420 International Agricultural Trade and Marketing (3)
Introduction to real and monetary aspects of international trade effect on agricultural commodity flows; partial equilibrium analysis of international trade in agricultural products; institutional aspects of international marketing of agricultural products. Prereq: 320 or consent of instructor. F

430 Agricultural Policy (3)
Values, goals and policy process. Economic rationale and effects of policy. Historical development and current characteristics of commodity, credit, food, and trade policy. Prereq: 320 or consent of instructor. Sp

442 Agribusiness Management (3)
Applications of advanced decision analysis concepts and tools to analyze management decision problems in farm and nonfarm settings. Case study work on strategic planning; assessing cost structure using budgeting and break-even analysis; evaluating profitability, liquidity, and solvency; using financial statements; analyzing investments using capital budgeting; etc. Prereq: 342 or consent of instructor. F

450 Agricultural Industry Analysis and Forecasting (3)
Analytical tools for decision making in the agricultural sector; analysis of commodity supply and demand conditions; economic modeling; market forecasting; analysis of temporal and spatial patterns. Prereq: 320 and Statistics 201 or consent of instructor. F

470 Natural Resource Economics (3)
Nature of natural resources; economic efficiency as a basis for natural resource use; externalities in natural resource use; factors influencing environmental quality; alternative public policy tools for influencing natural resource use; improving environmental quality. Prereq: Economics 201. Sp

492 Off-Campus Internship (1-3)
Pre-approved supervised experience with firm or organization in the field. May be repeated up to a maximum of 6 hours. Prereq: Junior standing or consent of advisor. S/NC.E

493 Independent Study (1-3)
Directed individual or team research and report writing. Special courses in specific topic must be arranged with instructor before registering. May be repeated up to a maximum of 6 hours. Maximum of 6 hours. Prereq: Junior standing. E

AGRICULTURE AND NATURAL RESOURCES (088)

100 Orientation to Studies in Agriculture and Natural Resources (1)
Orientation to academic advising and procedures. Information about the College will be emphasized. Various invited guests will review University resources available to help students succeed at their studies. Students and advisor-student sections are included to discuss the CASNR experience. Enrollment is restricted to freshmen and transfer sophomores. Grading is S/NC. F

290 Computer Applications to Problem Solving (3)
Introduction to real and monetary aspects of international trade effect on agricultural commodity flows; partial equilibrium analysis of international trade in agricultural products; institutional aspects of international marketing of agricultural products. Prereq: 320 or consent of instructor. Sp

491 International Experience in Agriculture and Natural Resources (1-15)
Credit for formalized international experiences related to agricultural sciences and natural resources; determination of credit based on nature of the proposed experience. Student should discuss the opportunity with their faculty advisor prior to the trip to determine if it is appropriate for credit. Credit hours will be determined by the department and college depending on the extent of activity and types of projects and/or presentations to be completed by the student upon return. S/NC.

497 Honors Independent Project (1-4)
For students participating in the CASNR Honors Research and Creative Achievements Program. Consists of independent work with a faculty member. Prereq: Participation in the CASNR Honors Program. Sp

498 Honors Presentation (1)
For students participating in the CASNR Honors Program. Final written report and oral presentation of the honors project. Prereq: Participation in the CASNR Honors Program.

AIR FORCE AEROSPACE STUDIES (094)

101-102 The Air Force Today (1,1) AS100 is a survey course that introduces students to the organizational structure and mission of the Air Force; the historical perspective of the Air Force; and professional military education. Includes an introduction to communicative skills. A weekly Leadership Laboratory (LLAB) consisting of Air Force customs and courtesies, Air Force environment, drill and ceremonies is mandatory.

103-104 Leadership Laboratory (1,1) Leadership Laboratory (LLAB) includes a study of Air Force customs and courtesies, drill and ceremonies, and giving military commands; instructing, correcting, and evaluating the preceding skills; studying the environment of an Air Force officer; and learning about opportunities available to commissioned officers.

201-202 The Development of Air Power (1,1) AS200 focuses on factors contributing to the development of air power from its earliest beginnings through two world wars; the evolution of air power concepts and doctrine; and a assessment of communicative skills. A weekly Leadership Laboratory (LLAB) consisting of Air Force customs and courtesies, Air Force environment, drill and ceremonies, and field training orientation is mandatory.

203-204 Leadership Laboratory (1,1) Leadership Laboratory includes a study of Air Force customs and courtesies, drill and ceremonies, and giving military commands; instructing, correcting, and evaluating the preceding skills; studying the environment of an Air Force officer; and learning about opportunities available to commissioned officers.

205 Field Training (Academic Program) (1,4)
Role of United States military forces in contemporary world; international relations; the balance of power; and matters of national security, arms control, and overviews regional security, arms control, and terrorism. Special topics of interest focus on the military as a profession, officerhood, the military justice system, and current issues affecting military professionalism. Within this structure, continued emphasis is given to the refinement of communicative skills. A weekly Leadership Laboratory (LLAB) consisting primarily of advanced leadership experiences in office-type activities is mandatory.

403-404 Leadership Laboratory (0,0) Leadership Laboratory consists of activities classified as advanced leadership experiences. They involve planning, organizing, staffing, coordinating, directing, and controlling the military activities of the cadre; preparation and presentation of briefings and other oral and written communications; and providing interviews, guidance, and information which will increase the understanding, motivation, and performance of other cadets.

AMERICAN STUDIES (099)

310 Introduction to American Studies (3)
Explores dynamics and nature of the culture(s) of the United States through interdisciplinary study and interpretation. Consideration of both "mainstream" and "minority" cultures. Writing emphasis course.

312 Popular Culture and American Politics (3)
(Same as Political Science 312.)

320 American Cultures (3)
(Same as Anthropology 320.)

334 Film and American Culture (3)
(Same as Cinema Studies 334 and English 334.)

343 Race and Ethnicity (3)
(Same as Sociology 343.)

345 Collective Behavior and Social Movements (3)
(Same as Sociology 345.)

355 Religion and Culture in the United States (3)
(Same as Religious Studies 355.)

356 The 1960s in America (3)
(Same as History 356.)

381 Introduction to Folklore (3)
(Same as English 381.)

410 Topics in American Culture (3) Content varies. May be repeated once.

420 Political Attitudes and Behavior (3)
(Same as Political Science 420.)

423 Geography of American Popular Culture (3)
(Same as Geography 423.)

442 American Humor (3)
(Same as English 442.)

450 Seminar in American Studies (3) Intensive study of a major issue in American Studies scholarship.

456 History of Sports in the United States (3)
(Same as History 456.)

469 Freedom of Speech (3)
(Same as Speech Communication 469.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

ANIMAL SCIENCE (113)

160 Introduction to Animal Science (3)
Preparation of academic plans and career direction. Introduction to structure and production principles of the food animal and horse industries. Overview of companion and alternative livestock. Market classes and grades of cattle, poultry and poultry products, lamb and wool, and swine. 3 labs. F, Sp

220 Anatomy and Physiology of Farm Animals (3)
Skeletal and joint anatomy; muscles; blood and microcirculation; the nervous, endocrine, cardiovascular, respiratory, and digestive systems; demonstrations of physical-chemical phenomena. Prereq: Biology 120 or 130. 2 hours and 1 lab. F
319 Caribbean Cultures and Societies (3) Anthropological approaches to key aspects of Caribbean history, sociocultural pluralism, racial and class stratification, patterns of economic development, and national-level political processes. Prereq: 130 or consent of instructor. Writing-emphasis course. (Same as African and African-American Studies 319 and Latin American Studies 319.)

320 American Cultures (3) Anthropological perspectives on cultural diversity in America, including the immigrant experience and expressions of ethnicity, intercultural relations, occupational and interest group subcultures. Writing-emphasis course. (Same as American Studies 320.)

321 Indians of Northwest North America (3) Survey of American Indian cultures found in the Northwest Coast, Columbia Plateau, and Northern Great Basin culture areas. Writing-emphasis course.

357 Junior Honors in Anthropology (3) Analytical, integrative review of current directions of research and theory in Anthropology. Open to students with an overall GPA of 3.2 who have fulfilled all progression requirements to declare a major in Anthropology.

360 North American Prehistory (3) Prehistoric cultures of North America from initial occupation of the continent to European contact. Writing-emphasis course.

361 Historical Archaeology (3) Historical archaeology of the Euro-American, Asian and African, and Native American cultures in the United States from 15th to 20th centuries.

362 Principles of Archaeology (3) Research strategies used in developing method and theory, constructing cultural histories, identifying site function and settlement-subistence patterns, and evaluating explanations of cultural change. Prereq: 120 or consent of instructor.

363 Prehistory of Tennesse (3) Archaeological principles and theory illustrated in history of archaeological research in Tennessee and through survey of prehistoric Indian cultures from initial occupation of the state to European contact. Recommended: 360. Writing-emphasis course.

373 African Religions (3) Same as Religious Studies 373 and African and African-American Studies 373.

400 Readings in Anthropology (1-6) Problem-oriented directed readings in anthropology. Prereq: Anthropology majors with senior standing or consent of instructor. May be repeated. Maximum 6 hours.

410 Principles of Cultural Anthropology (3) Exploration and illustration of major concepts, theories, and methods of cultural anthropology, with application to analysis of specific ethnographies. Prereq: 130.

411 Linguistic Anthropology (3) Basic linguistic concepts applied to research in cultural anthropology, particularly investigation of relationships between language and culture. Prereq: 130 or Linguistics 200. (Same as Linguistics 411.)

412 Folklore in Anthropology (3) Introduction to anthropological study of folklore, using folklore and folklife materials from various tribal, peasant, and complex societies. Prereq: 130 or consent of instructor.

413 Dynamics of Culture (3) Definition and in-depth study of major forms of culture change, ranging from evolution and diffusion to religious revitalization and political revolt. Continuity and change in diverse cultural settings examined through use of archaeological, ethnohistoric, and contemporary cases. Prereq: 130 or consent of instructor.

