historical developments in interior architecture and decorative arts within cultural context, colonial era through nineteenth century. Prereq: 370 or consent of instructor.

480 Furniture Design (4) Human factors data applied to design of furniture. Prereq: 440. Sp

490 Furniture Design Synthesis (4) Design of furniture for 420 in student's professional curriculum. Determination of credit based on particular international experience. Prereq: Consent of instructor.

493 Directed Studies in Interior Design (1-4) Student initiated research or studio investigation of special topic. Elective credit only. May be repeated. Maximum 8 hours. Prereq: Consent of instructor.

ITALIAN (584)

111-112 Elementary Italian (3,3) Introduction to Italian. Must be taken in sequence. Language Laboratory required.

211-212 Intermediate Italian (3,3) Sequence stresses reading, writing, listening and speaking Italian to prepare for upper division courses in the language. Must be taken in sequence. Language Laboratory required.
426 Methods of Historical Linguistics (3) (Same as 425.)
471 Sociolinguistics (3) (Same as English 471 and German 436.)
472 American English (3) (Same as English 472.)
473 Independent Study (1-6) Directed research on subject of mutual interest to student and staff member. May be repeated. Maximum 6 credit hours. Prereq: Consent of instructor.
474 Teaching English as a Second or Foreign Language I (3) (Same as English 474.)
475 Teaching English as a Second or Foreign Language II (3) (Same as English 475.)
485 Special Topics in Language (3) (Same as English 485.)
491 International Management (3) Factors significant to the manager in international business activities. Prereq: 301.
493 Independent Study (Readings, research, and special projects. Prereq: Consent of instructor. May be repeated one time for credit.

MANAGEMENT SCIENCE (627)
310 Management Science and Managerial Decision Support Systems (3) Introduction to quantitative decision models and their integration into microcomputer-based decision support systems. Topics include linear, dynamic, and network programming, as well as decision analysis, Markov, inventory and queuing models. Prereq: Mathematics 121, 122 and Statistics 201.
310 Buyer Behavior - Analysis for Marketing (3) Comprehensive framework of consumer behavior concepts and processes. Application to market analysis, design and control of marketing programs. Prereq: 301.
320 Marketing Research and Information Planning (3) Marketing research process from its inception to implementation of the study's results. Student should be able to critically evaluate the merit of a research project as well as possess the ability to design a sound marketing project. Major writing requirement. Prereq: 301 and Statistics 201.
431 Personnel Management (3) Theory, methods and issues pertaining to successful personnel management. Prereq: 301, senior standing.
432 Implementation and Evaluation of Personnel Programs (3) Methods of identifying, developing, implementing and evaluating various personnel programs. Prereq: 431, senior standing.
440 Organizational Psychology (3) (Same as Psychology 440.)
441 Operations Management I (3) Planning and control of operations systems, aggregate planning, scheduling, systems, materials management. Prereq: 341.
441 Operations Management II (3) Planning and control of carrier costs and their control considered by each mode individually and in coordination with each other. Prereq: 301-302.
450 Computer Information Systems Analysis and Design (3) Design of operational/logical information systems for organizations based on evolving microcomputer hardware networks, data base design theory, procedural and standard query language software. Analysis of both operational and decision support requirements. Prereq: Management 303.
461 Seminar in Logistics Strategy (3) Seminar in development of strategy in logistics management. Major writing requirement. Prereq: 301, 302 and senior standing.
462 Seminar in Transportation Strategy (3) Seminar in development of strategy in transportation management. Major writing requirement. Prereq: 301, 302 and senior standing.

LOGISTICS AND TRANSPORTATION (624)
301 Introduction to Logistics (3) Business logistics as a functional area within the firm and as a strategic element of the marketing mix. Role of materials management and physical distribution, and activities such as customer service, order processing and information flow, transportation, warehousing, purchasing, inventory, and system design and organization.
302 Introduction to Transportation (3) Transportation and distribution as a vital part of the nation's economic and social structure; U.S. transportation system; society's demands for mobility and policies of public and private sectors to meet those demands. Prereq: Economics 201.
400 Special Topic in Logistics and Transportation (Seminar in current problem area in logistics and transportation. Topic announced prior to offering. May be repeated. 3 credit hours provided topic is different. Maximum 6 hours. Prereq: Consent of instructor.
401 Materials and Traffic Management (3) Planning and management of logistics activities including purchasing, transportation, storage and control, and supply strategies. Materials management tools and organizational structures for various industries. Prereq: 301-302.
402 Transportation Operations and Cost Management (3) Freight carrier operations with the development of carrier costs and their control considered by each mode individually and in coordination with each other. Prereq: 301-302.
404 Statistics for Business (3) Includes descriptive and inferential statistics, both parametric and non-parametric, and decision analysis, and computer systems. Major writing requirement. Prereq: 301, 302 and senior standing.
420 Promotion Management (3) Principles and practices of promotion management and their relationship to overall marketing program. Managerial focus emphasizing types of decisions continually confronting promotion executives. Prereq: 301.
430 Marketing Research and Information Planning (3) Marketing research process from its inception to implementation of the study's results. Student should be able to critically evaluate the merit of a research project as well as possess the ability to design a sound marketing project. Major writing requirement. Prereq: 301 and Statistics 201.
431 Personnel Management (3) Theory, methods and issues pertaining to successful personnel management. Prereq: 301, senior standing.
432 Implementation and Evaluation of Personnel Programs (3) Methods of identifying, developing, implementing and evaluating various personnel programs. Prereq: 431, senior standing.
440 Organizational Psychology (3) (Same as Psychology 440.)
441 Operations Management I (3) Planning and control of operations systems, aggregate planning, scheduling, systems, materials management. Prereq: 341.
441 Operations Management II (3) Planning and control of carrier costs and their control considered by each mode individually and in coordination with each other. Prereq: 301-302.
450 Computer Information Systems Analysis and Design (3) Design of operational/logical information systems for organizations based on evolving microcomputer hardware networks, data base design theory, procedural and standard query language software. Analysis of both operational and decision support requirements. Prereq: Management 303.
461 Seminar in Logistics Strategy (3) Seminar in development of strategy in logistics management. Major writing requirement. Prereq: 301, 302 and senior standing.
462 Seminar in Transportation Strategy (3) Seminar in development of strategy in transportation management. Major writing requirement. Prereq: 301, 302 and senior standing.
493 Independent Study (1-6) Directed research on subject of mutual interest to student and staff member. May be repeated. Maximum 6 credit hours. Prereq: Consent of instructor.
497 Honors: Executive-in-Residence in Transportation and Logistics (3) Student interaction with top-level logistics and transportation executives. Focus on the strategic decision-making process. Prereq: Consent of instructor.

MANAGEMENT (625)
301 Principles of General and Operations Management (3) Basic functions of general management and the concepts and techniques used in operations management. Includes lectures and discussion/problem solving sessions. Prereq: Statistics 201.
303 Management Information Systems (3) Management information concepts: Organizational information needs, management decisions relating to technology and systems design. Data base management systems and applications development software. Prereq: Computer Science 102.
311 Labor Relations and Collective Bargaining (3) American labor history, structure and philosophy of contemporary unions, nature of collective bargaining, and dispute settlement. (Same as Economics 433.)
321 Organizational Structure and Behavior (3) Behavioral processes in organizations; motivation, leadership, decision making, communication; behavioral consequences; group behavior, informal organizations, organizational structures, conflict; politics, change and development. Prereq: 301.
401 Business Strategy/Policy (3) Strategy and policy which affect the character and success of the total enterprise. Capstone course which integrates all functional areas in the formulation and implementation of strategies, which will enable the organization to reach objectives. Major writing requirement. Prereq: Completion of business core courses and senior standing. Must be admitted to a business major. Prereq: Statistics 201, senior standing.
431 Personnel Management (3) Theory, methods and issues pertaining to successful personnel management. Prereq: 301, senior standing.
432 Implementation and Evaluation of Personnel Programs (3) Methods of identifying, developing, implementing and evaluating various personnel programs. Prereq: 431, senior standing.
440 Organizational Psychology (3) (Same as Psychology 440.)
441 Operations Management I (3) Planning and control of operations systems, aggregate planning, scheduling, systems, materials management. Prereq: 341.
441 Operations Management II (3) Planning and control of carrier costs and their control considered by each mode individually and in coordination with each other. Prereq: 301-302.
450 Computer Information Systems Analysis and Design (3) Design of operational/logical information systems for organizations based on evolving microcomputer hardware networks, data base design theory, procedural and standard query language software. Analysis of both operational and decision support requirements. Prereq: Management 303.
461 Seminar in Logistics Strategy (3) Seminar in development of strategy in logistics management. Major writing requirement. Prereq: 301, 302 and senior standing.
462 Seminar in Transportation Strategy (3) Seminar in development of strategy in transportation management. Major writing requirement. Prereq: 301, 302 and senior standing.
493 Independent Study (1-6) Directed research on subject of mutual interest to student and staff member. May be repeated. Maximum 6 credit hours. Prereq: Consent of instructor.
497 Honors: Executive-in-Residence in Transportation and Logistics (3) Student interaction with top-level logistics and transportation executives. Focus on the strategic decision-making process. Prereq: Consent of instructor.

MATHEMATICS (641)
100 Intermediate Algebra (3) First degree equations and inequalities, polynomials, rational expressions, exponents, graphing, second degree equations and inequalities, systems of equations, introduction to exponential and logarithmic functions. The course is designed for non-technical students for enrollment in Mathematics 110, 115, 119, 130, 201, and 202. Course does not satisfy graduation requirements. A, B, C, NC grading.
110 Algebraic Reasoning (3) A course in the applications of elementary mathematics to life in the modern world including applications in personal financial mathematics, consumer mathematics, and other areas. Students preparing to take 121 should take 119 instead of 110.
202 Probability, Statistics, and Euclidean Geometry (3) Probabilities in life and the physical sciences; measures of central tendency and variation. Basic plan and three-space geometry, congruence and similarity, constructions with compass and straightedge, transformations, areas and volumes metrized by Euclidean methods. Prereq: Two years of algebra and one year of geometry plus satisfactory placement test scores or Math 100.

221-222 Discrete Mathematics I, II (3,3) Logic, sets, combinatorics and probability, functions and relations, induction and recursion, elementary number theory. Prereq: 141 or 151.


241 Calculus III (4) Calculus of functions in two or more dimensions. Includes solid analytic geometry, partial differentiation, multiple integration, and selected topics in vector calculus. Prereq: 141-142.

243 Microcomputer Laboratory (1) Optional supplement to 241, featuring computer demonstrations and projects. Coreq: Students registering for 243 must also be registered for 241.

247 Honors: Calculus III (4) Prereq: 147-148 or invitation of the department.

251 Matrix Algebra I (3) First course in the algebra of simultaneous linear equations and matrices. Includes Gaussian elimination, determinants, vector spaces, linear transformations, eigenvalues, and eigenvectors. Prereq: 141-142.

253 Microcomputer Laboratory (1) Optional supplement to 251, featuring computer demonstrations and projects. Coreq: Students registering for 253 must also be registered for 251.

257 Honors: Matrix Algebra I (3) Prereq: 147-148 or invitation of the department.

263 Probability I (3) Elementary combinatorics; discrete and continuous random variables; binomial, Poisson, uniform and normal joint distributions, expectations and characteristic functions; elementary treatment of laws of large numbers and the central limit problem. Prereq: 241.

341 Analysis I (3) Introduction to the real number system, limits of sequences, and functions of a real variable. Prereq: 241.

351 Algebra I (3) Introduction to abstract algebra, emphasizing integers and polynomial rings. Prereq: 241 and 257.

371 Numerical Algorithms I (3) Introduction to the theory of sequences, series, difference equations, and quadrature and numerical solution of initial and boundary value problems. Prereq: 231, 241, 251, and knowledge of a high level programming language, such as FORTRAN. (Same as Computer Science 371.)

399 Studies in Mathematics (3) May be repeated. Maximum 9 hours. Prereq: Consent of instructor.

400 History of Mathematics (3) Development of major ideas in mathematics from ancient to modern times and the influence of these ideas in science, technology, philosophy, art, and other areas. Prereq: 141-142 or equivalent. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom. (Same as Computer Science 497.)

401 Mathematics and Microcomputers (3) Primarily for students seeking certification as mathematics teachers at the secondary level. The use of microcomputers to study concepts and problems in mathematics. Does not satisfy major or minor requirements in D.S. or M.S. in mathematics. Prereq: 141, 221 or 504.

404 Applied Vector Calculus (3) Topics from multivariable and vector calculus including line and surface integrals, the divergence theorem and the theorems of Gauss and Stokes. Prereq: 541.

409 Models in Biology (3) Difference and differential equation models of biological systems. Prereq: 141-142 or 151-152.

411 Mathematical Modeling (3) Construction and analysis of mathematical models used in science and industry. Prereq: 241 and 251. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

421 Combinatorics (3) Introduction to methods of construction and enumeration for discrete structures such as sequences, partitions, graphs, finite fields and geometries, and experimental designs. Prereq: 323 or consent of instructor.

423 Probability II (3) Law of large numbers and central limit theorems for discrete and continuous random variables; Poisson processes; discrete and continuous parameter Markov chains and their applications. Credit will not be given for both 141 and 151.

425 Statistics (3) Derivation of basic statistical distributions including t, F and X^2: Independence of sample mean and variance; basic limit theorems; point and interval estimation, Bayesian estimation; statistical hypotheses, Neyman-Pearson theorem; likelihood ratio and other parametric and non-parametric tests; sufficient statistics. Prereq: 325.


443 Complex Variables I (3) Introduction to the theory of functions of a complex variable, including residue theory and contour integrals. Prereq: 241, or 300 or 400-level mathematics course recommended.

445 Complex Variables II (3) Applications of complex variables to steady-state temperatures, electrostatics, and fluid flow. Prereq: 443.

444 Advanced Calculus I, II (3,3) Introduction to the theory of sequences, series, differentiation, and Riemann integration of functions of one or more variables. Prereq: 341 or consent of instructor.

447-448 Honors: Advanced Calculus I, II (3,3) Honors version of 445-446. Prereq: 341 or consent of instructor.

451 Topics in Algebra (3) Topics chosen from number theory and the theory of polynomial equations, such as the quadratic reciprocity law and Sturm separation. Prereq: 351.

454 Abstract Algebra I (3) Field theory and Galois theory. Prereq: 221, or consent of instructor.

456 Advanced Algebra II, II (3,3) Field theory and Galois theory. Prereq: 221, or consent of instructor.

458-460 Advanced Geometry (3) Advanced topics in plane and solid geometry, including neutral, Euclidean, and hyperbolic geometry stressing proof technique and critical reasoning. Models of Non-Euclidean geometries. Prereq: 141-142 and 221, or consent of instructor.

461 Topology (3) Includes topology of line and plane, separation properties, compactness, connectedness, continuous functions, homeomorphisms, the concepts of a limit and a topological invariant. Prereq: 341 or consent of instructor.

471 Numerical Analysis (3) Introduction to computational techniques for the approximation of solutions of ordinary differential equations, including stiff systems. Prereq: 371. (Same as Computer Science 471.)

472 Numerical Analysis (3) Numerical analysis of systems of linear equations. Solution of a single nonlinear equation and nonlinear systems. Orthogonal and trigonometric polynomials, interpolation by polynomials and piecewise polynomials. Quadrature and numerical solution of initial and boundary value problems of ordinary differential equations, including stiff systems. Prereq: 371. (Same as Computer Science 472.)
490 Readings in Mathematics (1-3) Open to superior students with consent of department head. Independent study with faculty guidance. May be repeated. Maximum 9 hours. Prereq: Agreement of faculty mentor to supervise independent work.

499 Seminar in Mathematics (1-3) Topics will vary. Will require independent study and in-class presentations by students. Students must register for the number of credit hours announced for a particular seminar. May be repeated. Maximum 9 hours. Prereq: Consent of instructor.

MEDICAL BIOLOGY (661)

410 Laboratory Safety Education (2) Preparation for teachers of laboratory safety. Hazards of flammable, corrosive chemicals, isotopes, pathogens, poisons, and equipment will be discussed. Techniques of safe operation and handling will be presented.

411 Undergraduate Research Participation (1-3) Experience in active biomedical research projects under supervision of faculty. Students in pre-medicine and other biological sciences may participate in biomedical research projects within designated areas. Prereq: Junior or senior standing; prior consent of faculty member. May be repeated with consent. Maximum 9 hours. Satisfactory/No Credit only.

MEDICAL TECHNOLOGY (669)

410-411 Microbiology (4,4) Laboratory work in bacteriology, mycology, and virology. Emphasis on pathogenic bacteria and fungi, their sources, methods of culture, techniques of identification, and evaluation of antibiotic sensitivity. Gross and qualitative chemical examination of feces and methods of identification of protozoa and helminth parasites of man.

420-421 Clinical Chemistry (5,5) Clinical aspects of clinical chemistry, including overview of principles and instrumentation with emphasis on practical laboratory application of analytical procedures, specimen collection and handling, significance of results, and quality assurance. Includes blood gas analysis, including radiometric analysis, and analysis of blood and other body fluids for enzymes, hormones, and other constituents of clinical interest, utilizing both automated and manual techniques, and study of techniques and use of short half-life radioactive materials for in vivo procedures such as radioimmunoassay, which utilize radioisotopes.