414 Political Anthropology (3) Examination of the organization and dynamics of power and politics in both stateless and state-level societies. The role of symbols, rituals, and ideologies in producing and reproducing power relations. The relationship between actors (individuals, groups, state) and power structures. The encapsulation of traditional political forms and systems within modern states. Prereq: 130 or consent of instructor. Writing-emphasis course.

416 Applied Anthropology (3) Introduction to principles, principles of cultural anthropology applied to practical problems in non-academic settings. Overview of career opportunities in various domains of applied anthropology. Prereq: 130 or consent of instructor.

430 Fieldwork in Archaeology (3-9) Practicum work in archaeological data recovery and analytical techniques. Prereq: Consent of instructor. May be repeated. Maximum 9 hours.

431 Ethnographic Research (3) Conceptual and practical exploration of methods and techniques cultural anthropologists use in fieldwork. Prereq: 130 or consent of instructor.

435 Historical Archaeology Laboratory (3) Laboratory procedures for the processing, identification, and interpretation of artifacts from historical sites. Artifactual material from historic East Tennessee sites will be used for class projects. Prereq: 361 recommended.

440 Cultural Ecology (3) Concepts and methods in studying dynamics between prehistoric and present day cultures and their environments. Topics include ecological theory, methods of analysis, and review of case studies. Prereq: 120, 130, 410, or consent of instructor.

450 Current Trends in Anthropology (3) Analytical, integrative review of current directions of research and theory in anthropology. May be repeated. Maximum 6 hours.

457 Senior Honors in Anthropology (3) Research and writing of the senior honors thesis. Open to students with overall GPA of 3.2 and an Anthropology GPA of 3.5 who have completed Anthropology 357 with a grade of B or better. Prereq: 130.

459 Selected Topics in Anthropology (3) Theoretical issues in anthropology for undergraduate students. Topics may include practical experience or laboratory study of anthropological materials. May be repeated. Maximum 6 hours. Prereq: Either 110, 120, 130, or consent of instructor.

462 Early European Prehistory (3) Origins and evolution of human culture in Europe through the beginnings of settled life. Primary focus on Paleolithic/Mesolithic chronology and lifeways. Prereq: 120 or consent of instructor. Writing-emphasis course.

463 Rise of Complex Civilizations (3) Development of complex societies in Old World from origins of agricultural economies to rise of States. Focus on Mesolithic, Neolithic, and Metal Age lifeways in Africa, Europe, and Asia. Prereq: 120 or consent of instructor. Writing-emphasis course.

464 Principles of Zooarchaeology (3) Basic osteological studies of major vertebrate groups, with emphasis on the aboriginal’s use of animals in subsistence and culture. Identification and interpretation of archaeologically-derived molluscan and vertebrate remains, with introduction to laboratory use of comparative collections. Prereq: 120 or consent of instructor.

465 Urban Archaeology (3) Field archaeology and interpretation of archaeological remains on historic urban sites in the United States. Course content sites include European settlements and field and laboratory research on urban sites in East Tennessee. Prereq: 361 recommended.

480 Human Osteology (4) Intensive examination of the human skeleton. Prereq: 110 or consent of instructor. 3 hours and 1 hour lab.

481 Museology I: Museums, Purpose and Function (3) (Same as Art 481.)

482 Museology II: Exhibition Planning and Installation (3) (Same as Art 482.)

484 Museology III: Field Projects (1-12) (Same as Art 484.)

485 Oral Biology (4) Intense examination of human dentition and oral skeletal structures including dento-facial embryology/growth, histology, gross tooth morphology and pathology. Prereq: Anthropology 480 or consent of instructor.

490 Primate Evolution (3) Living and fossil primate taxonomy, ecology, and comparative anatomy. Survey of primate fossil record with emphasis on the origin or major primate lineages. Prereq: 110 or consent of instructor.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

494 Primate Behavior (3) Social organization and behavior of selected primates including group composition, size, and structure; patterns of mating; other social interactions; communication; and cultural behavior. Application of primate studies to human ethology. Prereq: 110 or consent of instructor.

495 Human Paleontology (4) Intensive survey of the human fossil record from the earliest hominid remains to the earliest origins of modern human form. Prereq: 110 or consent of instructor.

496 Biology of Human Variability (3) Introduction to human populations; human adaptation, biological features of major human races, relationships of major groups to one another. Prereq: 110 or consent of instructor. (Same as African and African-American Studies 496.)

ARABIC (127)

121-122 Elementary Modern Arabic I, II (5,5) Same as Asian Studies 121-122.

221-222 Intermediate Modern Arabic I, II (5,5) (Same as Asian Studies 221-222.)

ARCHITECTURE (133)

101 Introduction to the Built Environment (3) Scope and definition of the built environment and in relation to contemporary society, building industry, and allied design professions. Architectural design as a creative process. Orientation to courses and programs of the school. Coreq: 171. F


111 Architecture and the Built Environment (3) An introduction to architecture and the built environment for non-architecture majors. Significance of our surrounding environment, forces that create design. Survey of examples from local to global. Strategies for individual and collective involvement.

121 Drawing and Perception (2) Exploration of drawing as a means of visual thinking and method of communication, addressing perceptual phenomenon. Exploration of different media, concentrating on freehand drawing. Includes line drawing, tone, shade, shadow, depth cues. Compositional principles will be introduced. Drawings based on observation, including figure drawing and campus visits. Coreq: 171. F

122 Drawing and Abstraction (2) Exploration of drawing as a means of visual thinking and method of communicating practical and creative aspects of design. Emphasis on communicating form and space. Coreq: 171. F


180 Introduction to Architecture (2) Introduction to architecture as an intellectual discipline. Design as a creative endeavor central to the discipline and its profession.

181 Introduction to Graphic Skills (4) Introduction to freehand drawing and orthographic techniques emphasizing visualization and simulation. The work will be explored and developed in the studio (4 credit hour studio).

182 Introduction to Basic Design I (6) Same as Art 182. Introduction to Basic Design II (6) (Same as Art 182.) The work will be explored and developed in the studio (6 credit hour studio and 3 credit hour studio).
341 Environmental Control Systems I (4) Heating, ventilating, and air-conditioning systems, including passive and active solar energy systems. Plumbing and fire-protection systems. Prereq: 231 and 232. F.
345 Principles of Environmental Control I (3) Introduction to heating, ventilating, air conditioning, solar energy, plumbing and fire-protection systems. Prereq: 180 and M. Arch Admission.
346 Principles of Environmental Control II (3) Introduction to computers and hardware, and three-dimensional application in architecture. Emphasis on learning how the computer can assist in design process by modeling, visualizing and analyzing building designs. Introduction to drafting, three-dimensional modeling, and desktop publishing.

322 Introduction to Architectural Technology (3) Place of building technology in architectural design. Introduces concepts and theory of structures, building materials and construction; and environmental controls. F, Sp.
271 Architectural Design I (6) Introduction to contextual determinants in architectural design. Role of the city and the landscape in architectural design. Methods of analyzing form and in determining design strategies. Representational skills developed including drawing, diagramming and modeling techniques. Prereq: 172. F.
272 Architectural Design II (6) Studies in architectural space. The role of function, habitation, movement, structure and content as determinants of spatial form explored through a series of design projects ranging in scale from furniture to dwellings. Development of design processes, including analytical skills, diagramming, and determining design organizational strategies. Use of computer aided visualization techniques. Prereq: 271. Sp.
281 Principles of Architectural Form (6) Principles of architectural form emphasizing building configuration and order. Design of simple buildings which explore possibilities of site, use, shape and materials and color. (1 credit hour seminar and 5 credit hours studio). Prereq: 182 or equivalent.
282 Principles of Architectural Design (6) Principles of architectural design emphasizing site, function, circulation, structure, technology, context and expression of building (1 credit hour seminar and 5 credit hours studio). Prereq: 281.
324 Advanced Architectural Structures (3) Philosophical ideas relating to structural design in relation to materials and form. Advanced mathematical and experimental analysis of structures, including use of computer programs. Prereq: 323 or equivalent.
335 Structures in Architecture I (3) Introduction to the structural properties of materials, foundations and simple statically determinant assemblies of buildings. Prereq: 180 and M. Arch Admission.
336 Structures in Architecture II (3) Continuation of design and analysis of simple structures in wood, steel and concrete based on loading requirements. Use of construction and building codes, handbooks and tables for selection of structural members. Prereq: 335 or special permission.
340 American Architecture, 1840-1940 (3) Stylistic periods from the Gothic Revival through the Twentieth Century.
341 History of Landscape Architecture (3) Intellectual, societal, and geographical influences which provide the theoretical basis for design throughout history. Selected examples of landscape architecture analyzed in terms of design.
342 Modern European Architecture (3) Twentieth century architecture in Russia, Czechoslovakia, Poland, Hungary, East Germany, Rumania, Bulgaria, Yugoslavia.
426 Special Topics in Architecture (1-6) Faculty initiated courses. Topics vary. May be repeated. Maximum credit 12 hours. Prereq: consent of instructor. E.
431 Structural and Mechanical Applications (3) Case study analysis and selection of structural and mechanical systems, investigating the conceptual integration of technical information into a unified design solution. Prereq: 332, 342. Coreq: 471. F.
433 Computer Applications in Design II (3) Advanced computer aided design using three-dimensional modeling and technical analysis using computers to augment building design. Independent studies under faculty direction. Prereq: Consent of instructor. Sp.
443 Building Energy Analysis (3) Balancing heat flow through external skin of residential and small and large commercial buildings; local climate evaluation; site planning, building size and orientation, window area, wall treatment, infiltration control. Energy use quantification, methods and economic analysis of energy efficient design features. Architectural program analysis of exterior and internal load dominated buildings. Prereq: 341.
444 Advanced Environmental Control Systems (3) In-depth analysis and innovative concepts in design of heating, ventilating, and air conditioning. Prereq: 341.
445 Advanced Lighting (3) In-depth analysis and innovative concepts in design of lighting. Prereq: 341.
462 Professional Practice (4) Management and organizational theories and practices for delivering professional design services. Included are assessment of the building industry and its influence on practice; analysis of the basic management functions within professional firms; and legal and ethical concerns facing practitioners today. Special obligations and privileges of the design professional. Sp.
463 Architectural Development (3) Principles and practice of the architect as a designer and developer. Impact of economics, finance and urban policy on the design and development of real estate. Open to all students.
471 Architecture Design V (6) Design project from conceptual through design development phase. Specifications for a building concept initiated in 481. Structural, energy and environmental issues. Prereq: 371. F.
473 Architectural Photography (3) Techniques of preserving photographic evidence in architectural design, research, and presentation medium. Application of photographic techniques, printing and processing color, black and white. Prereq: 471. F.
474 Comprehensive Design I (3) Preparation and Programming for Projects. (3) Formation of project statement, documentation and analysis of project data. Preparation of background and program information. Goals and economics set forth. To be taken the semester preceding 482.
481 Advanced Architectural Design Topics (6) Faculty initiated design projects. Advanced architectural topics not covered under 483, 484, 485, 486, or 489. Prereq: 471. F.
ART (140)
101 Studio Fundamentals: Drawing and Design (2) Introduction to basic drawing media, concepts and techniques and to the elements and principles of pictorial organization.

103 Studio Fundamentals: Three Dimensional Design (2) Projects dealing with real space and three dimensional materials. Primarily for art, architecture, art education, and interior design and housing majors.

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For Non-majors only. Courses may be repeated, medium may not be repeated. Maximum 12 hours.

299 Special Topics (3) Student or instructor-initiated course offered at convenience of department. May be repeated. Maximum 12 hours.


ART DESIGN/GRAPHIC (136)
151 Graphic Design History (3) Major movements and pivotal artists/designers and directors, 1850 to the present, and their impact on current graphic design trends. (Cannot be used to fulfill art history requirement.)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For Non-majors only. Courses may be repeated, medium may not be repeated. Maximum 12 hours.

251 Beginning Graphic Design (3) Introduction to the elements and principles of graphic design including typography, layout, Survey. The design process, tools, and production. May be repeated. Maximum 6 hours. Prereq: ART 101 and 103. Art Design/Graphic Design 151, all with a grade of C or better.

254 Black and White Illustration (3) Black and white media and production techniques as applied to product and editorial illustration. Prereq: ART 101.

256 Individual Projects in Graphic Design (3) Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

259 Special Topics: Graphic Design (3) Student or instructor initiated course offered at discretion of department. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

350 Graphic Design Portfolio Review (6) Review of prior work in graphic design. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172 and 173, all with a grade of C or better. Coreq: Coreq: Art Design/Graphic Design 252. May be repeated. Satisfactory/No credit only.

351 Intermediate Graphic Design I (3) Concept development and the study of graphic design elements including typography and imagery and their relationship to the design process. Prereq: Art Design/Graphic Design 251, all with a grade of C or better.

352 Intermediate Graphic Design II (3) Investigation of sign, symbols, marks and identity systems. Prereq: Art Design/Graphic Design 351 with a grade of C or better.

354 Color Illustration (3) Flat and process color media and production techniques as applied to product and editorial illustration. Prereq: 254 and successful completion of any portfolio review.

356 Graphic Design Production (3) Traditional and computer-generated techniques for the production of print media in graphic design. Introduces to computer systems, software and techniques.

396 Airbrush Painting (3) Techniques of airbrush painting; skills and creative applications emphasized. Prereq: Art Drawing 211.

405 Computer Enhanced Graphic Design (3) Exploration of new technologies and their application to graphic design. Prereq: 351, 356 with a grade of C or better and consent of instructor. May be repeated. Maximum 6 hours.
444 Graphic Design Center Practicum (3) Practical work experience in a student-managed, on-site studio. Prereq: 350 and consent of instructor. May be repeated. Maximum 6 hours.

451 Advanced Graphic Design (3) Theory and techniques of visual problem-solving as applied to advanced applications of graphic design. Prereq: 352 with a grade of C or better.

452 Graphic Design Seminar (3) Discussion of design and professional issues including politics, economics, and ethics for the graphic designer. Culminates in a student-initiated project. Prereq: 451 with a grade of C or better.

453 Advertising Illustration (3) Media and techniques as applied to editorial illustration for books, magazines, and newspapers. Prereq: 254 and successful completion of any portfolio review.

455 Graphic Design Professional Seminar (3) Professional practices including client relationships, design management and business practices. Assembly, organization and editing of the professional portfolio. Prereq: or Cons.

464 Graphic Design Practicum (3-12) Practical work experience in the graphic design field. Only by pre-arrangement with the department. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

495 Special Topics in Graphic Design (3) Student or instructor-initiated course offered at discretion of department. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

493 Independent Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

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.

ART EDUCATION (141)

301 Foundation of Art Education (3) Basic philosophy and structure including directed learning activities in two and three dimensional design, art appreciation, and teaching methodology. F, Sp, Su.

302 Multiculturalism in Visual Art (3) Selected cognitively intensive experiences involving multicultural visual art. Prereq: Permission of instructor.

303 Concepts of Sculpture and Crafts (3) Processes in teaching of sculpture and crafts including pertinent literature and research. Prereq: 301. F

350 Field Experience (1) Tasks related to teaching and to teacher roles. May be repeated. Maximum 2 hours. Prereq: Admission to Teacher Education Program. Satisfactory/No credit only. F, Sp

400 Curriculum Planning and Teaching Strategies (3) Program development, instructional methods, professional literature, contemporary issues, simulation and micro teaching situations. Prereq: 301 and admission to Teacher Education Program. Sp

ART HISTORY (139)

162 Art of Africa, Oceania, and Pre-Columbian America (3) Survey of the traditional arts of the cultures of Africa, Oceania, and Pre-Columbian America (focusing primarily on the period before the European conquest). Sculpture, painting, pottery, textiles, architecture and human adornment will all be examined. (Same as Medieval Studies 381 and Judaic Studies 425.)

172 Western Art (3) Major monuments in Western Art with emphasis on European and American art from the Renaissance to the present. Two-hour lecture and one-hour discussion each week.

173 Western Art (3) Major monuments in the history of European and American Art from the Renaissance to the present. Two-hour lecture and one-hour discussion section each week.

177 Honors: Western Art I (3) Consent of Department required. Major monuments in Western Art with emphasis on Europe from prehistory through the Middle Ages. Study grounded in writing, reading, and discussion. Writing-emphasis course.

178 Honors: Western Art II (3) Consent of Department required. Major monuments in the history of European and American Art from the Renaissance to the present. Study grounded in writing, reading, and discussion. Writing-emphasis course.

183 Asian Art (3) Selected works of painting, sculpture, architecture, and other forms in India, China, Japan, and to a lesser extent, Korea and Southeast Asia from prehistory to the 20th century. Study grounded in writing, reading, and discussion. Writing-emphasis course.

279 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.

276 Seminar in Art History (3) Variable theme; emphasis on methodology and skills in writing. Required for Art History majors. Prereq: junior or senior standing and completion of at least 12 hours in art history, or consent of instructor. May be repeated with consent of instructor for a maximum of 6 hours. Writing-emphasis course.

403 History of Photography (3) Survey of the history of photography from the introduction of the daguerreotype and calotype to more recent trends. Emphasis will be placed on aesthetic and social use of photography as a medium for artistic expression.

411 Art of South and Southeast Asia (3) A survey of the art and architecture of the Indian subcontinent and Southeast Asia from 2000 B.C. to the 20th century. The major achievements of each period are examined in relation to their religious, political, and social contexts. Writing emphasis course.

415 Art of China (3) A survey of the art and architecture of China from the neolithic period to the 20th century. The major achievements of each period are examined in relation to their religious, political, and social contexts. Writing emphasis course.

419 Art of Japan (3) A survey of the art and architecture of Japan from the neolithic period to the 20th century. The major achievements of each period are examined in relation to their religious, political, and social contexts. Writing emphasis course.

425 Early Christian and Byzantine Art to 1350 (3) Art in Italy and the Eastern Empire from the beginnings of Christianity to A.D. 1350. May be repeated. Maximum 12 hours.

431 Medieval Art of the West, 800-1400 (3) Western European art of the “Dark Ages,” Romanesque, and Gothic periods. Writing-emphasis course. (Same as Medieval Studies 381 and Judaic Studies 431.)

441 Northern European Painting, 1350-1600 (3) From court art of late Middle Ages to Northern Renaissance. Emphasis on Van Eyck, Roger van der Weyden, and Durer; early printmakers. Writing-emphasis course. (Same as Medieval Studies 372.)

442 Art of Northern Europe, 1600-1675 (3) Concentrated study of Bruegel, Rubens, Rembrandt, Georges de La Tour, Remonnik, Poussin, and Hals. Writing-emphasis course.

451 The Art of Italy, 1250-1450 (3) Development of naturalism. Revival of antiquity and development of theories of perspective in the Early Renaissance. Including Duccio, Giotto, Masaccio, Donatello, Botticelli. Writing-emphasis course. (Same as Medieval Studies 382.)

452 Art of Italy, 1475-1575 (3) Concentrated study of Leonardo da Vinci, Michelangelo, Titian, Raphael, and Giorgione. Writing-emphasis course.

453 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. Writing-emphasis course.

454 Renaissance and Baroque Theory (3) Addresses the theory of Western art in the early modern period with emphasis on the development and evolution in European art during the Renaissance and Baroque periods. Includes: studies in art history and their historical, aesthetic, and social contexts. Writing emphasis course. (Same as Medieval Studies 172 and 173, or their Honors equivalents), or consent of instructor. Writing emphasis course.