430-431 Hematology and Clinical Microscopy (4,4) Principles, theories, and instrumentation related to qualitative and quantitative evaluation of cellular elements of blood and other body fluids; factors of hemostasis, quantitative chemical analysis of urine, and renal function studies. Emphasis on microscopic identification of cells and the significance and correlation of laboratory data.

440-441 Immunohematology (3,3) Theory and practice in blood bank operation. Erythrocyte antigens and their normal and abnormal immunology. Standard techniques in blood bank operation. Erythrocyte antigens and techniques of identification. Emphasis on microscopic identification of antibodies and interpretation of selected worked from the early medieval period. Focuses on kinetic, allegorical and mystical writings from the high and later Middle Ages, e.g., The Song of the Nibelungen, the Romance of the Rose, St. Bernard's Commentary on the Song of Songs, Peter Abelard's History of My Callamities. Should be taken in sequence with 261. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

312-313 Medieval History (3,3) Same as History 312-313.

322 Medieval Philosophy (3) Same as Philosophy 322.

371 Early Christian and Byzantine Art, to 1350 (3) Same as Art 371.

372 Northern European Painting, 1350-1600 (3) Same as Art 372.

381 Medieval Art of the West, 800-1400 (3) Same as Art 381.

382 The Art of Italy, 1250-1450 (3) Same as Art 382.

401 Dante and Medieval Culture (3) Same as Italian 401.

402 Petrarch and Boccaccio (3) Same as Italian 402.

412 Seminar in Medieval Studies (3) Interdisciplinary treatment of selected topical matters. May be repeated. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

410 Medieval French Literature (3) Same as French 410.

415 Medieval Architecture (3) Same as Architecture 415.

475 Ancient and Medieval Political Thought (3) Same as Political Science 475.

MICROBIOLOGY (684)

200 Microbiology for Student Nurses (3) Open to student nurses in diploma program of hospitals affiliated with The University of Tennessee. Microbiological principles as they apply to nursing care of the patient, epidemiology of infection, and principles of immunity and allergy.

210 General Microbiology (3) General properties of bacteria and viruses including physiology, metabolism, genetics, applied bacteriology, pathogenesis, and immunity. May not be used as part of the major in microbiology. 2 hours and 2 labs.

310 Introduction to Microbiology (3) Introduction to bacteria and viruses including physiology, metabolism, and genetics of bacteria and replication and expression of viruses; bacterial and viral pathogenicity; mechanisms of resistance to disease. Prereq: Biology 210. Coreq: Biology 220.

319 Introductory Microbiology Laboratory (1) Basic techniques for the identification of bacteria, reproduction, and determination of microorganisms. Coreq: 310.

320 Advanced Microbiology (3) Cell and molecular biology of microorganisms, principles and applications in modern technological society. Intended for Microbiology majors. Prereq: 310.

329 Advanced Microbiology Laboratory (2) Laboratory exercises designed to accompany 320. Prereq: 319. Coreq: 320.

400 Laboratory Problems in Microbiology (2-4) Research projects under the direction of a faculty member. May not be used for credit toward requirements for a major, May be repeated. Maximum 9 hours. Satisfactory/No Credit only. Prereq: Consent of instructor.

401 Undergraduate Research in Microbiology (3) Research experience in laboratory of faculty member with faculty committee guidance. Prereq: Junior or senior standing. Coreq: 310-315 or 330-329. 3.2 minimum grade point average in all course work, consent of department head.

402 Microbiology Senior Honors Thesis (4) Supervised research, preparation and presentation of the senior honors thesis. Prereq: Senior standing, 401, 3.2 minimum grade point average in all course work and 3.5 in Microbiology courses, and consent of department head.

410 Bacterial Physiology (3) Modern concepts of the structure and function of the bacterial cell. Prereq: 310. F

411 Bacterial Genetics (3) Transmission and expression of genetic information by bacteria. Prereq: 310. Sp

420 Medical Microbiology (3) Disease producing microorganisms including bacteria, rickettsia, chlamydia and fungi. Prereq: 310.

420 Medical Microbiology Laboratory (2) Laboratory exercises designed to accompany 420. Prereq: 310. Coreq: 420.

430 Immunology (3) Principles of inflammation and immunity; immunoglobulin structure and theories of formation and diversity; complement, hypersensitivities, cell cooperation and recognition, immune mechanisms; soluble factors. Prereq: Biology 220. (Same as Zoology 430.) F

431 Immunology Laboratory (1) Laboratory exercises designed to accompany 430. Coreq: 430. (Same as Zoology 430.) F


449 Virology Laboratory (1) Laboratory procedures for isolation, handling, and culturing of animal viruses. Prereq: 310. Coreq: 440. F

470 Microbial Ecology (3) Physiological diversity and taxonomy of microorganisms from natural environments. Emphasis on the functional role of microorganisms in natural and simulated ecosystems. Prereq: 310. Sp

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

495 Senior Seminar (3) In depth consideration of microbiological problems of current interest requiring an integration of two or more disciplines. Emphasis on original literature and the experimental basis of current knowledge. Historical background, impact on society, predictions of the future, and the basis of moral and ethical judgments. Written reports required. A capstone course. Prereq: Senior standing. Writing-emphasis course.

MILITARY SCIENCE (688)

110 Basic Military Science (3) Formation and functioning of the American defense establishment and its relationship with American society, customs and traditions of the army, aspects of military physical fitness training; selected topics dealing with current world affairs; challenges facing the military in the future. Adventure training skills lab introduces mountaineering, rifle marksmanship, and optional field training exercises. Prereq: United States citizen; freshman or sophomore standing. Students with higher standing require consent of instructor. Letter grade only. F, Sp

120 Leadership Development Techniques (2) Introduction to basic leadership theory, human motivation theory, and principles of efficient and effective communications. Application of theories and principles in individual and small group situations. Prereq: Consent of instructor.
210 Basic Military Leadership (2) Course of leadership principles and skills, with emphasis given to significant leaders, events, and situations, from 1636 to present. Prereq: 120 or consent of the Professor of Military Science. Letter grade only. F

220 Basic Officer Skills (3) Practical application of small unit operating techniques to include first aid, marksmanship and weapons familiarization, map reading and land navigation, drill and ceremony, processing of enemy prisoners of war (EPW), execution of individual/unit movement techniques, and the exercise of leadership. Prereq: 210 or consent of the Professor of Military Science. Letter grade only. Sp

310 Advance Military Studies I (4) Discussion and practical exercising of principles of leadership, including operation of the military team, land navigation, small unit patrolling, 3 hours and 1 hour lab. F

320 Advance Military Studies II (4) Preparation of the future officer leader of Army to excel at MS 400 grade only. 3 hours and 1 hour lab. F

310 Advance Military Studies I (4) Discussion and practical exercising of principles of leadership, including operation of the military team, land navigation, small unit patrolling, 3 hours and 1 hour lab. F

320 Advance Military Studies II (4) Preparation of the future officer leader of Army to excel at MS 400 grade only. 3 hours and 1 hour lab. F

330 Music Methods for the Elementary School (3) Methods and materials for teaching music in the elementary grades. Primarily intended for music education majors. Prereq: Consent of instructor and admission to Teacher Education Program. Letter grade only. F

350 Field Experience in Music Education (1) Prereq: Consent of instructor. Field experience in teaching and learning music. Letter grade only. F

410 Pre-Internship Seminar (1) Objectives and policies of the internship program. Must be completed in the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. F, Sp

420 Music Methods for the Junior High School and Middle School (3) Methods and materials for teaching vocal, instrumental, and general music at the junior high school or middle school level. Prereq: Admission to Teacher Education Program and consent of instructor. Letter grade only. F, Sp

430 Music Methods for High School (3) Methods and materials for vocal and instrumental music at the high school level, including charting for the marching band. Prereq: Admission to Teacher Education Program and consent of instructor. Letter grade only. F

440 Marching Band Techniques (2) Functions, organization, and direction of a school marching band. Letter grade only. F

481 Internship I: Grades K-12 (3-6) Methods and theories of teaching. Internship is completed in local public school systems. Prerequisite: satisfactory completion of the classroom internship. Prereq: 480 and admission to Teacher Education Program. Satisfactory/No Credit only. F

482 Internship II: Grades K-12 (3-6) Demonstration of skills in planning, instruction, and classroom management. Internship is completed in local public schools. Prereq: 481 and admission to Teacher Education Program. Satisfactory/No Credit only. Sp

490 Special Topics in Music Education (1-3) Prereq: Consent of instructor. May be repeated. Maximum 9 hours. Letter grade only. F

493 Independent Study in Music Education (1-5) Prereq: Consent of instructor. May be repeated. Maximum 9 hours. Letter grade only. F

495 Advanced Music Methods for Elementary Teachers (3) Continuation and amplification of the concepts and skills covered in Music Education 310. Prereq: 300 or consent of instructor. Letter grade only. Sp

MUSIC ENSEMBLE (708)

301-501 Woodwind Choir (1.1) May be repeated. 303-503 Small Jazz Ensemble (1,1) May be repeated. Maximum 12 hours. 304-504 Jazz Ensemble (1,1) May be repeated. Maximum 12 hours. 305-505 Studio Orchestra (1,1) May be repeated. Maximum 12 hours. 306-506 Trombone Choir (1,1) May be repeated. 309-509 Tubas Ensemble (1,1) May be repeated. 310-510 Percussion Ensemble (1,1) May be repeated. 311-511 Marimba Choir (1,1) May be repeated. 312-512 Baroque Ensemble (1,1) May be repeated. 313-513 Synthesizer Ensemble (1,1) May be repeated. 314-514 Brass Choir (1,1) May be repeated. 315-515 Chamber Music Ensemble (1,1) May be repeated. Maximum 12 hours. 320-520 UT Singers (1,1) May be repeated. 330-530 Chamber Singers (1,1) May be repeated. 332-532 Collegium (1,1) May be repeated. 334-534 Saxophone Choir (1,1) May be repeated. 340-540 Opera Theatre (1,1) May be repeated. 342-542 Opera Workshop (1,1) May be repeated. 350-550 Concert Band (1,1) May be repeated. 352-552 Campus Band (1,1) May be repeated. 354-554 Varsity Band (1,1) May be repeated. 356-556 Laboratory Band (1,1) May be repeated. 358-558 Marching Band (1,1) May be repeated. 370-570 Symphony Orchestra (1,1) May be repeated. 380-580 Concert Choir (1,1) May be repeated. 382-582 University Chorus (1,1) May be repeated. 383-583 Men’s Chorus (1,1) May be repeated. 389-588 Women’s Chorus (1,1) May be repeated. 399-599 Accompanying (1,1) May be repeated.

MUSIC GENERAL (698)

100 Fundamentals of Music (3) Theory and practice of basic elements of music. Writing-emphasis course.

110 Music Appreciation (3) Developing listening skills and understanding of Western music from the ancient world through the 20th century. For non-music majors. Writing-emphasis course.

120 History of Rock (3) Study and appreciation of rock music, its origins in blues and rock and roll, its development and cultural dimensions to the present. Writing-emphasis course.

130 Music Performance (3) Individualized course of study combining participation in a University musical ensemble with collateral study of an instrument or voice. One hour of applied study added. Prereq: Performance ability on an instrument or voice.
MUSIC HISTORY (709)
200 Introduction to Music Literature (3) Basic forms and styles in music, including popular and classical music. Prereq: Consent of department head. May be repeated. Maximum 4 hours.
210-220 History of Music I, II (3,3) 210 to 1750; 220 to 1750 to present. Prereq: 200. Must be taken in sequence.
310 Introduction to Afro-American Music (3) History of African music, blues, gospel music, and jazz with emphasis on Black artists and their contributions. (Same as Afro-American Studies 310.)
330 Women in Music (3) History of women in music from the Middle Ages to present as composers, performers, educators, and patrons. (Same as Women's Studies 330.)
350 History of Jazz (3) Origin, development, and styles of jazz music and its exponents. Cultivation of special listening techniques. (Same as Afro-American Studies 350.) Writing-emphasis course.
380 Introduction to Folk and Popular Musics (3) Study of musics other than Western European classical music. Emphasis on musical structure. Examples will be drawn from folk, pop, rock, jazz, and non-Western repertoires. Prereq: 210-220.
390 World Music (3) Basic attitudes and techniques of ethnomusicology. Survey of music cultures throughout the world, with emphasis on the Pacific, Near East, Asia, and Europe.
400 Music History Survey (3) History of music with emphasis on genres, style changes, and cultural forces in Western European tradition from 400 to 1900. Recommended as a review course for graduate students. Prereq: Consent of instructor.
410 Music History Genre (3) Topics vary. May be repeated for credit. Maximum 8 hours.
420 History of Opera (3) Dramatic, vocal, and orchestral elements of operas in French, Italian, and German languages. 1600-present.
430 Symphonic Literature (3) Survey of literature for orchestra from Baroque to the present, with emphasis on the evolution of the symphony.
440 Music of North America (3) Folk and art music of the United States and Canada from colonial times to the present. Writing-emphasis course.
450 Composer Seminar (3) Life and works of a single composer. Subjects vary.
460 Music Aesthetics (3) Nature of music and musical experience, sense perception and emotions, music, and role of artist in society. Aesthetic viewpoint of individuals and historical areas through selected writings. Writing-emphasis course.
480 Music in Christian Worship (3) Hymnody, liturgies, and liturgical music.
490 Church Music Methods and Administration (3)
493 Independent Study (1-15) Prereq: Consent of department head. May be repeated for credit.
MUSIC INSTRUMENT (710)
310 Brass Literature and Pedagogy (3) Survey of brass solo and ensemble literature, including instructional materials and methods. Application of pedagogical procedures to individual instruction and performance; demonstration lessons by applied woodwind faculty and class members. Prereq: Consent of instructor.
320 Woodwind Literature and Pedagogy (3) Survey of woodwind solo and ensemble literature, including instructional materials and methods. Application of pedagogical procedures to individual instruction and performance; demonstration lessons by applied woodwind faculty and class members. Prereq: Consent of instructor.
330 Percussion Literature and Pedagogy (1) Survey of percussion solo and ensemble literature, including instructional materials and methods. Application of pedagogical procedures to individual instruction and performance; demonstration lessons by applied woodwind faculty and class members. Prereq: Consent of instructor.
340-350 String Literature and Pedagogy I, II (3,3) 340-350 Survey of string techniques, issues, research and pedagogies; topical presentations by the applied string faculty and class members. Development of the violin family of instruments and bows; survey of string literature, performances, and performance styles; application of historical, analytical, and pedagogical procedures to performance. Prereq: 340 and applied enrollment in strings at 300 level or above or consent of instructor.
410 Band Arranging (3) Study and application of techniques employed in scoring for the marching and concert bands. Prereq: Music Theory 350.
490 Instrumental Conducting (3) Knowledge and skills in instrumental conducting; various periods and composers and relationship of different styles to the conductor's art; musical analysis and practice in conducting. Prereq: Music Education 320 or equivalent.
495 Suzuki String Pedagogy (3) Psychology, procedures, and literature of the Suzuki violin method and pedagogy. May be repeated. Maximum 8 hours. Prereq: Consent of instructor.
MUSIC JAZZ (711)
110 Jazz Theory (2) Fundamentals of the jazz language, including terminology, chord symbols, chord scales, and chord progressions, plus ear-training lab. Prereq: Music Theory 110.
120 Analysis of Jazz Styles (2) Individual improvisational styles through analysis of transcribed solos. Teaching and function of the ear in music. Transcription of solos from recordings and preparation of analysis. Prereq: 110.
130-140 Jazz Piano I, II (1,1) Harmonic language of jazz. Interpretation of chord symbols, formulas for voicing chords, chord progressions, and a fundamental melody-playing and improvisation for right hand. Must be taken in sequence.
150 Studio Guitar Styles (2) Introduction to guitar styles in jazz, rock, country, and blues idioms. Prereq: Consent of instructor.
160 Introduction to Styles in Jazz Drumming (2) Examination of major jazz drummers and performances who have contributed significantly to creation of classic styles of jazz drumming.
210-220 Jazz Improvisation I, II (2,2) Study and application of principles of improvisation, including nomenclature, chord progressions, chord scales, patterns, melodic development, and tune styles. Prereq: 110.
310 Jazz Composition and Arranging (2) Prereq: Consent of instructor.
320 Jazz Band Arranging (2) Arranging and scoring for the Big Jazz Band. Prereq: Consent of instructor.
410 Advanced Improvisation (3) Development of individual skills and solving individual problems in jazz improvisation.
420 Jazz Pedagogy (1) Methods and materials relating to teaching of jazz, designing and administering jazz programs, and rehearsal techniques for jazz ensembles. Prereq: Studio Music and Jazz major or consent of department faculty.
MUSIC KEYBOARD (712)
110-120 Classic Piano I, II (1,1) Development of keyboard skills in reading, technique, repertoire, harmonization, and transcription. Must be taken in sequence.
210-220 Classic Piano III, IV (1,1) Continuation of 110-120. Prereq: 200. Completion of piano competency requirements; must be taken in sequence.
240 Church Service Playing I (1) Practical skills applicable to the use of the organ in church services, including improvisation, hymn playing, and accompanying. Prereq: 230 and organ proficiency at the 200 level.
310-320 Church Service Playing II, III (1,1) Continuation of 240. Prereq: 240.
330 Sight Reading at the Keyboard (1) Prereq: Consent of instructor.
340-350 Piano Pedagogy I, II - Practicum (3)
410 Early Keyboard Literature (2) Keyboard music through the baroque period, with primary emphasis on music for the harpsichord. Prereq: Music History 210-220.
420-430 Keyboard Literature I, II, III (3,3) 420-From 1750 to middle 19th century. 430-Middle 19th century to the present.
440-450 Piano Pedagogy I, II (2,2) Pedagogical methods and materials related to the development of principles of learning; specific programs based on pupil aptitude and background; collateral teaching experience. Must be taken in sequence. Prereq: Consent of instructor.
460-470 The Organ and Its Literature I, II (3,3) Development of the organ and organ literature from the Middle Ages to the present; problems of style and interpretation; pedagogical literature and methods; organ design. Prereq or Coreq: Music History 220 and consent of instructor.
485 Suzuki Piano Method I (2) Study of the psychological, pedagogical procedures, and literature of the Suzuki piano method. Must be taken in sequence. Prereq: Consent of instructor.
495 Suzuki Piano Method II (2) Study of the psychological, pedagogical procedures, and literature of the Suzuki Piano Method. Prereq: Consent of instructor.
MUSIC PERFORMANCE (713)
103-203-303-403-503 Flute (1-4) May be repeated.
105-205-305-405-505 Oboe (1-4) May be repeated.
110-210-410-510 Bassoon (1-4) May be repeated.
115-215-315-415-515 Clarinet (1-4) May be repeated.
120-220-320-420-520 Saxophone (1-4) May be repeated.
125-225-325-425-525 Horn (1-4) May be repeated.
130-230-330-430-530 Trumpet (1-4) May be repeated.
135-235-335-435-535 Trombone (1-4) May be repeated.
140-240-340-440-540 Baritone (1-4) May be repeated.
145-245-345-445-545 Tuba (1-4) May be repeated.
150-250-350-450-550 Percussion (1-4) May be repeated.
155-255-355-455-555 Voice (1-4) May be repeated.
160-260-360-460-560 Violin (1-4) May be repeated.
165-265-365-465-565 Viola (1-4) May be repeated.
170-270-370-470-570 Cello (1-4) May be repeated.
175-275-375-475-575 String Bass (1-4) May be repeated.
180-380-480-580 Piano (1-4) May be repeated.
MUSIC THEORY (714)