461 Art of Southern and Eastern Africa (3) Art traditions of the eastern and southern regions of Africa. Sculpture, painting, pottery, textiles, architecture, and human adornment will be examined. Some ancient Stone and Iron Age traditions will be examined, but the main emphasis will be on the diverse ethnic and regional art traditions practiced in the area from the 19th century to the present. Writing emphasis course.

462 Art and Archaeology of Ancient Africa (3) Historical art traditions of sub-Saharan Africa. Topics to be covered include rock art, rock paintings, pottery, textiles, architecture, and human adornment. May be repeated. Some ancient Stone and Iron Age traditions will be examined, but the main emphasis will be on the diverse ethnic and regional art traditions practiced in the area from the 19th century to the present. Writing emphasis course.

463 Arts of the African Diaspora (3) examines the aesthetic, philosophical and religious patterns of the African-American traditions of Brazil, Surinam, the Caribbean and the United States. Emphasis will be placed on the full range of art forms, including the sculptural and performance traditions as well as architecture, textile, pottery, and metal arts. Writing-emphasis course.

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

472 History of 20th Century American Art (3) Developments in architecture, painting, and design from 1900. Writing-emphasis course.
443 History of Modern Art and Film (3) Study of the development and interaction between the cinematic arts and the visual arts within the context of modern art history. Available for Art History credit. (Same as Cinema Studies 433.)

445 Cinematography as Art (3) Continued development of concepts and techniques for the creation of film as an art form with an emphasis on individual projects. Prereq: 255 or consent of instructor. May be repeated. Maximum 9 hours. (Same as Cinema Studies 435.)

446 Video Art (3) Continued development of concepts and techniques for the creation of video works as an art form with an emphasis on individual projects. Prereq: 236 and 330 or permission of instructor. May be repeated. Maximum 9 hours. (Same as Cinema Studies 436.)

439 Special Topics in Media Arts (3) Student or instructor initiated course offered at convenience of department. May be repeated. Maximum 12 hours.

441 Digital Photography II (4) Continuation of exploration and implications of use of computer in photography. Prereq: 341, and permission of instructor.

442 Large Format Photography II (4) Studio course that continues the exploration of the use of the large format camera in photography. Prereq: 342 and permission of instructor.

493 Independent Study (1-15) Prereq: Consent of instructor.

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

ART PRINTMAKING (132)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For Non-majors only. Courses may be repeated, medium may not be repeated. Maximum 12 hours.

231 Photography I (3) Art of black and white photography. Field and studio shooting, history of photography, basic developing, and enlarging techniques.

235 Introduction to Cinematography as Art (3) Development of basic concepts and techniques for the creation of film as an art form. Prereq: or Coreq: 231 or consent of instructor. (Same as Cinema Studies 235.)

236 Introduction to Video Art (3) Development of basic concepts and techniques for the creation of video works as an art form. (Same as Cinema Studies 236.)

239 Special Topics in Media Arts (3) Student or instructor-initiated course offered at convenience of department. May be repeated. Maximum 12 hours.

330 Media Arts Portfolio Review (0) Review of prior work in media arts. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172 and 173 with a grade of C or better. Satisfaction/No Credit only.

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


342 Large Format Photography I (4) Studio course introducing the advanced practice of fine art photography. Large format view camera. Prereq: 231, 311, and 331; and consent of instructor.

431 Photography III (3-6) Individual development of photographic problems and techniques. Prereq: 231 and 331. May be repeated. Maximum 12 hours.

432 Painting I: Introduction (3) Capacities of oil and acrylic painting on canvas. Prereq: 101, 103 for art majors; none for non-art majors.

434 Painting II (3) Techniques of expression in oil and acrylic. Prereq: Painting 213. May be repeated. Maximum 6 hours.


436 Watercolor II (3) Capacities of transparent watercolor, with attention to individual exploration of surface, space, and color. Prereq: Painting 215. May be repeated. Maximum 8 hours.

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

443 History of Modern Art and Film (3) Study of the development and interaction between the cinematic arts and the visual arts within the context of modern art history. Available for Art History credit. (Same as Cinema Studies 433.)

445 Cinematography as Art (3) Continued development of concepts and techniques for the creation of film as an art form with an emphasis on individual projects. Prereq: 255 or consent of instructor. May be repeated. Maximum 9 hours. (Same as Cinema Studies 435.)

446 Video Art (3) Continued development of concepts and techniques for the creation of video works as an art form with an emphasis on individual projects. Prereq: 236 and 330 or permission of instructor. May be repeated. Maximum 9 hours. (Same as Cinema Studies 436.)

493 Independent Study (1-15) Prereq: Consent of instructor.

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.

ART PAINTING (138)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For Non-majors only. Courses may be repeated, medium may not be repeated. Maximum 12 hours.

213 Painting I: Introduction (3) Capacities of oil and acrylic painting on canvas. Prereq: 101, 103 for art majors; none for non-art majors.

214 Painting II (3) Techniques of expression in oil and acrylic. Prereq: Painting 213. May be repeated. Maximum 6 hours.


216 Watercolor II (3) Capacities of transparent watercolor, with attention to individual exploration of surface, space, and color. Prereq: Painting 215. May be repeated. Maximum 8 hours.

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

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. Total of 4 hours required for students in the Painting concentration.

314 Painting Portfolio Review (0) Review of prior work in painting. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172 and 173 with a grade of C or better. Satisfaction/No Credit only.

315 Watercolor III (4) Individual expression with varied water-based media on paper. Prereq: 216 and 316 or consent of instructor. May be repeated. Maximum 8 hours. Total of 8 hours required for students in the Watercolor concentration.

316 Watercolor Portfolio Review (0) Review of prior work in watercolor. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172 and 173 with a grade of C or better. Satisfaction/No Credit only.

413 Painting IV (6) Advanced painting stressing individual concepts and personal expression with varied media. Prereq: 313. May be repeated. Maximum 12 hours. Total of 12 hours required for undergraduate students in the Painting concentration.

415 Watercolor IV (6) Advanced painting with water-based media on paper stressing individual concepts and personal approaches. Prereq: 315. May be repeated. Maximum 12 hours. Total of 12 hours required for undergraduate students in the Watercolor concentration.

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: Consent of instructor. May be repeated. Maximum 12 hours.

493 Independent Study (1-15) Prereq: Consent of instructor.

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.

ART PRINTMAKING (132)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For Non-majors only. Courses may be repeated, medium may not be repeated. Maximum 12 hours.

262 Intaglio I (3) Metal plate intaglio printing in traditional and contemporary techniques of etching, softground, drypoint, aquatint, and color methods. Prereq: 101.

263 Lithography I (3) Stone and aluminum plate lithography applying traditional and contemporary techniques of crayon, tusche, transfer methods, state proofs and photolithography. Prereq: 101.

264 Screen Printing I (3) Screen printing as a fine art medium including development and application of various basic stencils in compositional printing. May be repeated. Maximum 8 hours. Prereq: 101.

269 Special Topics in Printmaking (3) Student or instructor-initiated course offered at convenience of department. Prereq: 101 and determined by department for individual topic. May be repeated. Maximum 12 hours.

291 Papermaking Workshop (3) Papermaking as a medium for two- or three-dimensional art. Includes sheet forming, embedding, laminating, embossing, pulp dyeing, inlaying, casting, and other related techniques. Emphasis on development of a personal form.

360 Printmaking Portfolio Review (0) Review of prior work in printmaking. Successful completion required prior to registration for junior and senior courses. Prereq: Art History 172 and 173 with a grade of C or better. Satisfaction/No Credit only.

362 Intaglio II (4) Exploration of concepts and techniques in intaglio printing including work from zinc, photo-zinc, and steel plates. Prereq: 262 and 360 or consent of instructor. May be repeated. Maximum 8 hours.

363 Lithography II (4) Exploration of concepts and techniques in lithography from stones, aluminum plates and photo-plates. Prereq: 264 and 360, or consent of instructor. May be repeated. Maximum 8 hours.

364 Screen Printing II (4) Advanced work with basic screen printing techniques including photo screening. Emphasis upon image development and personal concept. Prereq: 264 and 360, or consent of instructor. May be repeated. Maximum 8 hours.

462 Intaglio III (3-6) Exploration of individual projects through advanced color printing methods and combinations on or print media. Prereq: 363, or consent of instructor. May be repeated. Maximum 12 hours.

463 Lithography III (3-6) Exploration of individual projects through advanced lithographic methods in combination with other print media. Prereq: 363, or consent of instructor. 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, or consent of instructor. May be repeated. Maximum 12 hours.
ART SCULPTURE (143)

191 Introduction to Studio Art: Various Media (3)
Individual sections for various artistic disciplines. For
Non-majors only. Courses may be repeated, medium may
not be repeated. Maximum 12 hours.

241 Sculpture I (3) Problems which explore basic
materials and techniques including clay modeling, plaster
construction, moldmaking. Limited work in plastics,
wood, or metal.

242 Life Sculpture (3) Modeling techniques in clay
and wax, working from figure. Possibilities of expression
with human figure as subject. Modeling process as both
observational and material handling technique. Prereq: 101,
103, or consent of instructor. May be repeated. Maximum
6 hours.

243 Metal Cast Sculpture (3) Metal casting methods in
bronze or aluminum. May include lost wax, styrofoam,
sand, ceramic shell casting methods. May be repeated.
Maximum 6 hours.

245 Steel Sculpture I (3) Problems to introduce steel as
a material for the creation of sculpture. Development of
welding techniques.

246 Mixed Media Sculpture I (3) Use of two or more
materials, and a variety of sculptural techniques, joined
to create dimensional form. May include carving, mod-
eling, molding, construction, and found objects.

249 Special Topics in Sculpture (3) Students on instructor
initiated course offered at convenience of department.
Prereq: Art 101 and 103 with a grade of C or better. May be
repeated. Maximum 12 hours.

340 Sculpture Portfolio Review (0) Review of prior work
in sculpture. Successful completion required prior to
registration for junior and senior courses. Prereq: Art
History 172 and 173 with a grade of C or better. Satisfactory/No credit only.

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

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

345 Steel Sculpture II (3) Further exploration of construc-
tion 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.

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 instruc-
tor-initiated course offered at convenience of depart-
ment. Prereq: Successful completion of any Portfolio
Review (Art 300), or Art Ceramics 320, or Art Design
Graphic 350, or Art Drawing 312, or Art Media Arts 330,
or Art Painting 314, or Art Painting 316, or Art Printmaking
360, or Art Sculpture 340). May be repeated. Maximum
12 hours.

493 Independent Study (1-15) Prereq: Consent of
instructor.

494 Individual Problems (3) Prereq: Consent of instruc-
tor. 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.

ART ARROW MONT PI BETA PHI SCHOOL OF ARTS AND
CRAFTS

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.

230 Photography (2-4) Beginning to intermediate. May be
repeated.

240 Painting (2-4) Beginning to intermediate. May be
repeated.

250 Metal Design (2-4) Beginning to intermediate. May be
repeated.

260 Fibers (2-4) Beginning to intermediate. May be
repeated.

270 Fabric (2-4) Beginning to intermediate. May be
repeated.

280 Enameling (2-4) Beginning to intermediate. May be
repeated.

290 Wood (2-4) Beginning to intermediate. May be
repeated.

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

410 Drawing (2-4) Intermediate to advanced. May be
repeated.

420 Ceramics (2-4) Intermediate to advanced. May be
repeated.

430 Photography (2-4) Intermediate to advanced. May be
repeated.

440 Painting (2-4) Intermediate to advanced. May be
repeated.

450 Metal Design (2-4) Intermediate to advanced. May be
repeated.

460 Fibers (2-4) Intermediate to advanced. May be
repeated.

470 Fabric (2-4) Intermediate to advanced. May be
repeated.

480 Enameling (2-4) Intermediate to advanced. May be
repeated.

490 Wood (2-4) Intermediate to advanced. May be
repeated.

ASIAN LANG UAGES (144)

131-132 Elementary Chinese I, II (5, 5) Must be taken in
sequence. F, Sp.

151-152 Elementary Japanese I, II (5, 5) Must be taken in
sequence. F, Sp.

199 Chinese and Japanese Language and World
Business (3) Examines the importance of foreign trade at
the local, state, and national levels. Interdisciplinary
faculty from the Colleges of Business Administration
and Arts and Sciences provide an overview of the value
of language study and international cultural awareness
in the program in Language and World Business. See
Directors for further information. F.

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.
F, Sp.

311-312 Chinese Literature in English Translation
(3, 3) 311-Classic literature. 312-Vernacular and modern
literature. Writing-emphasis course.

313-314 Japanese Literature in English Translation
(3, 3) 313-Classical/Traditional: masterpieces of poetry,
fiction, and drama to 1668. 314-Modern: masterpieces of
fiction since 1868. Writing-emphasis course.

331-332 Advanced Chinese I, II (4, 4) Prereq: 231-232 or
equivalent or consent of instructor. Must be taken in
sequence.

351-352 Advanced Japanese I, II (4, 4) Includes conver-
sation, drill, and composition practice with native speaker
as well as reading and translation. Prereq: 251-252. Must
be taken in sequence.

431 Readings in Chinese Literature (3) Prereq: Mastery of
intermediate-level of Chinese or consent of instructor.
May be repeated. Maximum 9 hours.

451 Readings in Japanese Literature (3) Prereq: Master-
y of intermediate-level of Japanese or consent of
instructor. May be repeated. Maximum 9 hours.

490 Chinese and Japanese Internship (1-15) Career-
related experiences in the United States or abroad with
permission of the Language and World Business Direc-
tor. For Language & World Business majors only. Sat-
isfactory/No Credit grading only.

491 Chinese and Japanese Foreign Study (1-15)

ASIAN STUDIES (145)

101-102 Asian Civilization (3, 3) Comparative study of
civilization 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-emphasis course.

121-122 Elementary Modern Standard Arabic I, II (4, 4)
Taped language program. Must be taken in sequence. Enroll-
ment by permission of instructor.

141-142 Elementary Modern Hebrew I, II (4, 4) Taped
language program. Must be taken in sequence. Enroll-
ment by permission of instructor.

161-162 Elementary Persian (4, 4) Taped language
program. Must be taken in sequence. Enrollment by
permission of instructor.

221-222 Intermediate Modern Standard Arabic I, II (4, 4)
Taped language program. Must be taken in sequence.
Enrollment by permission 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.

332 Classical Islam (3) (Same as Religious Studies
332).

333 Islam in the Modern World (3) (Same as Religious
Studies 333).

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; hy-
opotheses and theories of the origin and evolution of our
solar system; 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 minimum of mathematical analy-
sis. Must be taken in sequence. 4 hours lecture-demon-
stration and star chart field work. Only one of the three
sequences 151-152, 161-162, or 217-218 may be taken
for credit.
461 Introduction to Language Pathology in Children (3) Nature, etiology and treatment of language retardation in children; observations of language therapy required. Prereq: 320 or consent of instructor.

473 Introduction to Audiology Assessment (3) Basic principles of clinical audiology; pure tone, speech, masking and overview of special audiology tests. Prereq: 303.

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 components/characteristics, assistive devices, audiology, 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 equivalents or consent of instructor.

499 Senior Seminar in Communication Sciences and Disorders (3) Capstone Experience; A writing emphasis course exploring the forces shaping the profession of communication disorders in the past, present and future. Prereq: Consent of instructor and senior standing.

**BIOCHEMISTRY AND CELLULAR AND MOLECULAR BIOLOGY (188)**

- **320 Speech and Language Development (3)** Nature, etiology, and incidence of speech, hearing, and language disorders.

- **300 Introduction to Communication Disorders (3)** Nature, etiology, and incidence of speech, hearing, and language disorders.

- **302 Acoustics and Perception (3)** Basic acoustics. Introduction to psychoacoustics and speech perception.


- **305 Phonetics (3)** Basic phonetics including recognition and production of spoken English sounds with analysis of their functional aspects of articulation; phonetic aspects of dialect variation.

- **306 Anatomy and Physiology of Speech (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.

- **341 Stuttering (3)** Nature, appraisal and treatment. Prereq: 300 or consent of instructor.

- **435 Introduction to Speech Sound Disorders (3)** Etiology, diagnosis and treatment of articulation and phonological disorders. Prereq: 300, 305 or consent of instructor.


- **445 Clinical Practice in Audiology (1-4)** Prereq: 473 and 494. May be repeated. Maximum six hours.

- **455 Problems in Speech Pathology (1-3)** Prereq: Consent of instructor.

401 Cellular and Comparative Biochemistry (4) Electrophoresis and protein structure; enzyme systems, and metabolic pathways. Prereq: Consent of instructor.

411 Advanced Cellular Biology (3) Cellular structure and function at the molecular and supramolecular level. Topics include protein structure and function, membrane structure and function, and signal transduction and cell regulation. Mitois and the cell cycle, cell motility, cell-cell interactions and tissues. Prereq: 401 or 410.

415 Foundations in Neurobiology (3) Basic nerve cell physiology, nervous system organization, sensory and motor systems, neural basis of behavior, and nervous system development and plasticity. Prereq or coreq: Physics 221-222, Chemistry 140. F

416 Neurobiology Laboratory (2) Experiments designed to illustrate concepts of modern neurobiology using electrophysiological, historical, and behavioral neurobiological techniques. Prereq or coreq: 415. S

419 Cellular and Comparative Biochemistry Laboratory (2) Experiments with enzymes, nucleic acids, and membranes and organelles. Chromatography, kinetics, hybridization, sequencing, and immunochimical meth-ods. Prereq or coreq: 401 or 410. F, Sp

420 Advanced Topics in BCMB (3) Selected Topics in current research; recent research, theory and control of bone function, immunochemistry, regulation of gene expression, bioenergetics, etc. Emphasis on methods and applications related to current research. Prereq: Consent of instructor. Not available for credit if credit has previously been received for BCMB 401 or 410. Credit may be applied toward BCMB major. 


405-06 Minicourse in BCMB (2, 2) Select advanced topics in biochemistry, cell biology, genetics, neuroscience, or development. Biochemistry concentrated in 405 and subject matter is subject matter. Consent departmental listing for topics offered. Prereq: As announced. May be repeated. Maximum 4 hrs may apply toward BCMB major.

09 Perspectives in Biochemistry and Cellular and Molecular Biology (3) Current issues in biochemistry, cell biology and molecular biology. Emphasis on current developments and their applications, societal and economic implications, and interdisciplinary approach of medical, biological and psychological implications. Prereq: Consent of instructor. An oral presentation and a referenced library-research essay are required. A capstone course.

410 Cellular and Comparative Biochemistry (4) Electrophoresis, behavior, chemistry and structure of proteins; enzyme behavior and biological function; catabolism and energy capture; synthetic metabolism; nucleic acid function; protein synthesis, and biochemical genetics; regulation of biological processes. Prereq: Chemistry 350-350-369 and Biology 140-240; 3 hours and 1 discus-sion. Not available for credit if credit has previously been received for BCMB 401 or 410. Credit may be applied toward BCMB major. Sp

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; hypotheses 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 hours lab. Only one of three sequences 151-152, 161-162 or 217-218 may be taken for credit.
462 Junior/Senior Seminar (1) Lecture/discussion on the application of biochemical principles and techniques in research, clinical, diagnostic or therapeutic environment. May be repeated. Prereq: 410.