110-120 Theory I, II, (3) Materials of music including basic elements through triads and seventh chords and modulation. Exercises in writing and analysis of music with emphasis on common practice.

130-140 Ear Training I, II (1,1) Development of proficiency in identifying and notating melodic, harmonic, and rhythmic models. Includes computer lab. Must be taken in sequence. Should be taken concurrently with 110-120. A,B,C,NC grading.

210-220 Theory III, IV (3,3) Materials of music with emphasis on literature of Classic, Romantic, and contemporary periods. Exercises in writing and analysis. Must be taken in sequence. Prereq: 120 or consent of instructor.


250 Composition (2) Writing short vocal and instrumental compositions using conventional and new forms of notation. Prereq: 220 or consent of instructor. May be repeated for credit. Maximum 4 hours.

290 Sound Recording Techniques (3) Theory and applications of tape recording's sound reproduction and reinforcement systems. Topics include room acoustics, audio measurements, microphones, studio and real-time processing, noise reduction, mixing, editing, monitors, system wiring, and maintenance.

310 Form and Analysis (3) Study and practice in analysis of forms from smallest structural units to large compound forms. Prereq: Consent of instructor.

320 Orchestration (3) Study of capabilities of orchestral instruments and techniques of scoring for ensembles and concert orchestra and band. Prereq: 220.

340 Introduction to Computer Music Transcription (3) Exercise in notation, playback and publishing incorporating elements of word processing, graphic design, audio measurements, microphones, studio and real-time processing, noise reduction, mixing, editing, monitors, system wiring, and maintenance.

390 Sound Synthesis Techniques (3) Studio and real-time applications of synthesizers. Historical background, theoretical concepts, equipment interface and usage, analysis of sounds and compositions. Prereq: 230 or consent of instructor.

400 Survey of Music Theory (3) Emphasis on harmonic practice of Baroque, Classic, and Romantic periods. Exercises in writing and analysis. Recommended as a review course for graduate students. Prereq: Consent of instructor.

430-440 Counterpoint I, II, III (3,3,3) Counterpoint in modal and tonal styles with emphasis on works of Palestrina and J.S. Bach. Prereq: 220. 440-Writing of contrapuntal forms of the 18th century and fugue analysis of works from the 18th through the 20th centuries. Prereq: 430. 450.

450 Choral Arranging (2) Analysis of scores and writing of arrangements for choirs. Prereq: 220 or consent of instructor.

493 Independent Study in Music Theory (1-15) May be repeated for credit. Prereq: Consent of department head.

MUSIC VOICE (715)

110 Class Voice I (1) Development of basic vocal skills. May be repeated for credit. Maximum 2 hours.

120 Class Voice II (1) Prereq: Consent of instructor. May be repeated for credit. Maximum 2 hours.

210 Vocal Techniques in Popular Music (1) Development of performance techniques in Broadway and other contemporary musicals. Prereq: Consent of instructor. May be repeated for credit. Maximum 4 hours.

220 Introduction to Music Theatre Technology (2) Stage technology unique to lyric stage.


240-250 Diction I, II (2,2) Sounds by phonetic symbols. Opera and art songs used for examples. Performance practice.

330 Opera Production (1-3) Supervised work on opera productions. May be repeated for credit. Prereq: Consent of instructor. Maximum 12 hours.

410-420 Song Literature I, II (2,2) 410-German songs. 420-French, Italian, Russian, Scandinavian, Czechoslavakian, British, and American art songs.

430 Styles in Opera Acting (2) Study and practice of styles in opera acting with emphasis on historical and national characteristics. Prereq: 230.

440 Projects in Opera Theatre (1-3) May be repeated for credit. Prereq: Consent of instructor. Maximum 9 hours.

450-460 Pedagogy I, II. (1,1) 450-Concepts and applications of selected theories from psychology, and drama. 460-Vocal teaching materials, including collateral teaching experiences. Prereq: Consent of instructor.

NURSING (720)

202 Health and Culture (3) An exploration of the beliefs and practices of various cultural groups within the United States that relate to health, illness and the healthcare delivery system. Emphasis on the beliefs and practices of various cultural groups within the United States that relate to health, illness and the healthcare delivery system. Prerequisites: Consent of instructor.

214 Integrated Biomedical and Health Sciences (1-3) Examination and application of selected theories from physics and chemistry, microbiology, and nutrition to nursing process. Each module carries one credit. Prereq: Consent of instructor.

301 Clinical Pharmacology (3) Biochemical and pharmacological effects of therapeutic drugs on the human body; positive and negative reactions to drugs and interaction effects between and among drugs. Prereq: Chemistry 100-102 and 6 semester hours of anatomy and physiology. F

302 Introduction to Professional Nursing (3) History, philosophy, and scope of nursing practice with emphasis on nursing process; cognitive and psychomotor skills necessary for effective nurse/client interactions. Clinical laboratory experiences emphasize the nursing process and its application to the care of individuals whose health problems require in-patient services. 6 lectures, 3 lab. Coreq: 301 and 304. F

304 Nursing Assessment and Wellness Promotion (4) Developmental, psychosocial, cultural, environmental, spiritual, family, and physical dimensions of health assessment; collection, analysis, and application of assessment data in formulation of wellness-oriented nursing diagnoses and use of the nursing process in promotion of wellness. Emphasis on the nursing role in wellness promotion and education. Laboratory sessions for development of nursing assessment skills. 3 lectures, 1 lab. Coreq: 301, 302. F, Sp

305 Transition to Professional Nursing (6) Current status of professional nursing; utilization of the nursing process in a changing health care delivery system; Philosophy and conceptual framework of the baccalaureate nursing program and selected physiological and behavioral deviations demonstrated by clients whose health problems require in-patient services. 5 lectures, lab. For RN's only. F

311 Acute Care Nursing (10) Continuation of 302 with emphasis on psychological and behavioral deviations which underlie or are associated with more complex and critical illnesses of adults and children. Clinical laboratory experiences in adult and pediatric acute care settings for enhanced knowledge and skill in providing nursing care for children and adults with complex and critical illnesses. 8 lectures, 4 lab. Prereq: 301, 302 and 304. Sp

312 Acute Care Nursing Theory (6) Theoretical component of 311. For RN's only. Prereq: 301. 305. Sp

313 Introduction to Nursing Research (3) Language of research, types of research designs, methodological approaches to data collection and analysis, and significance of findings. Evaluation of existing and ongoing nursing research studies. Prereq: 302 or consent of instructor. Sp

315 Clinical Nursing Practicum (2) Application of nursing knowledge, principles, and concepts to care of hospitalized clients. Prereq: 305. Prereq: Coreq: 304, 312. For RN's only. Satisfactory/No Credit only. Sp, Su

317 Wellness and Lifestyle (3) Models of wellness and holistic health within the framework of modern medicine, eastern philosophy, and recent discoveries about the interaction of mind and body. Bio psychosocial interactions of lifestyle and genetic risk factors for cardiovascular and malignant diseases, wellness potential, and potential longevity. Process of lifestyle changes will be facilitated by faculty. Open to undergraduate students in all colleges.

320 Advanced Placement Credit: Care of the Adult Client (3) For registered nurses only. Satisfactory/No Credit only. Sp

321 Advanced Placement Credit: Care of the Child-Bearing Client (3) For registered nurses only. Satisfactory/No Credit only. Sp

322 Advanced Placement Credit: Care of the Child (2) For registered nurses only. Satisfactory/No Credit only. Sp

323 Advanced Placement Credit: Care of Client with Mental Disorder (3) For registered nurses only. Satisfactory/No Credit only.

401 Family Health Nursing (6) Nursing needs of families in health and in crisis. Provision of comprehensive care to families in the childbearing and childrearing phases of family development. Application of theories of human growth and development, family dynamics, and crisis intervention to provision of nursing care to families experiencing normal pregnancy and childbirth and to those experiencing such health problems or complications as congenital anomalies, high risk birth, disturbed parent-child relationships, or other psychologic disturbances. 5 lectures, 3 lab. Prereq: All 300 level nursing courses. F, Sp

402 Family Health Nursing Theory (3) Theoretical component of 401. For RN's only. Prereq: 312. F, Sp

403 Community Health Nursing (6) Application of the nursing process to care of groups, families, and populations in home and community settings with special emphasis on health promotion, disease prevention, and control of communicable diseases. Epidemiological approach is used to identify aggregates within the population that are at risk for illness, disability, or premature death. Political, social, economic, environmental, and ethical issues related to community health nursing. 3 lecs., 1 sem., 2 lab. Prereq: All 300 level nursing courses. F

405 Professional Nursing Seminar (2) Critical examination of legislative, legal, ethical, social, and educational issues and trends that have immediate and long-range implications for professional nursing practice. Prereq: Senior standing. For nursing majors only. Sp

409 Nursing Management and Strategies (6) Management and leadership principles and their application to client care. Course topics include care delivery systems, quality assurance procedures, staffing patterns, nursing service delivery models, nursing practice standards, and evaluation of nursing practice. Student examinations are provided for development of entry level nursing management role. 3 lecs., 3 lab. Prereq: 10 credits of 400 level nursing courses or consent of instructor. Sp

411 Psychosocial Long-Term Nursing (8) Nursing needs of clients whose health problems have a developmental, behavioral, or long-term nature. Equally emphasis on prevention, wellness promotion, and rehabilitation. Nursing laboratory/cclinical experiences with a
NUTRITION (725)

100 Introductory Nutrition (3) Nutritional concepts; current consumer issues in nutrition; nutritional needs through life cycle; current nutrition concerns and/or issues. A student who has received credit for NTR 107 or 300 may not receive credit for this course. F, Sp

101 Food Principles (3) Food selection, safety, preparation, evaluation, meal planning, service, 2 hours and 1 lab. F, Sp

105 Food for the Next Century (3) Interdependence of people on this planet for food, global perspective from United States point of view. F

107 Honors: Introductory Nutrition (3) Nutritional concepts; current consumer issues in nutrition; nutritional needs through life cycle; current nutrition concerns and/or issues. A student who has received credit for NTR 107 or 300 may not receive credit for this course. F, Sp

200 Physiological Chemistry (4) Metabolism of carbohydrates, lipids, and nitrogenous compounds; role of vitamins and minerals as co-enzymes and prosthetic groups. Prereq: Chemistry 110 or equivalent. F, Sp

201 Food and Clinical Analysis (4) Principles, procedures, instrumentation for analysis of food and body fluids. Prereq: 200 with a grade of C or better for NTR majors. 2 hours and 2 labs. F

300 Fundamentals of Nutrition (3) Nutrition in normal and altered health states during life cycle; nutritional analysis of diets. Prereq: Chemistry 110 or equivalent, Zoology 200. A student who has received credit for NTR 107 or 100 may not receive credit for this course. F

301 Nutrition for Educators (3) Principles of nutrition; biochemical and physiological aspects of nutrition during the life cycle; nutrition education concepts and strategies. Prereq: 100 or 107, 101, Chemistry 100 or equivalent, Zoology 230, or consent of instructor. A, Sp

312 Science of Food (4) Chemical and physical properties of food related to functional and nutritional properties; sensory evaluation and concepts and techniques; effects of processing on food; application of food principles to selected areas. Prereq: 100 or 107, 101, 201, Micro 210, 3 hours and 1 lab. F

313 Advanced Nutrition (4) Integrated knowledge of physiological chemistry and physiology applied to understanding human nutrition requirements; computer analysis for adequate diet. Prereq: 100 or 107, Zoology 230, F

410 Professional Issues in Dietetics (1) Dietetic registration, licensure, third party payments; dietetic practice; marketing dietetics; internship preparation; public policy in dietetic practice. Prereq: Senior standing. F

411 Nutrition in Disease (4) Metabolic processes of diseased organs and/or tissues; dietary modifications required. Prereq: 312, 313, F

412 Food and Nutrition Resources Management (3) Integration of community food and nutrition resources; geographic, social, economic, educational, cultural, health characteristics associated with food and nutritional problems and the need for services by individuals in community. Public policy. Prereq: or Coreq: 411. Sp

413 Experimental Food Science (3) Individual and group laboratory experimentation in food science; microcomputer applications. Prereq: 312, PSSC 471. 1 hour and 2 labs. F

414 Nutrient-Drug Interactions (2) Nutrient effects on efficiency and toxicity of drugs; drug effects on absorption, metabolism of nutrients. Prereq: 300 or equivalent. A, Sp

450 Physiological Principles (3) Concepts and principles of normal human physiology; tissue and organ physiology as a basis for integration of system physiology and for understanding pathophysiological mechanisms. Prereq: FNS status or consent of instructor. No credit for students who have taken 302, 305, 311 or 312. F, Sp

451 Computers and Nursing Care (3) Computerized information processing with application to patient care, health care administration, nursing education, and nursing research. 2 lectures, 1 lab. Prereq: All 300 level nursing courses or consent of instructor.

453 Oncology Nursing (3) In-depth exploration of cancer problem; relates cellular kinetics to theories of carcinogenesis and metastasis; treatment modalities and nursing interventions employed in all phases of the disease. Interdisciplinary approach analyzed. Prereq: 411 or 412 or consent of instructor.

470 Special Topics (1-3) Indepth study of selected nursing topics, problems, or issues not covered in other courses. Topics determined by faculty and student interest. Prereq: Consent of instructor.

493 Independent Study (1-3) Nursing or health-related topic not covered in other nursing courses. Prereq: Senior standing or permission of instructor.
PHILOSOPHY (745)

110 The Human Condition: Value and Reality (3) The meaning of life, the existence of God, freedom of the will, human nature and values. Writing-emphasis course.

111 The Human Condition: Knowledge and Reality (3) The place of mind in a material universe and the nature and possibilities of human knowledge. May be taken before 110. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

120 Foundations of Western Thought: Antiquity through 1500 (3) Plato, Latin Antiquity and the Medieval Period. Writing-emphasis course.

121 Foundations of Western Thought: 1500 through Early Twentieth Century (3) Development of Rationalist and Empiricist thought; Nineteenth Century and early Twentieth Century philosophy. May be taken before 120. Writing-emphasis course.

130 Critical Thinking (2) An introduction to practical reasoning in natural language, designed to enhance skills in recognizing, analyzing, evaluating and constructing arguments. Satisfies Basic Skills Requirement "Mathematics, Computer Science or Logic".

135 Formal Logic (3) Introduction to formal deductive systems: propositional and predicate logic. Satisfies Basic Skills Requirement "Mathematics, Computer Science or Logic".

200 Special Topics (3) When content varies, may be repeated. Maximum 6 hours.

240 Ethics (3) Theories of ethical values. Writing-emphasis course.

242 Ethical Theory and Its Applications (3) A study of moral values and principles in theoretical and practical contexts. Open only to students registered in the College of Business Administration.