465 Human Genetics (3) Genetic and molecular principles and problems of human inheritance. Prereq: Biology 240.

471-481 Biophysical Chemistry (3,3) Physicochemical principles with applications to biological systems. 471 Thermodynamics; chemical equilibrium; solution chemistry; transport; electrochemistry; kinetics; enzyme catalyzed reactions. 481—Elementary quantum chemistry; basic interactions of light with biological molecules; optical and magnetic spectroscopy; light scattering; case studies of selected macromolecules. Prereq: Calculus, Organic Chemistry, and consent of instructor. (Same as Chemistry 471-81). F, Sp

480 Physiology of Exercise (3) (Same as Exercise Science 480). F, Sp

492 Off-Campus Study (1-6) No more than two credits of 492 will count toward the Biological Sciences: BCMB major. Satisfactory/No Credit grading.

BIOLOGY (190)

101-102 Hamkinding in the Biotic World (4,4) Introduc- tion to the principles and techniques of observing the diversity of plants, animals, and microbes on human life, and the impact of humans on the biosphere, intended for students not majoring in the biological or pre-health sciences. 101 surveys life from the cell to topics in human health. Topics include: macromolecules and cells, energy flow in biological systems, genetics and information flow from generation to reproduction, biotechnology and genetic engineering, sex and sexuality, human physiology, cancer, drugs—use and misuse. 102 fo- cuses on the diversity of the Earth’s biota and the interdependence among components. Topics include: surveys of biodiversity from bacteria to higher plants and animals, genetics and evolutionary processes, popula- tion biology, and the biosphere (ecosystems, biomes, and landscapes). Prereq: 101. F, Sp

120-203 Inside the Biological Sciences (1,1) Introduc- tion to the history and philosophy of science, the application of scientific concepts to everyday life, and the impact of technological developments on society. Emphasis will be placed on the diversity of the Earth’s biota and the interdependence among components. Topics include: surveys of biodiversity from bacteria to higher plants and animals, genetics and evolutionary processes, population biology, and the biosphere (ecosystems, biomes, and landscapes). Prereq: 101. F, Sp

130 Biodiversity (4) Unifying concepts and principles of biology, illustrated with diversity of life, intended for science majors. Properties of life, molecular basis, origin of life, cells, genetics, introduction to kingdoms, origins of multicellular plants and animals, ideas about evolution, man’s place in nature. Emphasis on common themes in living systems (e.g., metabolism, protein and nucleotide sequence similarities, morphol- ogy, phylogeny, plant and animal form, and function) and life’s diversity. Writing and analysis of lab activities required. 3 hours lecture, 1 hour discussion laboratory. Laboratories involve a mix of skills-oriented exercises and assignments focused on topics. Although not required, it is strongly recommended that 101-102 be taken in sequence.

140 Organization and Function of the Cell (4) Topics include: basic organic chemistry and biomolecules, cell structure—membranes, cell walls, and internal organelles; energetics—respiration and photosynthesis; cell division—mitosis; and molecular biology. Labs will stress basic laboratory skills and procedures such as measuring pipetting and mixing solutions, as well as introduce modern methods for handling large amounts of biological material, such as electrophoresis and centrifugation. Prereq: 130, Chemistry 120; coreq: Chemistry 130.

202-203 Inside the Biological Sciences (1,1) Presenta- tions by faculty and other biology professionals emphasizing current biological research. Familiarizes students with diverse nature and current applications of biology. Open to freshmen and sophomores. Satisfac- tory/No Credit only. May be repeated.

240 General Genetics (4) Classical and modern prin- ciples of heredity; meiosis and transmission genetics; molecular genetics and gene expression; population and evolutionary genetics. Laboratories will allow students to alternate with theoretical discussions and will include both computer based simulations and hands-on experi- ence with model genetic systems. Emphasis on develop- ment of analytical skills. Prereq: 130-140 or Bot 110-120; Chemistry 120-130.

250 General Ecology (4) Relations between organisms and their environment, including human environmental problems. Topics include populations, communities, and ecosystems. Four hours lecture, 1 hour discussion, field problems or computer simulations. A working knowledge of college algebra is required. Prereq: 130-140 or Bot 110-120; Chemistry 120-130.

307-308 Honors Seminar in Biological Research (1,1) Presentations by professional biologists emphasizing rewards of careers in different areas of biology. Nationally recognized speakers invited each term. Open to sopho- more, juniors and seniors; required of Threshold Biology Scholars. Prereq: 8 hours of 200 or above, admission to an honors program or permission of the instructor. Satisfactory/No Credit only. May be repeated. F, Sp

379 Honors Seminar on Research Skills (3) Technical and cognitive skills necessary for participation in biologi- cal research. Lecture/presentations and small team demonstrations and discussion. Required of (but not limited to) Threshold Biology Scholars. Prereq: 8 hours of 200 or above. Permission of instructor required. F

398 Honors Practicum in Biological Research (3-5) Rotation through 3-5 modules of required an d elective experience in participating laboratories. Required of (but not limited to) Threshold Biology Scholars. Prereq: 8 hours of 200 or above and 397. Permission of instruc- tor required. S

401 Senior Thesis (3-12) Required research experi- ence in Threshold Biology Scholars. Students design research projects, complete research data collection, organize thesis documents, and prepare presentations. May be repeated. Minimum of 12 hours. Prereq: 394-395.

BIOSYSTEMS ENGINEERING (196)

104 Design Apprenticeship (1) Exposure to design in biosystems engineering, through apprenticeship with senior design teams in Biosystems Engineering 402. Apprentices will maintain a journal describing their activi- ties in assisting the senior design engineers, and will make an oral presentation summarizing the design project with which they assisted. Grading will be based on journal submissions, contributions to the design team, and the final presentation. Prereq: Engineering Fundamentals 101, 2 hours lab. Sp

201 Career Opportunities (1) Activities and opportuni- ties in the fields of specialization; required training for each area; projected career activities. 1 hour. F

221 Mass and Energy in Biosystems (3) Introduction to thermodynamic concepts for biological systems (energy, mass, and energy balances); psychrometrics and psychrometric processes; biological systems and the biosphere (bioenergetics, hydrologic cycle, energy flow in biological systems); and professional ethics. Prereq: Mathematics 231, 2 hours and 1 lab. F

231 Biothermodynamics, Heat and Mass Transfer (3) Application of thermodynamics to biological systems; heat transfer, with emphasis upon conduction and convection applications; introduction to diffusion mass transfer. Coreq: Mathematics 241. Prereq: 221, Nuclear Engineering 203. 2 hours and 1 lab. Sp

401 Biosystems Engineering Design I (3) First course of a capstone design sequence. Review of fundamental engineering principles, time and project management, ethics, contemporary issues in biosystems engineering, portfolio review, and design proposal generation. Design project will include team organization and preliminary analyses. Prerequisite: 451 and senior stand- ing or consent of instructor. Coreq: 403 or 423 or 430 or 433. F

402 Biosystems Engineering Design II (6) Culmination of capstone design sequence. Introduces the student to the engineering design process and the role that it plays in the development of new systems, flow charts, and process diagrams. Applications in mechanical, structural, and biosystems. 2D applications with limited emphasis on computer applications. 3D applications using computer intensive course. Hands-on experience. Prereq: Computer proficiency and admission to graduate program. (Students cannot receive credit for both 414 and 514.) Two 2-hour labs. F

411 Mechanical Systems Engineering (3) Fundamen- tals of power delivery systems and simple mechanisms; selection and design of mechanical, hydraulic, and thermal transmission systems. Emphasis on off- road vehicles and bioprocessing systems. Prereq. 431, Mechanical Engineering 231 and 321. 2 hours and 1 lab. Sp

412 Natural Resource Engineering (3) Introduction to hydrologic cycle: movement of water and interaction with environment through such processes as erosion and contaminant transport. Impacts through estimation and measurement, and controlling impacts through engineer- ing design. Specific designs: waterways, erosion and sediment control structures, waste management sys- tems, and environmental monitoring systems. Prereq. 321, Environmental and Soil Sciences 210, Civil Engineering 390 or Aerospace Engineering 341. 2 hours and 1 lab. F

431 Bioprocessing Engineering (3) Application of basic engineering principles to processing and handling of biological materials: physical, chemical, biological prop- erties; materials handling; material conversion opera- tions; drying; heat processing; and bioprocessing. Prereq: 221, 3 hours and 1 lab. F

441 Life Systems Engineering (3) Design of controlled environments to optimize conditions for organism growth and development: growth equations and population dynamics; plant growth systems; microbial growth systems; tensile and growth systems. Prereq. 321, Mathematics 231, 2 hours and 1 lab. F

444 Practicum (3) Applications of engineering theory and design in selecting, sizing, and fabricating engineer- ing materials and devices. Applications in biosystems, systems typically used in biosystems engineering. Must be taken in same semester as 401, 1 hour and 2 labs. F

451 Electronic Systems (4) Basic electronics with biological applications. Analog and digital electronics; sensing and controlling physical and environmental parameters; sensor selection and interfacing; signal conditioning; process control. Includes laboratory ex- periments and design project. 2 hours and 1 lab. Prereq: Electrical Engineering 301. 3 hours and 1 lab. Sp

470 Special Problems in Biosystems Engineering (1- 3) Selection, analysis solution and report of problem. May be repeated. E

480 Selected Topics in Biosystems Engineering (1-3) Current trends and problems in agricultural engi- neering. May be repeated. E

BIOSYSTEMS ENGINEERING TECHNOLOGY (194)

202 Materials and Fabrication (3) Properties of materials including wood, metals, concrete, plastics and lubri cants; drafting and plan reading; fabrication tech- niques and processes involving hand tools, power hand equipment, and arc and gas welding. 1 hour and 2 labs. F

212 Surveying (3) Measurement of distances, angles, and areas; differential and profile leveling; topographic surveying and mapping; area computation. Prereq: Math 119 or consent of instructor. 1 hour and 1 lab. F