290 Social and Political Philosophy (3) Basic problems and concepts of social and political philosophy.

320 Ancient Western Philosophy (3) Writing-emphasis course.

322 Medieval Philosophy (3) Development of medieval thought from St. Augustine to William of Occam. Secondary and primary sources. (Same as Medieval Studies 322.) Writing-emphasis course.

324 Seventeenth- and Eighteenth-Century Philosophy (3) Writing-emphasis course.

325 Nineteenth- and Twentieth-Century Philosophy (3) Writing-emphasis course.

335 Intermediate Formal Logic (3) Metatheory of formal logic and philosophy of logic. Prereq: 135 or consent of instructor.

342 Business Ethics (3) Ethical problems as they confront both business as a social institution and individuals in business.

344 Professional Responsibility (3) Critical analysis of selected classic texts from philosophy, religious studies, and social sciences dealing with responsibility and the nature of professionalism. Theoretical principles and analytical skills applied to selected case studies and other detailed descriptions of professional practice from engineering/architecture, business/accounting, and at least one of law/politics; helping professions (social work, human services, ministry, teaching. (Same as Religious Studies 344.)

345 Medical Ethics (3) Ethical issues in medicine such as abortion, euthanasia, human experimentation, fairness in health care delivery and the doctor-patient relationship. (Same as Religious Studies 345.)

346 Environmental Ethics (3) Issues concerning the nature of the environment and the place of humanity within it.

349 War and Morality (3) Moral justification for war (justus bellum); legal and moral constraints in war (ius in bello).

350 Aesthetics (3) Philosophical discussion of art. Writing-emphasis course.

353 Philosophy and Literature (3) Nature of literature; philosophical assumptions in literary works. Writing-emphasis course.

360 Introduction to Philosophy of Science (3) Standard topics in philosophy of science: scientific method, nature of laws and theories, problem of induction, explanation, measurement. No background in logic is presupposed.

363 Conceptual History of Science (3) Historical evolution of thought in astronomy, mechanics, and the study of living things, from the Greeks through the early twentieth century. Prereq: 8 hours of physical science or consent of instructor.

370 Philosophy of Religion (3) Analysis of basic issues in the philosophy of religion. (Same as Religious Studies 370.)

374 Philosophy and Religion of India (3) (Same as Religious Studies 374.)

376 Buddhist Philosophy and Religion (3) (Same as Religious Studies 376.)

379 Religion and Philosophy in China (3) (Same as Religious Studies 379.)

380 The Concept of Woman (3) The nature of woman as it has been conceived by major western philosophers from Plato to Simone de Beauvoir. (Same as Women's Studies 380.) Writing-emphasis course.

382 Philosophy of Feminism (3) Various feminist theories and their application to social issues of concern to women today. (Same as Women's Studies 382.)

390 Philosophical Foundations of Democracy (3) Philosophical problems relating to the nature and justification of the central values, principles, and concepts of democratic society. Writing-emphasis course.

393 Marxism (3) Basic philosophical issues in Marxist thought: ideology, dialectics, praxis, the critique of modern society. (Same as Russian and East European Studies 393.)

395 Existentialism (3) Themes related to freedom and finitude in the tradition that begins with Kierkegaard and Nietzsche and extends to Heidegger and Jaspers, Sartre and Merleau-Ponty.

400 Special Topics (3) When content varies, may be repeated. Maximum 6 hours.

411 Modern Religious Philosophies (3) (Same as Religious Studies 411.)

412 Classical Indian Systems of Philosophy: The Moksha Tradition (3) (Same as Religious Studies 412.)

420 Topics in History of Philosophy (3) One or more figures or movements from antiquity through mid-twentieth century. Prereq: 8 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum 9 hours.

425 American Philosophy (3) Colonial to early 20th Century. Prereq: 6 hours of philosophy or consent of instructor. Writing-emphasis course.

430 Topics in Logic (3) Prereq: 6 hours of logic or consent of instructor. When content varies, may be repeated. Maximum 6 hours.

440 Contemporary Ethical Theory (3) Topics in metaethics or ethics. Prereq: 6 hours of philosophy or consent of instructor.

446 Theoretical Issues in Medical Ethics (3) Prereq: 240 or 345 or consent of instructor. (Same as Religious Studies 446.)

460 Philosophy of Science (3) Methodological and conceptual issues in the natural and social sciences: patterns of theory modification and replacement, the nature of explanation and causation, the status and philosophical entities. Prereq: 360 and one year of natural or social science, or consent of instructor.

465 Philosophy of History (3) Speculative and critical aspects of philosophy of history. Prereq: 6 hours of philosophy or consent of instructor.

PHYSICAL EDUCATION SERVICE PROGRAM (764)

The following courses may not be repeated:

200 Special Topics (1-2) When content varies, may be repeated. Maximum 6 hours.

201 ARC WSI-Handicapped (1)

202 Badminton (1)

203 Elementary Ballet I (2)

204 Elementary Ballet II (2)

205 Basketball (1)

206 Bowling (1)

209 Flag Football (1)

210 Folk and Square Dance (1)

211 Golf (1)

212 Handball (1)

213 Ice Skating (1)

214 Elementary Jazz I (2)

215 Elementary Jazz II (2)

216 Martial Arts: (Special Topics) (1)

219 Coed Gymnastics: Men's Apparatus (1)

220 Elementary Modern Dance I (2)

221 Elementary Modern Dance II (2)

222 Paddleball (1)

223 Personal Safety and Self-Defense (1)

224 Physical Fitness: Conditioning (1)

225 Physical Fitness: Exercise to Music (1)

226 Exercise and Weight Control (1)

229 Physical Fitness: Jogging (1)

230 Physical Fitness: Swimming (1)

231 Physical Fitness: Walking (1)

232 Racquetball I (1)

233 Racquetball II (1)

234 Soccer (1)

235 Social Dance (1)

236 Softball (1)

239 Beginning Swimming (1)

240 Intermediate Swimming (1)

241 Emergency Water Safety (1)

242 Tap Dance I (2)

243 Tap Dance II (2)

244 Tennis I (1)

245 Tennis II (1)
PHYSICS (773)

121-122 Introductory Physics (3,3) For students whose major is outside the physical sciences. Concepts of physics developed by observation of phenomena and logic, using the phenomenon of magnetic analysis. 121: Introduction to modern physics including properties of atoms and nuclei. Must be taken in sequence. 3 hours lecture including demonstration lab. Prereq: Algebra.

123-124 Physics (4,4) For engineers and liberal arts majors in mathematics and the physical sciences. Basic Electromagnetism, heat and wave motion and modern physics. Must be taken in sequence. Coreq: Mathematics 141-142. 3 hours lecture, 3 hours lab.

125-126 Waves (3,3) Waves and oscillations. Consent of department is required. Maximum 6 hours.

127 Honors: Electricity and Magnetism and Light (4) Honors course for selected students admitted on basis of performance in 131-132, 137-138 or Basic Engineering 131-132. Coreq: Mathematics 231. 3 hours lecture, 3 hours lab.


321 Thermal Physics (3) Concepts of temperature and heat; laws of thermodynamics; elementary statistical mechanics; applications to physical and chemical problems. Prereq: 311-312 and consent of instructor.

340 Relativity and the Structure of the Atom (3) Special relativity and the wave model of the atom. Fundamental concepts of modern physics and their applications to atomic systems. Prereq: 231.

341-342 Structure of Matter (3,3) 341-Subatomic physics: including physics of the nucleus and elementary particles. 342-Physics of molecules and condensed matter. May be taken in either order. Prereq: 340.

361-362 Electronics Laboratory (3,3) Electronic components, circuits and instruments for physicists, with emphasis on applications to instrumentation. 361-Analog electronics, including fundamental network theorems, complex impedance and admittance, frequency response and resonance, feedback, operational amplifiers, oscillators, and various semiconductor devices, as applied to scientific instrumentation. 362-Digital electronics, including elementary building blocks of relevant to data acquisition systems, digital to analog conversion, analog to digital conversion, simple applications of microprocessors. Prereq: 222 or 232. 6 hours lab per week.

390 Junior Seminar (1-3) Topic of current interest. Prereq: Introductory Physics. May be repeated with consent of department. Maximum 6 hours.

401 A Survey of Physics (3) A survey of physics from earliest times to the present, emphasizing the underlying philosophical and mathematical principles. Classical theories of gravitation, electromagnetism, and relativity; various forms of quantum mechanics, quantum electrodynamics, and recent theories of particles, fields, and the unification of quantum mechanics and general relativity. Consideration of their interactions. Consideration of the effects of physics on modern society and the practice of physics from a value-oriented perspective. Written reports on important original papers, thought-provoking problems combined with laboratory work. Consent of department is required. Prereq: 311 or 231 and consent of instructor. 3 hours lecture and, invited presentations on current environmental issues and careers in Environmental Science. Sp

210 Introduction to Soil Science (4) Differences in soils; soil genesis, physical, chemical, and biological properties of soil; relation of soils to land use and pollution; soil management, harvest and utilization of major field and forage crops. Prereq: Chemistry 130 or equivalent. 3 hours and 1 lab. F

230 Introduction to Crop Science (3) Fundamentals of structure, classification, growth and reproduction of higher plants and use of plant products basic to plant science. Principles and methods of growing several of the world's important agronomic, fruit and vegetable crops. Prereq: Botany 110 or Principles of Ecosystems 292. 3 hours lecture and one 2 hour lab. Prereq: Botany 110, 120 or Biology 110, 120. F

292 Soil Morphology (1) Intensive course involving describing, classifying and interpreting soils in preparation for regional and national soil judging contests. Prereq: 210 and consent of instructor. May be repeated. Maximum 4 hours. 1 hour and 1 lab. F, Sp

311 Soil Fertility (3) Influence of soil properties on plant nutrient availability and uptake. Principles of fertilizer use and their reaction in soils. Prereq: 210. 2 hours and 1 lab. Sp

312 Soil and Water Conservation (2) Hydrologic, agronomic, and engineering principles applied to resource management, problems including flood and erosion control, drainage and water quality. Prereq: 210. Coreq: 313. S

313 Soil and Water Conservation Laboratory (1) Laboratory topics covered in 312. Coreq: 312.

331 Field and Forage Crops (3) Agronomic principles of crop production and management. Crop improvement, soil management, harvest and utilization of major field and forage crops. Prereq: 210 or 230. 2 hours and 1 lab. Sp
332 Fruit Crops (3) Fundamentals of site selection, fruit propagation, tree training, pest control and related management factors for deciduous fruit crops will be emphasized. Prereq: 230. 2 hours and 1 lab. F-A.

333 Vegetable Crops (3) Characteristics, economic importance, adaptability and production of vegetables for fresh and processing markets with emphasis on both warm and cool season crops. Prereq: 210, 230. 2 hours and 1 lab. Sp-A.

334 Weed Management (3) Principles of weed interference, integrated management, herbicide selectivity and behavior, economic aspects related to the control of weeds and non-crop situations. Prereq: 210. 2 hours and 1 lab. F.

392 Practicum (2-4) Working with agricultural, environmental or natural resource-oriented enterprises in area of student's career interest. Prereq: be used as 300-level prerequisite for any course in Plant and Soil Science. Prereq: Consent of advisor and faculty committee. E.

401 Seminar (1) Current topics in the plant and soil sciences. Techniques of effective oral and written professional presentation, professional ethics, and writing outside of the classroom. Assignments for written and oral presentations. Senior standing. Sp.

411 Soil Microbiology (3) Soil microbial population and the soil ecosystem; microorganisms of importance and their role in soil processes; dynamics of soil organic matter. Prereq: 210 and Chemistry 110 or 350 or consent of instructor. 2 hours and 1 lab. F-A.

412 Soil Genesis, Classification and Mapping (3) Soil genesis and formation: observing and describing morphology of agricultural and forest soils; chemical and physical properties, classification, mapping. Two Saturday field trips required. Prereq: 210 or consent of instructor. 2 hours and 1 lab. Sp.

413 Soil Chemistry (3) Structure and chemical properties of soil materials with emphasis on the colloidal fraction; its relation to exchange, chemical equilibrium, soil acidity, weathering, nutrient availability and waste disposal. Prereq: 311 or consent of instructor. F.

414 Soil, Land Use and the Environment (3) Soil as an environmental component and soil properties affecting land use. Soil as a resource in development planning including nonenginnering aspects of site selection for land use, soil survey and resource data in land use, recognition and prevention of soil pollution. Prereq: 210 or consent of instructor. Sp-A.

415 Soil-Water Relations (3) Physical relationships among soil, liquid, and gaseous phases of the soil system. The relationships of soil properties to the processes governing water and air movement in soil. Prereq: 210. 2 hours and 1 lab. F-A.

431 Crop Physiology and Ecology (3) Plant physiology and ecology applied to crop production. Effects of environmental factors on physiological processes. Prereq: 230, Botany 321. 2 hours and 1 lab. F-A.

432 Bioclimatology (3) Solar energy budget; interactions between global, regional and local climates and biophysical systems; implications of macroclimate; microclimates and their modification; automated weather station data collection and analyses; biological responses to climatic stresses; climate variation and change and their effects on biological systems. Prereq: 210. 1 year of physical science, junior standing. 2 hours and 1 lab. F-A.

433 Agricultural Pesticides (3) Regulation of pesticide development, manufacture, transportation, marketing and use. Structure, use, mode of action, degradation and environmental effects of pesticides and their residues in agriculture, forestry and related areas. Prereq: 1 year biological sciences and 1 semester chemistry. 2 hours and 1 lab. Sp.

434 Postharvest Biology and Technology (3) Principles, methods, and techniques related to the maintenance of quality of horticultural commodities. Emphasis is placed on preharvest management, harvesting, storage facilities and techniques, quality evaluation and the biological and physiological mechanisms related to maturation, ripening, and senescence. Two Saturday field trips. 2 hours and 1 lab. Prereq: 1 year biological sciences and junior standing. F, A.

453 Principles of Plant Breeding (3) Genetic principles of plant breeding. Prereq: 220 or equivalent. 2 hours and 1 lab. F.

471 Statistics for Biological Research (3) Notation, descriptive statistics, probability, distributions, confidence intervals, student's t and chi-square tests, analysis of variance, mean separation procedures, linear regression and correlation. Prereq: Math 121 or equivalent. 3 hours and 1 rec. F.

493 Problems in Plant and Soil Science (1-3) Special research or library problems in plant and soil science. May be repeated. Maximum 6 hours. E.

POLITICAL SCIENCE (801)

101 United States Government and Politics (3) Introduction to American National Politics including the Constitution, the Presidency, the Congress and the courts.

102 Introduction to Political Science (3) Analysis of politics and political systems in various countries.

107 Honors: United States Government and Politics (3) Analysis and exploration of the American political system for students with superior ability. Admission by permission of department for students with at least a B average; entering freshmen acceopted on basis of strong performance on the school record.

301 Introduction to Political Analysis (3) Nature, character, and functions of research design, data collection, and statistical techniques used in the study of politics.

311 Contemporary Issues in American Public Policy (3) Selected public policy issues confronting the nation, including the background, nature, and effects of selected policies, and options for the future. Writing-credit course: at least one in-class essay examination and 3000 words of writing outside the classroom.

312 Popular Culture and American Politics (3) Popular culture related to American politics and government focusing on the role of film, television, fiction, music, drama, and sports within each course at least one in-class essay examination and 3000 words of writing outside the classroom. (Same as American Studies 312 and Cinema Studies 312.)

315 Tennessee Government and Politics (3) Major issues in Tennessee government and politics.

320 State Government and Politics (3) Setting, institutions, and processes of government in the United States; generalizations and comparisons, with emphasis on federalism and inter-governmental relations.

321 Urban Politics and Process (3) Development of politics and policy-making in the modern American city. (Same as Urban Studies 321.)

322 Minority Group Politics in the United States (3) Content varies. May be repeated with the consent of the department. Maximum 6 hours. (Same as Afro-American Studies 322.)

330 Law in American Society (3) Law as a process through which social problems are addressed in the United States. Examples from case law, legislation, and administrative regulation. Writing-credit course: at least one in-class essay examination and 3000 words of writing outside the classroom.

331 Judicial Process (3) Courts as components of political systems, and public policy formulation through judicial decision making.

340 Introduction to Public Administration and Public Policy (3) Public agencies, their organization, personnel, and financial management and administrative responsibility; the policy-making process, political environment.

350 Political Change in Developing Areas (3) Characteristics and problems of political changes with primary focus on developing areas. Writing-credit course: at least one in-class essay examination and 3000 words of writing outside the classroom.

355 Latin American Government and Politics I (3) Introduction to contemporary conditions in Latin America. (Same as Latin American Studies 355.) Writing-credit course: at least one in-class essay examination and 3000 words of writing outside the classroom.

361 Politics in Western Democracies (3) Political culture, institutions and political systems of Western democracies. Writing-credit course: at least one in-class essay examination and 3000 words of writing outside the classroom.

365 Introduction to International Relations (3) Sources of political power, international political economy, international security and peace (imperialism, war, diplomacy, the balance of power, international law and international organization). Writing-credit course: at least one in-class essay examination and 3000 words of writing outside the classroom.

366 United States Foreign Policy Process (3) Processes whereby United States foreign policies are made and implemented, focusing on interactions within federal bureaucracy and roles of the President, Congress, the press, and public opinion.

370 Contemporary International Problems (3) Analysis of current international events.

374 American Political Thought (3) Major themes and ideas in American political thought related to the development of American political institutions, values, and practices. Writing-credit course: at least one in-class essay examination and 3000 words of writing outside the classroom.

385-386 Junior Honors Seminar (3, 3) Required of honor students; admission with consent of department.

410 Special Topics in Political Science (3) May be repeated with consent of department. Maximum 6 hours.


420 Political Attitudes and Opinions (3) Nature, formation, development, and dissemination of politically relevant attitudes and ideas in the American political system. (Same as American Studies 420.)

421 Political Parties and Interest Groups (3) Role of political parties and organized groups in American politics and government.

422 Political Campaigns and Elections (3) Nature of campaigns and elections in the American political process.

430 United States Constitutional Law: Sources of Power and Restraint (3) Judicial review, constitutional powers of the President and Congress, federalism, sources of regulatory authority, and constitutional protection of political and economic rights.

431 United States Constitutional Law: Civil Rights and Liberties (3) Current issues in civil rights and liberties including: first amendment freedoms, equal protection, privacy and the rights of the accused.

440 Public Management and Human Resources (3) How public and private organizations utilize human resources in pursuit of public sector organization goals.

441 Budgetary Process and Financial Management (3) Fiscal planning, budget and expenditure processes in government, their policy and administrative implications.

442 Administrative Law (3) Legal dimensions of administrative power and procedures, and constitutional controls over administrators.

452 Black African Politics (3) Recent evolution and current political environment of Black African countries. (Same as Afro-American Studies 452.) Writing-credit course: at least one in-class essay examination and 3000 words of writing outside the classroom.

454 Government and Politics of China and Japan (3) Political setting, structure and political processes in China and Japan. Writing-credit course: at least one in-class essay examination and 3000 words of writing outside the classroom.

455 Latin American Government and Politics II (3) Selected topics on Latin American political dynamics, including analysis of leading theoretical explanations. (Same as Latin American Studies 455.) Writing-credit course: at least one in-class essay examination and 3000 words of writing outside the classroom.

459 Government and Politics of the Soviet Union (3) Origins and development of the Soviet political system.
and selected policy areas. (Same as Russian and East European Studies 459.) Writing-emphasis courses: at least one in-class essay examination and 3000 words of writing outside the classroom.

460 Revolution (3) Characteristics, theories, and consequences of revolution with particular focus on left-wing revolutions and movements.

461 Policy Making in Democracies (3) Comparative approach to theory and process of making public policy.

463 Contemporary Middle East Politics (3) Governments and movements in the Middle East, their characteristics, bases, and interrelationships.

469 Soviet Foreign Policy (3) Soviet international behavior since the 1917 Revolution and selected problems of Soviet foreign policy post World War II. (Same as Russian and East European Studies 469.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

470 International Law (3) Nature and development of international law and compliance with it. Particular attention to function of international law in the context of international conflict.

475 Ancient and Medieval Political Thought (3) Major western political thinkers from Socrates to Marx. Prereq: 110 or consent of instructor.

476 Modern Political Thought (3) Major western political thinkers from Machiavelli to Marx.

477-488 Senior Honors Thesis and Seminar (3,3) Required of honors majors; admission with consent of department.

491 Foreign Study (1-15) Prereq: Consent of Department. May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Prereq: Consent of Department. May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 15 hours.

494 Internship (1-6) Prereq: Consent of department. May be repeated. Maximum of 6 hours. S/N/C only.

PORTUGUESE (811)

111-112 Elementary Portuguese (3,3) Introduction to Portuguese. Must be taken in sequence. Language Laboratory required.

211-212 Intermediate Portuguese (3,3) Studies reading, writing, listening, and speaking of Portuguese to prepare for upper division courses in the language. Must be taken in sequence. Language Laboratory required.

300 Portuguese for Spanish Speakers (3) Accelerated class for beginning students of Portuguese with a strong background in another Romance language. Introduction to grammar, reading and culture of Portugal and Brazil. Prereq: 3 hours at 300 level in another Romance language or equivalent.

311 Aspects of Luso-Brazilian Literature (3) Luso-Brazilian literature, with emphasis on contemporary works. Genres may vary. Prereq: 212 or equivalent. (Same as Latin American Studies 311.)

323 Conversation and Composition (3) Development of speaking, listening, and writing skills in Portuguese; some review of grammar. Prereq: 212 or 220 equivalent.

431-432 Directed Readings in Brazilian and Portuguese Literature (3,3) May be repeated with consent of instructor. (Same as Latin American Studies 431-432.)

491 Foreign Study (1-15)

PSYCHOLOGY (830)

110 General Psychology (3) Introduction to primary approaches to the study of human behavior and experience. E

117 Honors: General Psychology (3) Enriched introduction with extra readings. Prereq: Consent of instructor.

210 Biological Basis of Behavior (3) Survey of theories and research concerning the role of genetic factors, nervous and endocrine systems, and other biological influences on behavior. Prereq: 110 or equivalent, or consent of instructor. F, Sp

220 Behavior and Experience: Humanistic Psychology (3) Behavioral and phenomenological analysis of individuals and their development in natural environments. Prereq: 110 or equivalent, or consent of instructor. E

300 Child Psychology (3) The normal child from conception through infancy, childhood, and adolescence. Physical, cognitive, social, and emotional development. Prereq: 110 or equivalent and 210 or 220, or consent of instructor. E

310 Learning and Thinking (3) Survey of theory and findings of research concerning human behavior, attention, perception, and memory. Prereq: 110 or equivalent and 210 or 220, or consent of instructor. E

320 Motivation (3) Survey of theories and related research; discussion of applications. Prereq: 110 or equivalent and 210 or consent of instructor. F, Sp

330 Abnormal Psychology (3) Individual and environmental factors in delinquent and maladaptive behavior; neurotic and psychoses. Psychological methods of treatment. Prereq: 110 or equivalent and 210 or 220, or consent of instructor. E

359 Laboratory in Human Relations (3) Interpersonal relations and communication through structured experiences in small groups. Prereq: 110 or equivalent, and consent of instructor. May be repeated. Maximum 6 hours.

360 Social Psychology (3) Theories, methods, and findings of research concerning individual behavior in a social context. Prereq: 110 or equivalent, and 210 or 220. E

370 Ethology and Sociobiology (3) Basic concepts in the evolutionary approach to behavior, including applications to psychology, the social sciences, and the arts. (Same as Zoology 370.) F

382 Contemporary Topics in Psychology (3) Current issue or problem, such as architechtural psychology, impact of technology, artificial intelligence, or stereotypes. Different topic each semester. Prereq: 110 or equivalent and 210 or 220, or consent of instructor. E

385 Statistics in Psychology (3) Descriptive statistics, logic of hypothesis-testing and statistical inference. Basic parametric and non-parametric tests. Prereq: Mathematics 110, Statistics 201, or equivalent. F

386 Methods of Research in Psychology (3) Fundamentals of the design, conduct, and interpretation of research, including systematic observation, experiments, quasi-experiments, and program-evaluations. Focus on both laboratory and natural settings. Prereq: 110 or equivalent, 210 or 220, or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.

389 Psychological Testing (3) Theory and practice of psychological testing. Emphasis on application and systems theory. Prereq: 360. (Same as Mathematics 450.) F

390 Laboratory in Psychological Testing (3) Laboratory studies of nervous system and physiological correlates of behavior. Prereq: 389, 391, 392, and 393 combined may be applied toward the major.

394 Internship (1-6) Prereq: Consent of department. May be repeated. Maximum of 6 hours. S/N/C only.


420 History and Systems of Psychology (3) History of psychological thought. Classical approaches and recent developments. Prereq: 110, 210, 220 and three upper division courses in Psychology. F, Sp

424 Psychology and the Law (3) Psychological aspects of legal systems. Prereq: 110 or equivalent, upper-division standing and consent of instructor.

430 Health Psychology (3) Psychological factors related to health and illness, including stress, personality, and environment. Applications of psychological treatments of medical illnesses. Prereq: 110 or equivalent, 210.

434 Psychology of Gender (3) Biological, psychological, and social factors in gender. Importance of gender roles and stereotypes for behavior and experience. Prereq: 110 or equivalent, 210, 220. (Same as Women's Studies 434.)

440 Organizational Psychology (3) Social-psychological analysis of organizations, emphasizing role-theory and systems theory. Prereq: 360. (Same as Management 440.)


450 Comparative Animal Behavior (3) (Same as Zoology 450.) F

459 Comparative Animal Behavior Laboratory (3) Coreq: 450. (Same as Zoology 459.) F

461 Physiological Psychology (3) Nervous system and physiological correlates of behavior. Biological basis of emotion, learning, memory and stress. Prereq: 110 or equivalent, 210, and one year of Biology or Zoology introductory sequences or equivalents. F, Sp

469 Laboratory in Physiological Psychology (3) Laboratory studies of nervous system and physiological correlates of behavior. Coreq: 461.

470 Theories of Personality (3) Major theories of human personality and their development. Prereq: 220 and 300 or 330. F, Sp

480 Theories of Learning (3) Classical and current approaches to learning and cognition. Prereq: 310.

482 Topics in Psychology (3) Intensive analysis of special topics, such as Afro-American Psychology or evaluation of programs in the community. Prereq: 210 or 220 and at least 9 credit hours in 300 level courses. Recommended: 385, 395. May be repeated. Maximum of 6 hours may be applied toward the major.

489 Supervised Research (1-9) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 493 combined may be applied toward the major.

491 Foreign Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 493 combined may be applied toward the major.

492 Off-Campus Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 493 combined may be applied toward the major.

493 Independent Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 493 combined may be applied toward the major.

496 Senior Seminar: Great Ideas in Psychology (3) Key ideas that have shaped conceptions of humankind. Exploration of historical development, scientific evaluation, and broader social consequences of the Consensus of instructor and senior standing. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom. F, Sp

PUBLIC HEALTH (839)

300 Introduction to Public Health (3) Aspects of public health including an introduction to contemporary and controversial health issues. E
RECREATION AND LEISURE STUDIES (853)

110 Foundations for Leisure Studies and Services (3) Focuses on understanding concepts, principles, and practices relevant to providing leisure services including philosophy of leisure, social and political movements, economics, leadership, and a survey of leisure services organizations and occupational opportunities. F, S, Sp.

120 Dynamics of Recreation Leadership (3) Theories, practices and concepts as they apply to all roles of recreation leadership. F, S, Sp.

250 Specialized Study in Leisure Education (1-3) Focus on developing positive attitudes toward leisure. Contribution of leisure to mental and physical health. F, S, Sp.

290 Practicum in Recreation (1-3) Supervised practice in approved agencies offering leisure and sport management services. Each 40 clock hours of work for recreation students only. S, NC only. Prereq: Permission of instructor. E.

310 Leisure Program Development and Evaluation (3) Essential elements and basic principles involved in organizational pattern, marketing, evaluation of various types of recreation programs with emphasis on development of program objectives, practical and comprehensive studies of evaluation and operation of recreation and facility within student's particular area of interest. Prereq: 210 or consent of instructor. S, Sp, Su.

320 Therapeutic Recreation and Special Populations (3) Principles, concepts, historical development of medical fields, religion, culture, and religious institutions; and the religious imagination. Writing-emphasis course.

321 World Religions (3) Concepts of gender in religious traditions; religious, social and psychological dimensions of gender-related symbols (e.g., the God-ess, God the Father); that shape women's and men's experiences; contemporary feminist discussions of ways in which religions have liberated and oppressed women. (Same as Women's Studies 320.)

322 Christian Thought (3) Principles of Christian thought and institutions through the interpretation of representative thinkers and movements from Augustine of Hippo to Immanuel Kant. Writing-emphasis course. (Same as History 322.)

323 Images of Jesus (3) Major portraits of Jesus Christ from the first century to the twentieth within the context of the cultural milieu which gave birth to each. Extensive use of slides, video material, recordings, and literature.

329-330 Intermediate Classical Hebrew (3,3) Readings in narrative material from the Hebrew Bible. 330-Readings in poetic and prophetic material from the Hebrew Bible. Prereq: 329 or consent of instructor.

331 Judaism (3) Comprehensive introduction to the historical traditions, culture, and religious institutions of Judaism, and interactions with modern culture. Writing-emphasis course.

332 Islam (3) Comprehensive introduction to the origin and early history of Islam, rapid spread as a missionary religion, development of theology and culture, and interactions with modern culture. Writing-emphasis course.

342 Religious Ethics (3) Selected ethical theories and moral teachings of religious communities and thinkers; their action-guides for individuals and institutions, their application to persons and social problems.

344 Professional Responsibility (3) (Same as Philosophy 344.)

345 Medical Ethics (3) (Same as Philosophy 345.)

351 Introduction to Religion in the United States (3) A representative profile of religion in the United States, organized around selected focal themes or problems.

352 African-American Religion in United States (3) Historical and critical examination of formation and development of African-American religious thought and institutions in America. (Same as African-American Studies 352.) Writing-emphasis course.

353 Topics in African-American Religion (3) Selected themes, movements, or problems in the African-American religious tradition. Variable content. May be repeated. Maximum 8 hours. (Same as African-American Studies 353.)

355 Religion and Culture in the United States (3) Selected figures, movements, and problems in American religious life, thought, and culture from pre-colonial period to present. Prereq: 351 or consent of instructor. May be repeated. Maximum 6 hours. Writing-emphasis course. (Same as American Studies 355.)

370 Philosophy of Religion (3) (Same as Philosophy 370.)

371 Eastern Religions and Western Thought (3) Comparative study of selected movements, thinkers, and institutions of religious traditions, East and West. Writing-emphasis course.
374 Philosophy and Religion in India (3) Survey of the development of the major non-Buddhist themes of philosophical and religious thought in India. (Same as Philosophy 374.) Writing-emphasis course.

376 Buddhist Philosophy and Religion (3) Survey of the origins of Buddhism in India and further development of Buddhist philosophy and religion in India, China, Korea, Japan, the countries of Southeast Asia, and beyond. Writing-emphasis course. (Same as Philosophy 376.)

379 Religion and Philosophy in China (3) Traditional thought and religion of China in its cultural setting as basis for understanding modern China. (Same as Philosophy 379.) Writing-emphasis course.

383 Religion in Japan (3) Traditional religious heritage and contemporary expressions of religion in Japan with attention to relationships of persons to nature, self-mastery and spontaneity, individual and community and secular to sacred. Writing-emphasis course.

384 Zen Buddhism (3) Historical, philosophical, and meditational aspects of Zen. Special emphasis on motifs of emptiness, no-mind, and enlightenment and on practices of meditation and the use of the koan. Recommended: One of the following: 376, 379, 383.

388 Literature of the English Bible (3) (Same as English 388.)

390 Topics in Religious Studies (3) Selected figures, themes and issues. Variable content. May be repeated. Maximum 6 hours.

411 Modern Religious Philosophies (3) Religious implications of major Western thinkers and movements from Nicolas of Cusa to the nineteenth century German Idealists. (Same as Philosophy 411.)

412 Classical Indian Systems of Philosophy: The Moksha Tradition (3) Selected writings and philosophic problems of the orthodox schools, Yoga, Vedanta, Buddhism, or Jainism. Prereq: Religious Studies/Philosophy 374 or 376 or consent of instructor. (Same as Philosophy 412.)

416 Jesus and Paul Compared (3) Central ideas and concepts of each person compared with equivalent concepts in the other. Advanced study of the Gospels and Epistles of Paul, involving extensive independent research.

421-422 Elementary Sanskrit I, Elementary Sanskrit II (3,3) 421-Introduction to the grammar of classical Sanskrit. 422-Introduction to the reading of epic and classical Sanskrit texts. Prereq: 421 or consent of instructor.

425 Seminar in Western Religions (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

430 Seminar in American Religion (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

435 Seminar in Asian Religions (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

440 Seminar in Comparative Religion (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

446 Theoretical Issues in Medical Ethics (3) (Same as Philosophy 446.)

446-463 Intermediate Sanskrit Intermes Sanskrit I, II, III (3,3) 462-Advanced grammatical constructions and reading of epic and classical religious and narrative texts (e.g., Bhagavad Gita, Mahabharata, Ramayana, Kathasaritsagara). Prereq: 425 or consent of instructor. 463-Continued reading of classical religious and narrative texts. Introduction to classical Sanskrit poetry (e.g., Kalidasa’s Shakuntala, Meghaduta. Prereq: 462 or consent of instructor.

469 Readings in Selected Languages Related to Religious Studies (3) Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

490 Readings and Research in Religious Studies (3) Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

491 Foreign Study (1-15) E

492 Off-Campus Study (1-15) E

493 Independent Study (1-15) E

498 Proseminar in Religious Studies (3) For advanced students in Religious Studies; required for majors. Selected topics, e.g., nature and function of myth in religious thought of the West, area studies (India, China, Africa, Near East), hermeneutics, integrating various disciplines involved in study of religion. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

RETAIL AND CONSUMER SCIENCES

101 Apparel Selection and Construction (3) Garment selection decisions based upon knowledge of construction techniques. Not available for credit for department majors. Al, F.