326 GIS/GPS Applications in Agriculture and Environ- mental Science (3) Introduction to the application of Geographic Information Systems (GIS) and Global Posi- tioning Systems (GPS) in agriculture and in environmental science. Students will become familiar with the concepts, GPS receivers, data acquisition, and spatial analysis to data to solve problems. Case studies in agricultural demography, precision agriculture, pasture management, water quality, watershed management, and waste pollution will be used to provide hands-on experi- ence with these emerging technologies. Prereq: Agricultur e and Natural Resources 290 or equivalent. S

414 CAD Applications to Biosystems Engineering (3) Computer Aided Drafting (CAD) applica- tions in agriculture and environmental science. Essent- ials of CAD software to create design and work in two and three dimensions, flows, chart and design applications. A plications in mechanical, structural, and biosystems. 2D applications with limited emphasis on computer applications. Computer intensive course. Hands-on experience. Prereq: Computer proficiency and admission to graduate program. (Students cannot receive credit for both 414 and 514.) Two 2-hour labs. F
422 Food and Process Engineering Technology (3) Application of basic engineering principles to agricultural and food processes. Fluid handling, drying, evaporation, thermal processing, heating and cooling, refrigeration systems, and materials handling. Prereq: Physics 101 or 221. 2 hours and 1 lab. F

432 Agricultural Machinery and Tractors (3) Functions, selection, matching, and management of agricultural machinery and tractors. Evaluation of power ratings and transmission systems, hydraulic systems, hitching, and ballasting. Field and material capacity, field efficiency, cost analysis, and farm machinery replacement strategies. Functional analysis of tillage operations, planters and drills, no-tillage systems, hay harvest systems, forage and small grain harvesting, and cotton harvesting. Crop drying practices, machinery safety considerations, and operator ergonomics. Prereq: Mathematics 123 or 125 or consent of instructor. 2 hours and 1 lab. Sp

442 Agricultural Waste Management and Pollution Control (3) Waste renovation fundamentals; characteristics of animal manures and domestic waste for utilization. Trans- porting, storing, and utilizing livestock waste. Prereq: Mathematics 125 or 123 or equivalent. 2 hours and 1 lab. F

452 Small Internal Combustion Engines (3) Theory, concepts and mechanisms of small internal combustion engines; theoretical cycles, selection, operation, adjustment, troubleshooting and repair of single-cylinder engines. Prereq: Mathematics 123 or 125 or consent of instructor. 2 hours and 1 lab. Sp

462 Agricultural Chemical Application Technology (3) Equipment for application of liquid, solid, and gaseous agricultural chemicals; system components; operational characteristics of system components; application and management of safety considerations; materials handling and disposal methods. Prereq: Mathematics 123 or 125 or consent of instructor. 2 hours and 1 lab. Sp

474 Environmental Instrumentation and Monitoring (3) Equipment and techniques commonly used to measure all aspects of hydrologic cycle: precipitation, runoff, streamflow, subsurface water movement. Sampling of all flows for design of monitoring systems and data gathering. Analysis of data. Prereq: Environmental and Soil Sciences 324, Statistics 201, Math 152, or consent of instructor. (Students cannot receive credit for both 474 and 574). 2 hours and 1 lab. Sp

BOTANY (198)

110-120 General Botany (4.4) 110 - Introduction to taxonomy through tree identification; basic organization and function of cells; respiration; photosynthesis; genetics (including meiosis, mitosis, Mendelian inheritance); survey of plant kingdom: algae, fungi, mosses, ferns, conifers, and flowering plants). 120- Plant growth, anatomy, growth regulation; uptake and transport; origin of life. Prereq: 110 or consent of instructor. 4 hours and 1 lab course providing students with an overview of radio, television, and cable. Prereq: 140-150 or equivalent. 2 hours and 1 lab. F

305 Socio-Economic Impact of Plants (3) Significance of plant products and plant sciences for human culture. Evolution of cultivated plants, and role of plants in present civilization. Occasional field trips. Sp

306 Genetics and Society (3) Introduction to genetics, anthropology and evolution with emphasis on implications for human society. (Same as Anthropology 306.)

309 Biology of Human Affairs (3) Basic biological principles involved in deterioration and preservation of an environment in which humans and their cultures may survive.

310 Plant Morphology (4) Morphology, development, natural history, and evolution of non-vascular plants (mosses, ferns, algae, fungi, and bryophytes) and vascular plants (ferns, fern allies, gymnosperms, and flowering plants). Prereq: 110-120 or Biology 130-140 or equivalent. F

313 Introductory Plant Pathology (3) (Same as Entomology and Plant Pathology 313.)

321 Introductory Plant Physiology (4) Organismal physiology of plants; water relations, mineral nutrition, morphogenesis of plants, metabolic processes, effects of age, light, natural rhythms, temperature, and other environmental factors. Lecture and lab. Prereq: One year general chemistry and one year biological science. F, Su

330 Field Botany (3) Principles of taxonomy, basic ecological concepts and the identification, recognition, collection and preservation of local, native and naturalized plants. Prereq: 8 hours in biological sciences. F, Sp, Su

371 Undergraduate Seminar (1) At least one hour is required for a Botany major or minor. Junior or senior standing recommended. May be repeated. Maximum 2 hours.

400 Tutorial in Botany (1-2) Individual, independent study under guidance of selected staff. By application only. May be repeated with consent of department. Maximum 4 hours.

401 Field Studies in Botany: (Specific Topic to be announced) (1-3) Field experience and taxonomy of special plant groups. Selected field topics will vary and may include: Bryology, Lichenology, Pteridology, Agrostology, Mycology, Phycology, Aquatic Vascular plants, Synantherology, Woody Plants, and Botanical Photography. May be repeated, but no specific topic may be repeated for credit. Maximum 9 hours.

404 Plant Molecular Biology (4) Instructions to current research in plant molecular biology and to commonly used techniques and procedures. Lectures include genome structure, gene expression and regulation, transformation, transposable elements, plant development, etc. Labs: RNA isolation and analysis, gene isolation, molecular cloning, hybridization, isolation and preparation of plasmids, PCR amplification of specific sequences, DNA sequencing and transformation, RNA analysis, protein analysis, and case studies. Prereq: 440 or equivalent. F

419 Science as Method (3) (Same as Ecology and Evolutionary Biology 419 and Phagae 410.)

431 Plant Ecology (3) Interactions between individuals, species, communities and their environments. Circulation of energy and matter in ecosystems. Weekly field trips or laboratory periods, and at least two weekend field trips. Prereq: 330 or equivalent. Su (Same as Ecology and Evolutionary Biology 431).

442-444 Undergraduate Research Participation (1-2,1-2) Experience in active research projects under supervision of staff members. Prereq: Junior or senior standing, minimum grade average 3.0, consent of instructor. May be repeated. Maximum 8 hours.

451 Plant Tissue Culture (3) Methods for the culture of cells, tissues, and organs including media preparation and growth regulatory compounds. Prereq: Botany 110-120 or Biology 130-140 or equivalent and Chemistry 120 or equivalent. Recommended: 310, 321, 412, Microbiology 310 or 319, Ornamental Horticulture and Landscape Architecture 410.

471 Senior Seminar (3) A capstone course conducted in seminar format dealing with topics of current interest in plant biology. Written reports and oral presentations are required. Prereq: Senior standing. Sp

499 Evolutionary Ecology (3) Basic concepts in evolutionary and ecological genetics. Biogeography, climate, population genetics, evolution and natural selection, population growth and regulation, competition, niche, experimental evolution, predation, phylogenetics in ecology, biodiversity and conservation. Prereq: General Biology and General Ecology. Students may not receive credit for both 499 and 599. (Same as Ecology and Evolutionary Biology 499.) Sp, A-O


330 Audio/Video Production (3) Emphasis on the function and operation of the primary video and audio tools to develop effective communication. Lecture and laboratory provide experience in studio production process and procedures. Includes concept development, script writing, message design, applied aesthetics, crew management, and producing. Prereq: 275.

360 Radio-TV Performance (3) Development of vocal, visual and performance skills for announcers, interviewers, narrators, reporters, and newscasters. Laboratory hours required. Prereq: 275.

410 Electronic News Gathering (3) Writing, reporting, producing and performing news for television. Lecture and lab course providing students with experience as reporters/producers for a television news program. Includes an overview of electronic news gathering equipment and techniques as well as video editing. Prereq: 310.


430 Electronic Field Production (3) Basic principles of video production on location. Emphasis on the concepts relating to message design, development, and production in the field. Includes concept development, script writing, shooting, graphics, sound design, lighting, and editing. Prereq: 330 or consent of instructor.

440 Corporate Video (3) Examination of special requirements of business, industrial, educational and medical uses of video. Management, budgeting, planning, producing and evaluating projects. Prereq: 430 or consent of instructor.


460 Broadcast News Operations (3) Production of news program for broadcast on television stations. Electronic news gathering, editing and writing news packages, and studio production. Prereq: 410 or consent of instructor.

470 Cable, Broadband, and Interactive Digital Media (3) History and structure of cable television and other broadband delivery systems (DSS, Internet, etc.). Development of digital broadcasting, interactive television, and other broadband media systems and digital technologies, focusing on emerging broadband delivery technologies such as DTV. Prereq: 275 or consent of instructor.

480 Radio and Television Programming (3) Program- ming practices in radio, television and cable. Nature and structure of broadcast programs. Also programming of business, industrial, educational and medical media. Prereq: 410 or consent of instructor.

490 Radio and Television Management (3) Business policies and practices of broadcast operations, departmental functions, cost and income analysis, leadership styles and techniques with an emphasis on mid-level management. Capstone course to be taken in student’s last semester. Prereq: 460.

492 Practicum (1) Work and learning experience at radio, television, cable or non-broadcast facilities. Final written report required. May be repeated once. Prereq: Senior standing and consent of department head. S/N grading only.