110 Introduction to Retailing (3) Study of the retailing industry based upon knowledge of its origin, history, function, employment opportunities, extent and importance to the economy. F

120 Textiles for the Consumer (3) Study of fibers, yarns, fabrics structures and finishes of textiles related to selection, use, and care by the retail consumer. F

230 Product Quality Evaluation (3) Price/quality relationships in hard and soft goods; linkages between raw materials, manufacturing, distribution, and retail and contributions to consumer goods. F

310 Principles and Theories of Buying (3) Analysis of theoretical perspectives that formulate and affect buying principles and processes for the retail markets; application of the Gough, S. (1960) uses and practices associated with procuring products for the consumer. F

322 Quantitative Managerial Merchandising (3) In-depth analysis and practical application of the principles, techniques, and philosophies guiding the merchandising plan; inventory control, and alternative uses for quantitative merchandising; extensive use of computer programs designed to simulate actual buying situations. Prereq: 310. Sp

340 Social Psychology of Clothing (3) Cultural and functional aspects of apparel; use of clothing and appearance cues as stimuli for understanding ourselves and world around us. Prereq: Soc 100. Sp

345 Fashion in History (3) Structure of fashion industry; relation of lifestyles to apparel styles in selected periods of western civilization and the factors associated with original, adoption, and abandonment.

350 Consumers in the Market (3) Consumer and family decision making in the domestic and international marketplace; consumerism, consumer issues, advocacy, geographic issues; consumer policies in information, protection, and market choice; consumer choice in retail and other markets; major consumption expenditures, public goods, financial and risk management. Prereq: Econ 201. E

390 Introduction to Internship (1) Interviews, placement, and planning for internship. Prereq: Approved application for internship.

410 Retail Management (3) Retail sector of economy from management perspective; decision making in retail operations; promotion, pricing, financial planning and control, computer application, product mix-strategy. Prereq: 2 semesters Marketing. Sp

411 Entrepreneurship and Small Business Management (3) Concepts of entrepreneurship within single ownership and other business organizations, risk-taking and risk management; management of a small business; current issues and problems. Prereq: 310, MKT 301. Sp

412 Direct Retail Selling (3) General principles of selling goods at the retail level; analysis of customer types and personalities; psychology of selling, communication style, development of the sales personality; nontraditional methods of direct selling using various media such as catalog and electronic shopping techniques. Sp

415 Retail Promotion (3) Advertising and special purpose media used to promote retail merchandise; evaluation of retail sales promotion activities. Sp

450 Consumer and Retail Economics (3) Consumer choice models, consumer demand analysis, household behavior, economic organization of information, briefing, and product differentiation, brand and label identification, market factors of the retail complex, economic analysis of the retail organization; domestic and international implications. Prereq: 350, MKT 310. Sp

490 Methods in Internship (3) Investigation of training systems and business organizations, analyses of jobs and evaluation of internship. Prereq: 390; Coreq: 492. F

492 Internship (3) Retail and Consumer Sciences (3) Off-campus cooperative program with business establishments which merchandise or manufacture textiles and/or apparel. Prereq: 390; Coreq: 490. F. Enrollment by written only.

493 Directed Study (1-3) Individual problems for junior and senior students with special interests in retail and consumer sciences. Prereq: Junior or Senior standing and consent of the instructor. E

495 Special Topics (3) Topics in retail and consumer sciences. May be repeated. Maximum 6 hours. Prereq: Junior or Senior standing and consent of the instructor. E

497-498 Honors: Retail and Consumer Sciences (3) Individual problems for Junior and Senior students showing special ability and interest in retail and consumer sciences. Prereq: Recommendation of Department Head. E

RURAL SOCIOLOGY (880)

380 Rural Sociology (3) Topics include cultural variability, reference group theory, social stratification, major social institutions, demographic changes, rural community and decision making, diffusion of technology and rural industrialization. Prereq: Sophomore standing. (Same as Sociology 380.)

480 Diffusion of Agricultural Technology (3) Diffusion and communication processes whereby new technology spreads from scientists to change agents and then to farmers. Innovation-decision process; communication behavior, mass media, roles of professional change agents, opinion leadership and consequences of technological change. Prereq: 380 or consent of instructor. Sp. (Same as Sociology 480.)

RUSSIAN (886)

101-102 Elementary Russian (4,4) Must be taken in sequence.

201-202 Intermediate Russian (4,4) Must be taken in sequence.

221-222 Russian Literature in English Translation (3,3) Nineteenth and twentieth-century Russian literature. No foreign language credit. Writing-emphasis courses: at least one in-class essay examination and 3000 words of writing outside the classroom.

225 Russian Philosophical and Theological Thought (3) Development of philosophical thought in Russia from the Middle Ages to the Revolution. Emphasis on expression of this thought in Russian literature and literary criticism. No knowledge of Russian required.

301-302 Introduction to Russian Literature (3,3) Russian poetry, short stories, and short novels. Prereq: 202: Need not be taken in sequence. (Same as Russian and East European Studies 301-302.)

311-312 Russian Composition and Conversation (3,3) Practice in writing and speaking; grammar review and vocabulary building. Prereq: Completion of 202.

321 Works of Dostoevsky in English Translation (3) Crime and Punishment, Brothers Karamazov, and other works. Writing-emphasis course; at least one in-class essay examination and 3000 words of writing outside the classroom. (Same as Russian and East European Studies 321.)
345 Collective Behavior and Social Movements (3) Collective phenomena leading to social change, response to disaster, popular crazes, and social protests and development, organization, and function of social movements. Emphasis on American cases. (Same as American Studies 345.)

346 Sociology of Occupations (3) Occupations and professions as interest groupings in work settings and the wider community.

350 Criminology (3) Systemic inquiry into alternative definitions of crime, statistical distribution of different types of crime causation, and responses to crime, primarily by the police.


352 Deviance and Social Control (3) Deviants, their lifestyles, social organization, and social control.

360 Environment and Resources (3) Relationship between scarcity of natural resources and changes in societal beliefs and social structure. Topics include social and physical limits to growth and collective action problems.

363 The City (3) The revolutionary impact of cities and city life as seen from an ecological perspective. The organization of life in cities into communities, neighborhoods, and other territories. Urban planning and problems.

370 Social Psychology (3) Social psychological analysis of social behavior emphasizing its acquisition, its enactment, and its dynamic nature.

375 Gender in Society (3) Exploration of gender in society utilizing various sociological perspectives with special focus on the relationships between social structures, social roles, and gender identities. (Same as Women's Studies 375.)

380 Rural Sociology (3) (Same as Rural Sociology 380.)

400 Special Topics (3) Variable topics. Scope of subject matter determined by students and instructor with consent of department. Prerequisite determined by department. May be repeated. Maximum 6 hours.

405 Sociology of Sport (3) Social meaning, organization, and process of sport. Prerequisite: 291 or consent of instructor. (Same as Physical Education 405.)

413 Formal Organization (3) Organizational models, typologies, and theories of authority; communication; interpersonal relations in work settings; organizational change.

414 Sociology of Health Care (3) Organization of health care facilities, staff-patient relationships, demographic characteristics, and prevalence of disease.

415 Sociology of Aging (3) How roles and statuses change with age in relation to the major social institutions. Prerequisite determined by department. May be repeated. Maximum 6 hours.

422 Comparative Poverty and Development (3) A critical examination of patterns of poverty and inequality in developing areas of the world, along with a review of major sociological theories which attempt to explain differences in economic development. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom. (Same as Latin American Studies 442.)

446 The Modern World System (3) Critical examination of the capitalist world-system as a social system, its coherence, boundaries, regions, member groups, cleavages, and patterns of conflict. Analysis of who gets what, why, and how in the global political economy. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

451 Criminal Justice (3) A critical assessment of the criminal justice apparatus and its components. Brief examination of the law, police, courts, and prisons. Emphasis on the criminal courts and institutions and programs such as the prison, probation, and parole. Analysis of their operation and impact. Prior completion of 350 is recommended.

455 Society and Law (3) How laws and legal processes are affected by social change, the social nature of legal sanctions, relations between law and social justice. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

459 Organizational and Corporate Crime (3) Crime, and deviance committed by organizations. Case studies of corporate and organizational crime, the organizational dynamics of crime, and organized responses to this type of crime by governmental regulatory agencies.

462 Population (3) Demographic factors and social trends; fertility, mortality, population growth, migration, distribution, and composition; population policy.

464 Urban Ecology (3) The relation of humans to their urban environment with emphasis on conservation and the use of appropriate technology. (Same as Urban Studies 464.)

471 Sociolinguistics (3) (Same as English 471 and Linguistics 471.)

480 Diffusion of Agricultural Technology (3) (Same as Rural Sociology 480.)

491 Foreign Study (1-15) Prerequisite: Advance departmental approval of number of hours and topics. May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Prerequisite: Advance departmental approval of number of hours and topics. May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Prerequisite: Advance departmental approval of number of hours and topics. May be repeated. Maximum 15 hours.

SPANISH (924)

111-112 Elementary Spanish (3,3) Introduction to Spanish. Must be taken in sequence. Language Laboratory required.

117-118 Honors: Elementary Spanish (3,3) An introductory course for students with a special interest in Spanish. Ideal for students with knowledge of another foreign language, or for those who have had some previous (but not extensive) experience with Spanish. An enriched program with emphasis on basic skills of listening, speaking, writing, and reading. Special attention given to those skills needed for communication with Spanish speakers in real life situations. Grading scale and workload the same as regular sequence. Students with two years of high school Spanish or one year of college Spanish may take the course for credit. Courses must be taken in sequence. Students receiving a grade of A or B in 117 will receive credit for 212. Class size limited to 15 students.

189 The Spanish Language and World Business (1) The course will examine the importance of foreign trade at the local, state, and national levels. An interdisciplinary team of faculty from the Colleges of Business and Liberal Arts will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students majoring in the program in Language and World Business. See the Director for further information.

210 Intermediate Spanish Transition (3) A thorough study of the fundamentals of Spanish language for those who have completed two or more years of high school Spanish who place out of placement test but are not prepared for the 211-212 sequence. Special emphasis on developing communicative proficiency in Spanish. The course meets five hours per week and will not count toward the College of Liberal Arts intermediate-level foreign language requirement. For elective credit only.

211-212 Intermediate Spanish (3,3) Reading, writing, listening, and speaking. Preparation to prepare for upper division courses in the language. Must be taken in sequence. Language Laboratory required. Prerequisite: 111-112 or equivalent.

217-218 Honors: Intermediate Spanish (3,3) Honors course for students of superior ability in Spanish. Incom- ing freshman are advised to take Spanish for beginning students. Classes normally held to a maximum of 15 students.

Students follow enriched program with continuing emphasis upon speaking ability and with an introduction to reading literary selections. Students who earn an A or B in 218 receive credit for 300. Prerequisite: 111-112 or equivalent.

291 Spanish Literature in English Translation (3) From the Golden Age,Don Quixote, to the modern, Unamuno, Lorca, Ortega, and Cela. No foreign language or major credit. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

292 Spanish American Literature in English Translation (3) Contemporary Spanish American fiction: such as Carlos Fuentes, Mario Vargas Llosa, Alejo Carpentier. No foreign language or major credit. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

300 Spanish Translation (3) Development of linguistic skills necessary for satisfactory work in courses above 200. Recommended for students who would benefit from additional training beyond 212 in the skills of reading, writing, and with Spanish. Particular attention for preparation to read Hispanic literature and other advanced-level material.

311 Aspects of Spanish Literature (3) Introduction to Spanish literature, using selections from prose, drama, and poetry of the medieval, Golden Age and modern periods. Required of all majors. Prerequisite: 212, 218 or equivalent.

312 Aspects of Spanish American Literature (3) Introduction to the study of Spanish American literature, with emphasis on contemporary literature. May vary. Prerequisite: 212, 218 or equivalent. (Same as Latin American Studies 312.)

323-324 Intermediate Conversation and Composition (3,3) Designed to improve proficiency in oral and written communication in Spanish. Students are expected to participate in small groups. Prerequisite: 212 or equivalent.

345 Spanish Business (3) Contemporary Spanish language as it applies to business transactions. Understanding and composing letters; oral communication and elements to Hispanic culture related to good business practices. Prerequisite: 292 or consent of instructor.

421 Phonetics (3) Prerequisite: 212, 218 or equivalent.

422 Advanced Grammar (3) Finer points of grammatical structures. Required of all majors. Prerequisite: 211, 217 or equivalent.

423-424 Advanced Conversation and Composition (3,3) Advanced conversational and written skills in Spanish. Oral and written communication in Spanish. Prerequisite: 212, 218 or equivalent.

425 Introduction to Descriptive Linguistics (3) (Same as French 425, German 425, Russian 425 and Linguistics 425.)

426 Methods of Historical Linguistics (3) (Same as Russian 426, French 426, German 426 and Linguistics 426.)

429 Romance Linguistics (3) (Same as French 426 and Linguistics 426.)

431 Spanish Civilization (3) Major social, political, and cultural achievements of the Spanish people from the origins of their civilization until today. Prerequisite: 311, 312 or equivalent. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

432 Cervantes (3) Emphasis upon selections from Don Quixote and study of the shorter Novelas ejemplares. Prerequisite: 311, 312 or equivalent.

433 Masterpieces of Spanish Literature (3) Selections from both the Golden Age and the modern period of works of all genres. Prerequisite: 311, 312 or equivalent.

436 Survey of Spanish Literature (3,3) Survey of Spanish literature from the Golden Age. 430-Spanish literature since 1700. Prerequisite: 311, 312.

450 20th Century Hispanic Theatre (3) Emphasis on Spanish American playwrights. Prerequisite: 311, 312 or equivalent. (Same as Latin American Studies 450.)

459 Capstone Colloquium in Spanish (3) An integrative experience focusing on a broad range of issues and topics that affect much of the Spanish-speaking world.
and also involve those who specialize in Hispanic Stud-
ies. Prereq: 311, 312 or equivalent. Writing-emphasis
course: at least one in-class essay examination and 3000
words of writing outside the classroom.

460 Capstone Tutorial in Spanish (3) Independent
study project supervised closely by a faculty member.
Prereq: Spanish 311, 312 or equivalent. Writing-
emphasis course: at least one in-class essay examination
and 3000 words of writing outside the classroom.

471 Latin American Civilization (3) Latin America's
diverse heritage and major social and political institu-
tions. Prereq: 311, 312 or equivalent. (Same as Latin
American Studies 471.) Writing-emphasis course: at
least one in-class essay examination and 3000 words of
writing outside the classroom.

472 Masterpieces of Spanish American Literature
(Same Selected works by major Spanish American writers
as listed in the following section. Figures and their
genres and periods may vary. Prereq: 311, 312 or equiva-
 lent. (Same as Latin American Studies 472.)

473-474 Survey of Spanish American Literature
Theod) Historical survey of the conquest to the late 19th
century. 474 Major literary movements, writers and works
of the 20th century. Prereq: 311 or equivalent. (Same
as Latin American Studies 473-474.)

479 Social Protest Literature of Latin America
Literature (3) Literature as a means of unmasking social ills that have
to traditionally beset Latin America. Among major themes:
indigence, Black and Indian, women writers, the role of
the writer in Latin American society. Prereq: 311, 312 or equiva-
 lent. (Same as Latin American Studies 479.)

491 Foreign Study (1-15)

493 Independent Study (1-15)

SPECIAL EDUCATION (933)

310 Special Education Principles (3) Introduction to
the field of special education, including the nature and
causes of disabling conditions, family systems, a history
of the field, and current trends. Prereq: Admission to
Teacher Education Program. Sp

320 Special Education Strategies (3) Introduction to
basic special education procedures, including formal
and informal assessment, planning, development of
individual Education Plans, applied behavioral analysis,
appropriate medical procedures, and effective instruc-
tional strategies. Prereq: 310, Admission to Teacher
Education Program.

331 Articulation Disorders (3) Prereq: Admission to
Teacher Education Program. (Same as Audiology and
Speech Pathology 331.)

371 Audiology I (3) (Same as Audiology and Speech
Pathology 371.)

404 Appraisal of Speech and Language Disorders
(Same as Audiology and Speech Pathology 404.)

410 Pre-Internship Seminar (1) Objectives and poli-
cies of the internship program. Must be completed the
term immediately preceding the internship. Prereq: Ad-
m ission to Teacher Education Program, Satisfactory/No
Credit only. Sp, Su

415 Language Development for the Hearing Im-
paired I (3) Language problems of hearing impaired
children contrasted with those of normally hearing chil-
dren. Comprehension and production differences, idiomatic
and figurative structures. Prereq: 421.

416 Language Development for the Hearing Im-
paired II (3) Developmental and remedial systems of
teaching language to hearing impaired children. Com-
prehension and production differences, idiomatic and
figurative structures. Prereq: 421.

419 Speech Development of Hearing Impaired (4)
Theory of speech development, approaches in train-
ing perception and production of speech, and verbal
habilitation. Praxis experiences.

420 Psychology and Education of Students with
Mild Disabilities (6) Nature and characteristics of per-
sons with mild handicaps and the educational strategies
appropriate for these persons. Prereq: 310, 320 Educa-
tional Curriculum and Instruction 422 and Admission to Teacher Education Program. Coreq: 421.

421 Field Experience in Modified Programs (3) Prac-
ticing in teaching in modified programs; planning,
developing, implementing, and evaluating instruction.
Prereq: 316, 320, Educational Curriculum and Instruc-
tion 452 and Admission to Teacher Education Program.
Coreq: 420. Satisfactory/No Credit only. F

423 Communication Processes for the Hearing Im-
paired (3) Expressive and receptive vocabulary devel-
opment in sign communication. Finger spelling and
educational aspects of the deaf language. Prereq: 311 or
312 or equivalent. (Same as Audiology and Speech
Pathology 423.)

424 Nature of Hearing Impairments (3) Anatomy
and physiology of hearing; nature and causes of hearing
loss; methods and instrumentation for assessment of
hearing level; interpretation of audiologic services to
medical and other rehabilitative disciplines.

425 Introduction to the Psychology and Education
of the Hearing Impaired (3) Primarily for those planning
to teach the hearing impaired. Related research related to
psychology, social adjustment, communication methods,
strategies, and characteristics of persons with hearing
impairment. Survey of literature. Visits to pro-
grams.

430 Psychology and Education of Students with
Moderate/Severe Disabilities (6) Nature and charac-
teristics of persons with moderate/severe disabilities
and the educational strategies appropriate for these
persons. Prereq: 310, 320, Educational Curriculum &
Instruction 452 and admission to Teacher Education
Program.

431 Field Experience in Comprehensive Programs
(3) On-site teaching experience with moderately and
severely handicapped children and youth. Prereq: 310,
320, Educational Curriculum & Instruction 452 and Ad-
m ission to Teacher Education Program. Coreq: 420.
Satisfactory/No Credit only. Sp

432-434 Clinical Practice in Speech Pathology
(1-4-4) (Same as Audiology and Speech Pathology
432-434.)

440 Voice Disorders (3) (Same as Audiology and
Speech Pathology 440.)

454 Education of the Gifted and Talented Children
Special topics in the education of the gifted and
talented children. Prereq: 311 or equivalent. (Same
as Audiology and Speech Pathology 454.)

464 Speech and Language Basis of Learning Dis-
abilities in the Classroom (3) Normal communication
development; understanding of speech and language
impairments; language development; integration of oral
written communication skills into existing curriculum,
especially for high incidence special education stu-
dents. Sp

470 Psychology of the Exceptional Child (3) General
characteristics and learning characteristics of exceptional
children. Implications of developmental variations for
functioning as adults. Enrollment limited to non-educa-
tion majors.

471 Internship I: Special Education (3-15) Field
thories of special education, psychology, social adjustment,
communication methods, strategies, and characteristics of
persons with hearing impairment. Survey of literature. Visits to pro-
grams.

471 Internship I: Special Education (3-15) Field
work experience in special education. Prereq: Admission to
Teacher Education Program, Satisfactory/No
Credit only. Sp, Su

473 Audiology II (3) (Same as Audiology and Speech
Pathology 473.)

482 Speech and Language Services in the Schools
Organization and implementation of speech and
language programs. Emphasis on the IEP process as it
affects assessment, case selection, and programming
for students ages 4-21. Procedures and materials, group
intervention, and classroom consultation. Prereq: Ad-
m ission to Teacher Education Program.

483 Clinical Practice in Communication Disorders
in Schools (3) Supervised clinical experiences with
child with communication disorders. Prereq: 482 and Audiology
and Speech Pathology 433, 434 (80-100 clinical contact
hours) and admission to Teacher Education Program.

484 Internship with Hearing Impaired Children (3)
Supervised practicum with preschool, school, day
school, and residential students. Prereq: Admission to Teacher
Education Program.

485 Student Teaching in Special Education (3-10)
Intended for students in the fourth year program or equiv-
alent. Not to be substituted for internship (Educational
Curriculum and Instruction 471, 472 or Special Educa-
tion 471.) Prereq: Admission to Teacher Education Pro-
gram, permission of Mentoring Team, and Educational
Curriculum and Instruction 203 (1). Satisfactory/No
Credit only.

493 Directed Independent Study (1-3) Tutorial and
specialized area. Prereq: Consent of instructor. May be
repeated. Maximum 6 hours. S/N or letter grade.

494 Aural Habilitation/Rehabilitation of the Hearing
Impaired (3) (Same as Audiology and Speech Patho-
y 494.)

SPEECH COMMUNICATION (943)

100 Introduction to Speech Communication (3) Fun-
camental theories and practices with particular refer-
cence to interpersonal, intrapersonal, group, organiza-
tional, and public communication.

200 Developing Speech Confidence (3) Principles
and techniques for coping with apprehension about
speech, and defenses. Recommended for students who are
concurrently enrolled in 200 level speech courses and
desire additional work in dealing with their anxiety about
speaking.

210 Public Speaking (3) Preparation and delivery
of informative and persuasive speeches. Topics include
research, organization, adapting to an audience, topic
selection, reasoning, and evaluating the discourse of
others.

220 Interpersonal Communication (3) Process by
which thoughts, feelings, and actions affect and are
affected by the face-to-face communication situation.
(Same as Sociology 220.)

240 Business and Professional Speaking (3) Basic
principles of oral communication within organizations,
including such topics as organizational communication
theory, group problem solving, formal presentations,
and interviewing.

270 Argumentation and Debate (3) Reasoned deci-
ding; making with emphasis on analysis, evidence, rea-
toning, constructing and refuting arguments.

280 Introduction to Oral Interpretation (3) Art of
reading aloud; development of interpretive techniques
and their application to selected passages of prose,
oratory, and dramatic literature. Writing course: at least
one in-class essay examination and 3000 words of
writing outside the classroom.

295 Communication Research Methods (3) Survey of
temporary methods used for research in Communication.
Emphasis on interpreting and evaluating communication
research reports.

300 Nonverbal Communication (3) Exploration of
nonverbal communication from human communication per-
spective; origins, structure, and function, content and
context, verbal and nonverbal behavior, research strategies, and theoretical approaches.

310 Persuasion (3) Methods which contribute to effec-
tive and ineffect persuasive. Topics include credibil-
ity, message construction, receiver variables.

320 Interpersonal Communication Processes (3)
Social dimensions of interpersonal communication and
relationships. Prereq: Speech Communication 422 or Special Educa-
tion 220 or consent of instructor. (Same as Sociology
320.)

330 Group Communication (3) Small group decision-
making; evidence, and conditions affecting credibility.

350 Communication Theory (3) Survey of social sci-
ence approach to theorizing about communication

360 Topics in Communication and Society (3) Con-
tent varies. Studies in social function of such communi-
cation forms as posters, speeches, songs, plays, dem-
ocratic. May be repeated with consent of depart-
ment. Maximum 6 hours.

370 Evidence and Argumentation (3) Consensus
of evidence in public controversies, uses and sources of
evidence, and conditions affecting credibility.

380 Advanced Oral Interpretation (3) Individual and
group performances of prose literature and poetry.
Prereq: 200 or consent of instructor. Writing-emphasis course.

390 History of Rhetorical Theory (3) Western rhetorical theory from Plato to the present.

400 Topics in Speech Communication (3) Variable content course offering opportunity to offer subject matter not covered in other courses. Topics, scope of subject matter, and prerequisites to be determined by department. May be repeated. Maximum 6 hours. Major credit limited to 3 hours.

420 Communication and Conflict (3) Communication as a significant factor in the development, management, and resolution of conflict at the interpersonal, small group, organizational, or societal levels.

440 Organizational Communication (3) Organizational setting and those variables of the communication process that affect the viability of human interaction both within and outside the organization.

445 Internship (1-3) Supervised career-related experiences using Speech Communication theories and techniques in government and for profit or non-profit organizations, culminating in a written and oral report. Prereq: Junior/ Senior level majors with at least a 3.0 GPA, or by special permission of Internship Director. S/NC only. May be repeated; maximum 6 hours. Major credit limited to 3 hours.

450 Propaganda (3) Study of political, commercial, and social propaganda in United States, World War I to present. Writing emphasis course.

456 Studies in Rhetorical History and Criticism (3) May be repeated. Maximum 6 hours.

466 Rhetoric of the Women's Rights Movement (3) Historical analysis of women in public address in campaigns for women's rights from the 1830's to present. (Same as Women's Studies 465.) Writing emphasis course; at least one in-class essay examination and 3000 words of writing outside the classroom.

469 Freedom of Speech (3) Historical and philosophical perspectives on freedom of expression; legal issues in free speech controversies in the U.S. Writing emphasis course. (Same as American Studies 469.)

470 Theories of Argumentation (3) Conceptual bases of argumentation from classical to contemporary theories. Prereq: Consent of instructor.

480 Ensemble Interpretation (3) Study and presentation of literary texts through group performance.

490 Topics in Rhetorical Theory (3) Content varies. Emphasis on a particular period, such as Greek, eighteenth century, or contemporary. May be repeated. Maximum 6 hours.

491 Foreign Study (1-15) See description of major concentration. Prereq: Consent of faculty advisor and/or supervising instructor required prior to registration.

492 Off-Campus Study (1-15) See description of major concentration. Prereq: Consent of faculty advisor and/or supervising instructor required prior to registration.

493 Independent Study (1-15) See description of major concentration. Prereq: Consent of faculty advisor and/or supervising instructor required prior to registration. 

499 Proseminar in Speech Communication (3) Major theoretical perspectives in speech communication, their interrelationships and applications; consideration of the significance and ethical implications of speech communication in modern society. The course will cover two or more areas of the subject matter. Prereq: senior standing and completion of at least 12 hours of major requirements in speech communication. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

STATISTICS (962)

201 Introduction to Statistics (3) Descriptive statistics, including bivariate trends and time series analysis; concepts of probability and probability distributions, binomial and normal distributions, linear correlation and regression, estimation, and significance tests for means, contingency tables. Prereq: Mathematics 121.


252 Probability and Statistics for Scientists and Engineers II (3) Hypothesis testing. Introduction to statistical process control, reliability, analysis of variance. Simple and multiple linear regression. Prereq: 251 and a working knowledge of the UTCC VAX system, or Coreq: 251.

261 Computing for Data Management and Analysis (3) Use of computer operating system commands and packaged programs for managing data files and statistical analysis. Prereq: 251.

302 Statistical Methods (3) Linear regression and correlation; multiple regression, diagnostics, dummy variables; analysis of variance and covariance; categorical data. Emphasis on data analysis and interpretation. Not counted toward a major or minor in statistics. Not available for credit to students with credit in 461.


411 Introduction to Statistical Computing (3) Use of computer operating system commands and packaged programs for statistical analysis and file management. Not acceptable for credit for statistics majors. Prereq: 201 or 251.


481 Special Topics in Probability (1-3) Topics in probability and stochastic processes. Prereq: Consent of the instructor. May be repeated. Maximum 6 hours.

483 Special Topics in Statistics (1-3) Topics vary. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

485 Principles of Statistical Process Management (3) Control charts and other statistical techniques applied to business, industrial, or government, culminating in a written and oral report. Prereq: Permission of the Chairperson of the Statistics Department Undergraduate Affairs Committee. Satisfactory/No credit only. Prereq: May be repeated. Maximum 2 hours.

492 Internship (1-6) Supervised off-campus experience in application of statistical principles and methods in business, industry, or government, culminating in a written and oral report. Prereq: Permission of the Chairperson of the Statistics Department Undergraduate Affairs Committee. Satisfactory/No credit only. May be repeated. Maximum 6 hours.

493 Independent Study (2-6) Faculty directed reading and investigation of specified topic in probability or statistics culminating in a written report. Prereq: Two courses in statistics and permission of the Chairperson of the Statistics Department Undergraduate Affairs Committee. Letter grade or Satisfactory/No credit. May be repeated. Maximum 6 hours.

497 Honors Thesis (6) Undergraduate thesis culminating in written report and oral defense. Prereq: Invitation of the Department Undergraduate Affairs Committee. Satisfactory/No credit only.

TECHNOLOGICAL AND ADULT EDUCATION (967)

161 Graphic Communications (3) Drafting as a means of communication in technology. Orthographic and multiview drawing, conventional practices, pictorial techniques and applications, sheet metal development and auxiliaty view drawing. Sketching, dimensioning, board work, and CAD. F.

163 Power and Energy Systems (3) Automotive technology and internal combustion engines. Includes various types of engines, fuels, design and manufacture, and transmission of power. Engine tune up and overhaul and small engine maintenance and repair is stressed through experimental and applied laboratory experiences. F.

165 Woods Technology (3) Processes, tools, equipment, and products of the woodworking industry. Importance of safety and using hand tools and basic machinery. F.

166 Metals Technology (3) Processes, equipment, materials and products of metal working industries. Processes in machine, foundry, forging, heat treatment, sheet metal and fabrication. F.

201 Field Experience in Vocational Technical Education (1) Field experience in public school programs in distributive education. May be repeated. Maximum 5 hours. Satisfactory/No credit only. E.

230 Typewriting and Shorthand Proficiency (3) Proficiency credit for students planning to certify in business education and office technology who have typewriting and/or shorthand courses. Prereq: Department approval. E.


263 Basic Electricity/Electronics (3) Operation and characteristics of electrical systems and devices; includes general DC/AC theory and application, use of electronic measuring instruments. Prereq: consent of instructor. May be repeated. Maximum 3 hours. Satisfactory/No Credit only. E.


336 Micro Business Applications (3) Operating and programming microcomputers. BASIC language is used and programming examples are oriented in business applications. Prereq: Admission to Teacher Education Program.

350 Related and Applied Theory in Occupations (1-15) Applicants must show evidence of bonafide occupational experience compatible with State Plan requirements. Written theory tests and the submission of a comprehensive portfolio are used to award variable credit. Measures evaluated by technical specialist and departmental faculty. May be repeated. Maximum 15 hours. Satisfactory/No credit.

492 Independent Study (2-6) Faculty directed reading and investigation of specified topic in probability or statistics culminating in a written report. Prereq: Two courses in statistics and permission of the Chairperson of the Statistics Department Undergraduate Affairs Committee. Letter grade or Satisfactory/No credit. May be repeated. Maximum 6 hours.

497 Honors Thesis (6) Undergraduate thesis culminating in written report and oral defense. Prereq: Invitation of the Department Undergraduate Affairs Committee. Satisfactory/No credit only.
tain, and evaluate a successful cooperative education program. Instructional materials development utilizing the techniques of job analysis. F

354 Job Analysis Techniques and Curriculum Development (3) Application of job analysis techniques to technical and vocational training. Prereq: Admission to Teacher Education Program. F

355 Microcomputer Applications in Technology (3) Use and applications of microcomputers for education, business, and industry. Implications and impact of microcomputer applications and everyday living. Open lab for required hands-on experience in operations and programming. F

356 Lab Organization, Management, Maintenance, and Safety (3) Principles of classroom and laboratory organization, management, and safety for educational and instructional laboratories. F

361 Graphic Reproduction Processes (3) Principles of printing, duplicating, photography, and other forms of graphic communication; includes laboratory experience in ELT camera applications, camera copy preparation, line and halftone photography, layout, stripping, platemaking, and offset presswork. F

363 Applications of Integrated Electronics (3) Electrical circuit analysis and IC applications; including amplifiers, waveforms, oscillators, and the basic principles and applications of digital electronics through lecture and laboratory experiments and projects. F

365 Manufacture of Wood Products (3) Design and construction of furniture, cabinets, and built-ins. Emphasizing use of wood as material. Prereq: 165. Sp

366 Manufacturing Technology (3) Manufacturing system, including researching and developing products, preparing to produce, producing, marketing, and servicing products. Prereq: 165 and admission to Teacher Education Program. F

369 Plastic Technology (3) Characteristics and applications of thermoplastic and thermosetting materials. Emphasis on production equipment related to product design and processing of plastics. Prereq: 165 and admission to Teacher Education Program. F

372 Job Analysis (3) Applied techniques of job analysis to determine job descriptions, training requirements, performance standards and sequence of training technical personnel. F

373 Instructional Techniques in Industrial Education (3) Application of learning theories, motivational techniques, and instructional strategies to technical and related subjects. F

374 Planning Instruction for Human Resource Development (3) Selection, design, and development of performance-based training programs. Prereq: 372 or consent of instructor. F

401 Utilization of Community Resources (3) Strategies of developing linkages between vocational education and the private sector through advisory committees, councils and working partnerships. Development and management of public relations programs. Prereq: Three years of teaching experience. A

410 Pre-Student Teaching Seminar (1) Objectives and policies of the student teaching program. Must be completed in term immediately preceding student teaching. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. F, Sp

413 Special Topics in Technological and Adult Education (1-3) Topics to be assigned. May be repeated. Maximum 6 hours. E

414 Individual Study in Technological and Adult Education (3) Prereq: Consent of supervising instructor with approval form filed in the office of the department head. May be repeated. Maximum 6 hours. E

415 Coordination Techniques (3) Necessary procedures, duties and responsibilities to implement, maintain, and evaluate a successful cooperative education program. Sp

420 Introduction to Adult Education (3) Breadth of adult education activities and the diversity of adult clientele, including opportunities for professional practice apart from traditional instructional settings. A

421 Adult Education Program Design and Management (3) Theory and practice of program development and special application to adult training programs. Sp

422 Adult Development and Training (3) Application of adult development concepts to design and management of training programs for adults. Sp

430 Principles and Organization of Business Marketing (3) Principles of business marketing, sales, and distribution. Prereq: Consent of instructor. F

431 Word Processing and Office Technology (3) Word processing concepts and applications, methodology for teaching word processing and machines. Prereq: Advanced typewriting skill and permission of instructor. Sp

432 Methods and Materials in Business and Marketing Education (3) Teaching techniques, aids and evaluation in subject matter fields. Prereq: Admission to Teacher Education Program. Sp

433 Methods in Office Technology (3) Materials, methods, evaluation procedures, and recent research in typewriting, shorthand, and other office procedures. F

434 Methods in Accounting and Data Processing (3) Methods, materials, evaluation procedures, and recent research in accounting and data processing. Automated accounting concepts included. Prereq: Admission to Teacher Education Program. F

436 Supervised Occupational Experience (3-9) Practical field experience in business and marketing settings under the supervision of practitioner and department representative. May be repeated to a maximum of 9 credits. E

439 Areas of Marketing (3) Marketing personnel development, operations and management as these affect the instructional leadership program in marketing education. Sp

440 Special Topics in Business and Marketing Education (1-3) Topics to be assigned. May be repeated. Maximum 6 hours. E

450 Seminar in Industrial Education (1-3) Current issues, innovations, problems, and other topics associated with technical programs. May be repeated. Maximum 6 hours. A

454 Training Aids Development (3) Study and preparation of instructional aids and non-print media commonly used by technical instructors and trainers. F

455 Performance-Based Evaluation (3) Assessing the effectiveness of training through the development of performance-based training, evaluation of incumbent worker job performance. Sp

456 Organization and Operation of VICA/HOSA (3) Planning, organizing and implementing youth-club activities in vocational-technical programs. A

459 New Developments in Industrial Education (3) Developments, significant problems and recent trends in industrial education presented by coordinating instructor in conjunction with knowledgeable resource personnel. May be repeated. Maximum 6 hours. E

464 Methods and Media in Technology Education (3) Application of learning theories, motivational techniques, and instructional strategies to technical and related subjects. F

465 Materials and Processes (3) Materials relative to specifications, testing, and methods to classify and categorize materials. Determining correct processes to match industrial product needs. Prereq: Consent of instructor. F

466 Course Construction in Technology Education (3) Selection and arrangement of course content. Prereq: Consent of instructor. F

470 Training for Human Resource Development (3) Organization and management of training, including roles and functions performed and the needs, costs, benefits, and productivity of training programs. F

471 Principles of Supervision (3) Principles of motivation, communication, interpersonal relationships and leadership. Sp

479 Internship in Human Resource Development (5-10) Assessing, planning, implementing, and evaluating the effectiveness of training programs in an industrial setting. May be repeated to a maximum of 10 semester hours. Satisfactory/No Credit only. E

481 Student Teaching: Grades 7-12 and Adults (10) Fulltime experience in classroom, laboratory teaching and related responsibilities under the direct supervision of a master teacher in the content area. Satisfactory/No Credit only. Prereq: Admission to Teacher Education Program. E

THEATRE (976)

100 Introduction to Theatre (3) Understanding theatre: thought, philosophy, aesthetics, and production practices. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

210-211 Survey of World Drama (3,3) 210-Includes Greek, Roman, Medieval, Elizabethan, and Eastern forms of drama. 211-Covers 19th century, as well as realism through contemporary drama. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

220-221 Acting (3,3) 220-Basic Acting techniques. 221-Further exploration and development of acting techniques through exercises and beginning scene work. Prereq: 220. Writing-emphasis courses: at least one in-class essay examination and 3000 words of writing outside the classroom. Prereq to 221: 220.

226 Voice and Diction (3) Voice production, attention to individual speech problems.

245 Basic Stage Costuming (3) Costume design and construction, basic theory and technique. Production participation required.

250 Introduction to Scenery Technology (3) Techniques of scenery and stage properties construction. Production participation required.

260 Fundamentals of Lighting and Sound Production (3) Survey of practical information on electricity, physics, psychology, and instrument engineering as it relates to stage lighting and sound production. Emphasis on hands-on skills in labs. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

310-311 History of the Theatre (3,3) 310-Dramas in performance with particular emphasis in theatre architecture, scene design, and acting styles Antiquity to Renaissance. 311-The European and modern theatres.

312-313 History of the American Theatre (3,3) Development of the theatre as social institution in American life. 312-From its beginnings to 1900. 313-From 1900 to present, including presenting-arts emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

320 Advanced Acting (3) Characterization and scene study in realistic plays. Prereq: 220-221 and consent of instructor. May be repeated. Maximum of 6 hours.

340 Introduction to Costume Design (3) Development of research and rendering skills. Prereq: 245 or consent of instructor.

345 Costume Construction (3) Study and practice of skills in costume construction. Includes stitching, morale, and crafts. Production participation is required.

355 Introduction to Scenic Design (3) Introduction to art and craft of scenic design.


401 Principles of Theatrical Design (3) Fundamental principles of design; visual and structural relationships. Projects will be assigned to develop understanding and perception.

409 Stage Make-Up (2) Problems in make-up design and application, character analysis, physiognomy and chiroscopy. Prereq: 100.

410 Dramatic Theory and Criticism (3) Theatre aesthetics from Aristotle to the present.
to Theatre majors only or with consent of instructor. 90 hours of work required.

483 Applied Theatre: Lighting (2) Laboratory in lighting for departmental productions. Credit available to Theatre majors only or with consent of instructor. 90 hours of work required.

484 Applied Theatre: Performance (2) Laboratory in performance for departmental productions. Credit available to Theatre majors only or with consent of instructor. 90 hours of work required.

485 Applied Theatre: Management (2) Laboratory in theatre management for departmental productions. Credit available to Theatre majors only or with consent of instructor. 90 hours of work required.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

UNIVERSITY HONORS (983)

118-128 Whittle Scholars Seminar (1,1) Sequence limited to and required of all Whittle Scholars in their freshman year. May be repeated. 128 concentrates on aspects of leadership. Satisfactory/No Credit grading only.

237, 337, 437 Honors: Concentration in the Humanities (3,3,3) Small group studies of selected topics, issues or problems with a concentration in the humanistic disciplines. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated.

247, 347, 447 Honors: Concentration in the Social Sciences (3,3,3) Small group studies of selected topics, issues or problems with a concentration in the social sciences. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated.

257, 357, 457 Honors: Concentration in the Natural and Applied Sciences (3,3,3) Small group studies of selected topics, issues or problems with a concentration in the natural and applied sciences. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated.

330-348 Tennessee Scholars Seminar (1,1) Sequence limited to and required of all Tennessee Scholars each year. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.

358-368 Chancellor's Scholars Seminar (1,1) Sequence limited to and required of all Chancellor's Scholars each year. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.

418-428 Seminar on International Travel/Study/Work Overseas (1,1) Sequence required of all Whittle Scholars and must be taken prior to their international experience. Open to all students who intend to travel, study or work abroad. Satisfactory/No Credit grading only.

491 Honors: Foreign Study (3-15) Open to any undergraduate honors student. Proposals must be approved in advance. See the Director of University Honors for further information.

492 Honors: Off-Campus Study (3-15) Open to any undergraduate honors student. Proposals must be approved in advance. See the Director of University Honors for further information.

493 Honors: Independent Study (3-15) Open to any undergraduate honors student. May be used by all University Honors Scholars in preparing their senior projects. Proposals must be approved in advance. See the Director of University Honors for further information.

UNIVERSITY STUDIES (984)

101 Freshman University Seminar (3) Introduction to university education as an asset in personal growth and professional development. A/B/C/N grading. Open only to freshmen, transfer students, and re-entry students, or by permission of instructor.

210-220 Case Studies (4,4) Variable content using case studies and problem-solving approaches to explore interdisciplinary issues. Includes a one-hour learning laboratory. Open only to students enrolled in a University Learning Community.

310-320 Special Topics in University Studies (3,3) Interdisciplinary approaches to issues transcending the boundaries of a single discipline. Topics may be initiated by faculty or students through arrangements with the University Studies Program. Taught by faculty from throughout the university (often team-taught). Extensive use of films, field trips, student discussion. May be repeated. Maximum: 9 hours.

410-420 Advanced Topics in University Studies (3,3) Interdisciplinary approaches to issues transcending the boundaries of a single discipline. Topics may be initiated by faculty or students through arrangements with the University Studies Program. Taught by faculty from throughout the university (often team-taught). Extensive use of films, field trips, student discussion. May be repeated. Maximum: 9 hours.

URBAN STUDIES (985)

200 Human-Environment Systems (3) (Same as Interior Design 200.)

250 Introduction to Urban Studies (3) Multidisciplinary nature of urban studies. Includes lectures by specialists presenting the approach of their disciplines to Urban Studies; application of general approaches to a specific issue; and collaborative teaching involving most faculty of Urban Studies.

321 Urban Politics and Process (3) (Same as Political Science 321.)

323 Behavioral Geography (3) (Same as Geography 323.)

350 Practicum in Urban Studies (3-6) Student and faculty member team, in conjunction with the East Tennessee Design Center, study a selected problem or aspect of urban studies.

401 The City in the United States (3) (Same as Planning 401.)

402 Survey of Planning (3) (Same as Planning 402.)

411 Urban Geography (3) (Same as Geography 411.)

450 Directed Field Work (3-15) Participant observation and directed face research. Project results are presented to Urban Studies students and faculty.

454 Cities and Urban American History (3) (Same as History 454.)

460 Senior Seminar (3) Variety of disciplines used to approach student selected problem. Prereq: 250, 350 and directed field work. May be repeated. Maximum: 9 hours.

465 Introduction to Urban and Professional Development (3) (Same as Political Science 465.)

472-485 Whittle Scholars Seminar (1,1) Sequence limited to and required of all Whittle Scholars each year. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.

482 Urban Development and Finance (3-15) Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.

WILDLIFE AND FISHERIES SCIENCE (993)

341 Law Enforcement and Public Relations (3) Fundamentals and general principles of local, state and federal laws and regulations governing natural resources and their management. Principles and practices of interacting with the public.

441 Wildlife and Fisheries Techniques (3) Capturing and handling fish and wildlife; population restoration; food habit sampling; wildlife damage control; marking techniques; fish culture systems; track and sign identification. Prereq: Forestry, Wildlife and Fisheries 317. 1 hour and 2 labs or field. One weekend field trip required.

443 Fisheries Science (3) Quantification and management of freshwater fisheries including population esti- mation, age and growth, biological assessment, and stockng. Prereq: Forestry, Wildlife and Fisheries 317 or Biology 230, and 6 hours of mathematics, 2 hours and 1 lab. So.

444 Ecology and Management of Wild Mammals (3) Biological and ecological characteristics of game mam-
383 Women in the Greek and Roman World (3) (Same as Philosophy 383.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

400 Topics in Women's Studies (3) Content varies. May be repeated.

410 Sex Role Development: Implications for Education and Counseling (3) (Same as Educational and Counseling Psychology 410.)

422 Women Writers in England (3) (Same as English 422.)

425 Women's Health (3) (Same as Health 425.)

432 Women in European History (3) (Same as History 432.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

433 Literary Portraits of French Women (3) (Same as French 433.)

434 Psychology of Gender (3) (Same as Psychology 434.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

453 Women in American History (3) (Same as History 453.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

466 Rhetoric of the Women's Rights Movement (3) (Same as Speech 466.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

469 Sexuality and Cinema (3) Explores issues surrounding sexuality and development from point of view of feminist film criticism. (Same as Cinema Studies 469.)

483 Afro-American Women in American Society (3) (Same as Afro-American Studies 483.)

493 Independent Study (1-15) Registration by consent of chair of Women's Studies.


496 Comparative Animal Behavior Laboratory (2) Coreq: 330. 2 labs.

501 Animal Development and Embryology Laboratory (2) Coreq: 330. 2 labs.


540 Comparative Invertebrate Biology (4) Origins, phylogeny, and functional anatomy of invertebrates with emphasis on diversity of life forms and adaptations to specific local environments. 2 hours and 2 labs.

570 Ethology and Sociobiology (3) (Same as Psychology 570.)

380 General Entomology (3) Introduction to insects: basic structure, physiology, behavior, evolution and classification of insect orders. 2 hours and 1 lab.

400 Undergraduate Research (2) Research projects under supervision of faculty. Prereq: Junior or senior standing and prior consent of instructor. May be repeated. Maximum of 4 hours may be applied toward the Zoology major.

401 Senior Thesis (3) Senior thesis, Honors Program. Prereq: Candidate for Honors Zoology degree.

402 Practicum in Zoology (2) Participation in individual or small group applications of zoology in community, government, and industry. Prereq: Biology 210, 220, 230 and prior consent of instructor.

403 General Genetics Laboratory (2) Experiments designed to illustrate basic principles of inheritance; physical organism used is Drosophila. Prereq: Biology 220, 2 labs.

404 Cytological Technique (2) Practical experience with a variety of techniques including microscopy, embedding and sectioning, chromosome preparations, autoradiography, in situ hybridization, histochemistry, and immunofluorescence. Prereq: Biology 210, 2 labs.

405-406-411-412 Minicourse in Zoology (2) Selected advanced topics in zoology, concentrated in time and subject matter. Consult departmental listing for topics offered. May be repeated for credit but a maximum of 4 hours may be applied toward the Zoology major.

409 Perspectives in Zoology (3) Forefront considerations of the life sciences. Emphasis on current developments for applications, including societal and economic impacts and ethical and moral implications. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom. An oral presentation and a referenced library-research essay are required.

410 Advanced Cell Biology (3) Molecular and supramolecular structure and functions of eukaryotic cells including cytoskeletal mechanisms, physiology, behavior, and cellular interactions. Prereq: Biology 210, 220, 2 hours and 1 lab.

420 Cell and Tissue Structure and Function (4) Animal cells and tissues at light and electron microscope levels. Prereq: Biology 210, 2 hours and 2 labs.

430 Immunology (3) (Same as Microbiology 430.)

439 Immunology Laboratory (1) (Same as Microbiology 439.)


445 Comparative Animal Physiology (3) Comparison of diverse physiological mechanisms aiding in adaptation to particular habitats and lifestyles. Prereq: Biology 210, 220; 2 years of chemistry; recommended: 230.

449 Laboratory in Physiology (2) Prereq or Coreq: 440 or 445.

450 Comparative Animal Behavior (3) Principles and methods of ethology with emphasis on ecological, developmental, physiological and evolutionary aspects. (Same as Psychology 450.)

459 Comparative Animal Behavior Laboratory (3) Introduction to observational and experimental research in ethology. Coreq: 450. (Same as Psychology 459.)

460 Evolution (3) Modern concepts of animal evolution. Prereq: Biology 220.

331 Animal Development and Embryology Laboratory (2) Coreq: 330. 2 labs.
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<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
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<td>465</td>
<td>Human Genetics (3)</td>
<td>Genetic and molecular principles and problems of human inheritance. Prereq: Biology 220.</td>
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<tr>
<td>470</td>
<td>Aquatic Ecology (3)</td>
<td>Introduction to the physicochemical nature of inland waters with description of biotic communities and their interrelationships. Prereq: Chemistry 120-130 and Biology 230. 2 hours and 1 lab.</td>
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<tr>
<td>472</td>
<td>Arachnology (3)</td>
<td>Biology of spiders, mites, scorpions and relatives. Prereq: 360 or 380. 2 hours and 1 lab.</td>
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<td>473</td>
<td>Herpetology (3)</td>
<td>Biology of amphibians and reptiles with emphasis on ecology and adaptive radiation. Prereq: Biology 230. 2 hours and 1 lab.</td>
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<tr>
<td>474</td>
<td>Ichthyology (4)</td>
<td>Evolution, classification, collection and identification, distribution and biology of fishes with emphasis on freshwater fauna of Eastern North America. Prereq: Biology 230 or consent of instructor. 2 hours and 2 labs.</td>
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<tr>
<td>475</td>
<td>Ornithology (3)</td>
<td>Behavior, ecology, populations, evolution and field identification of birds. Prereq: Biology 230. 2 hours and 1 lab.</td>
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<tr>
<td>476</td>
<td>Mammalogy (3)</td>
<td>Evolution, classification, biogeography, ecology, behavior and functional anatomy of mammals. Prereq: Biology 230 or equivalent. 2 hours and 1 lab.</td>
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<tr>
<td>480</td>
<td>Physiology of Exercise (3)</td>
<td>(Same as Physical Education 480.)</td>
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<tr>
<td>490</td>
<td>Comparative Endocrinology (3)</td>
<td>Comparative analysis of physiology and morphology of endocrine glands in vertebrates and invertebrates, their role and interaction in maintenance of the organism and species. Prereq: 440 or equivalent.</td>
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<td>491</td>
<td>Foreign Study (1-15)</td>
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