494 Special Topics (3) Salient issues in electronic media. Topics vary. Prereq: Consent of instructor. May be repeated. Maximum of 6 hours.
BUSINESS ADMINISTRATION (205)

101 Basic Business Applications (1) An online course with GTA, computer use, and software basics, including Lotus Notes, Word, Excel, and Powerpoint. Testing is online. Prereq: Business Administration 101 or 102.


220 Business Career Planning (1) Introduction to Business, concentration options, career opportunities, and the decision-making process for preparing for and conducting a job campaign. Prereq: Satisfactory/No Credit only. Required for satisfactory progression to upper-division level in Business. Prereq: Business Pre-major.


331 CBM I: Supply Chain Management (2) Coordinating the end-to-end relationships between supply chain members, from inputs to delivery of product/services. Understanding demand and supply information flows across the supply chain. Emphasis on integrating activities through improved processes and relationships to achieve and maintain competitive advantage. Prereq: Progression as a business major in the College of Business Administration and junior standing. Coreq: BA 332.

341 CBM II: Lean Operations (2) Design of the product delivery system in manufacturing and service operations. The dynamics of the supply chain. Managing flows in manufacturing and service processes. Specific techniques for organizational design, such as pull replenishment, cellular layout, standard work, and mixed model sequencing. Prereq: Progression as a business major in the College of Business Administration and junior standing. Coreq: BA 331.

342 CBM II: Information Management (2) Emphasis on the concepts, structure, and components (input, processes, output, feedback and control) of information systems, and database design and management. Includes the role, function and integration of information systems and technology into business activities. Prereq: Progression as a business major in the College of Business Administration and junior standing. Coreq: BA 341.

351 CBM III: Business Management: The Marketplace (2) Integrative experiential learning experience to facilitate student learning of the interactions between the perspectives of supply chain management, demand management, operations management, and information management. Prereq: BA 331-332, BA 341-342. Must be admitted to a business major in the College of Business Administration and be of junior standing. Coreq: Business Administration 352.

352 CBM III: Organizational Behavior (1) Behavioral processes in organizations; motivation, leadership, decision-making, communication, behavioral consequences, group behavior, informal organizations, organizational structure, conflict, politics, change, and development. Prereq: BA 331-332, BA 341-342. Must be admitted to a business major in the College of Business Administration and be of junior standing. Coreq: BA 351. 

361 The Firm in a Global Context (3) Domestic and international factors that impact the decision-making process of the firm; domestic and international macroeconomic forces, technological change, institutional and cultural systems. Emphasis on relationships between theoretical models and actual problems encountered in the conduct of business. Prereq: Business Administration 201.


400 Special Topics (1-9) Topics of current interest in business. Topics announced prior to offering. May be repeated for additional credit provided topic is different. Maximum 9 hours. Prereq: consent of instructor.

467 Honors: Corporate Executive in Residence Seminar (3) Interaction with top corporate executives from a wide spectrum of business 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, Finance 301, Business Administration 332 and 341, and consent of instructor.

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

492 Off-Campus Study (1-15) Satisfactory/No Credit grading only. Prereq: Consent of instructor.

493 Independent Study (1-15) Prereq: Consent of instructor.

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. E


160 Chemistry and the Home (3) Chemistry and the consumer; household products; chemistry in the kitchen and around the home. 3 hours lecture. Not a prerequisite for any other chemistry course. F

200 Introduction to Chemical Research (1) Participation in an active research program in analytical, inorganic, organic, physical, or polymer chemistry. Students work with researchers to acquire expertise in planning experiments, interpreting results, and presenting findings. Credits may not be applied toward a major or minor in chemistry. Not a substitute or prerequisite for 400. Prereq or Coreq: 200 or higher level course in chemistry and consent of instructor. May be repeated. Maximum 4 hours.

230 Inorganic Chemistry (3) Periodicity, valence, bonding, and the descriptive chemistry of the elements; coordination compounds; transition elements, inner transition elements. 2 hours and 1 lab. Prereq: 130 or 138. F

240 Chemical Programming (2) Use of the computer in solving problems encountered in chemistry. Required of and limited to chemistry majors. Prereq: 130 or 136. 1 hour and 1 lab. Sp

301 Industry/Laboratory Internship (3) Supervised by industry/laboratory technical staff at an approved facility. Consists of a full-time "hands-on" individual assignment in a semester as a member of a practical or experimental team. Credits may not be applied toward a major or minor in chemistry. May not be repeated. Prereq: 130 or higher and consent of Department Head. S/NC grading only. E

310 Analytical Chemistry (3) Principles and practices of quantitative measurements in chemical systems. Acid-base, complexometric, and redox equilibria; applications of titrimetric analysis; potentialometric, colorimetric, spectrophotometry; chemical separations including chromatography, ion exchange, and solvent extraction. Prereq: 130 or 136. E

319 Analytical Chemistry Laboratory (2) Experiments on topics covered in 320. Coreq: 320. E

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

329 Advanced Analytical Chemistry Laboratory (2) Experiments on topics covered in 320. Coreq: 320. Sp

350-360 Organic Chemistry (3,3) Compounds of carbon and their reactions. Reaction mechanisms, synthesis, spectroscopic and other physical properties. Must be taken in sequence. Prereq: 130 or 138; Coreq for 350: 369. E

369 Organic Chemistry Laboratory (2) Experiments on topics covered in 350-360. Coreq: 350. 1 hour lecture and 4-4 hour lab. E

400 Research in Chemistry (3) Open to senior majors with consent of department head. Written reports are required. Advanced students work with faculty on projects requiring knowledge and skills acquired in chemistry curriculum. May be followed by either 400 or 408 (but not both); minimum of 6 hours of Research in Chemistry. E

401 Advanced Industry/Laboratory Internship (3) Supervised by industry/laboratory technical staff at an approved facility and by a chemistry faculty member serving as liaison between the laboratory and the university. Consists of a full-time "hands-on" individual assignment for entire semester as a member of a theoretical or experimental team. Final comprehensive written report required. May not be repeated. Prereq: 230 or higher numbered course in chemistry and consent of Department Head. E

405 Topics in the Development of Chemistry (3) Historical development of topics such as the atomic theory; chemical industry; interrelationship of population, environment, and industry. Subject matter varies from one semester to another with the assignment of topics by the instructor. Assignments may be read from original literature (Dalton, Faraday, Kekule) and from current journals and monographs. Includes the use and misuse of evidence, the impact of chemistry on society, how scientists reach conclusions, and the nature of scientific controversy. Written reports will be required. Coreq: instructor standing in chemistry. Writing-emphasis course. F
### Courses of Instruction

#### 331-332 Advanced Chinese II (4,4) (Same as Asian Languages 331-332.)
#### 431 Readings in Chinese Literature (3) (Same as Asian Languages 431.)
#### 235 Introduction to Cinematography as Art (3) (Same as Art Media Arts 235.)
#### 236 Introduction to Video Art (3) (Same as Art Media Arts 236.)
#### 231 Introduction to Film Studies (3) (Same as English 281.)
#### 312 Popular Culture and American Politics (3) (Same as Political Science 312.)
#### 323 German Film (3) (Same as German 323.)
#### 325 Russian Film (3) (Same as Russian 325.)
#### 334 Film and American Culture (3) (Same as English 334 and American Studies 334.)

#### 400 Special Topics (3) (May be repeated. Maximum 6 hours.)
#### 420 French Cinema (3) (Same as French 420.)
#### 421 Topics in Italian Literature and Cinema (3) (Same as Italian 421.)
#### 433 Modern Art and Film (3) (Same as Art Media Arts 433.)
#### 383 Chinese Film (3) (Same as Art Media Arts 383.)
#### 434 Hispanic Culture Through Film (3) (Same as Spanish 434.)
#### 435 Cinematography as Art (3) (Same as Art Media Arts 435.)
#### 436 Video as Art (3) (Same as Art Media Arts 436.)
#### 465 Latin American Film and Culture (3) (Same as Latin-American Studies 465 and Spanish 465.)
#### 469 Sexuality and Cinema (3) (Same as Women’s Studies 469.)
#### 489 Special Topics in Film (3) (Same as English 489.)
#### 491 Foreign Study (1-15)
#### 492 Off-Campus Study (1-15)
#### 493 Independent Study (1-15)

#### Classics (257)

**201 Introduction to Classical Civilization (3)** Introduc-tory survey of civilization of ancient Greece and Rome. Includes aspects of history, literature, art and archaeol-ogy, philosophy and religion. Writing-emphasis course.

**221 Early Greek Mythology (3)** Archai Greek religion through comprehensive study of Greek myths with emphasis on how they reflect the early Greek vision of the universe and humanity’s place in it. Origins and development of Greek myths and the role of organized religion, from Bronze Age to about 450 B.C. Readings include Hesiod and Aeschylus. Writing-emphasis course.

**222 Classical Greek and Roman Mythology (3)** Use of myth in literature, history, religion and philosophy of Greece and Rome from about 450 B.C. to about 550 A.D. Two foci are the later half of the fifth century B.C. and the last quarter of the first century B.C. Includes oriental intrusions into Greece and Rome, including early Chris-tianity. Readings include Sophocles, Euripides, Roman poetry, and modern scholarship. Writing-emphasis course.

**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 empha-sis on architecture and artifacts used to recreate the culture of the Minoan and Mycenaean civilizations and that of the following Dark Age. For Archai, Classical, and Hellenistic periods emphasis on development of architec-ture, sculpture, and vase painting. Includes minor arts and the relationship between archaeology and art. Writing-emphasis course.

**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 (1000 B.C.-500 A.D.) Reconstruction of the Etruscan culture from tombs, paintings, and artifacts, development of Roman architecture, and urban planning in Rome and the provinces. Writing-emphasis course.

**253 Greek and Roman Literature in English Translation (3)** Major literature of ancient Greece and Rome. Writing-emphasis course.

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

**310 The Ancient World: Greece (3)** Development of Athenian democracy; its successes and failures; Polis crisis of the fourth century B.C.; emergence of hellenistic civilization. (Same as History 310.)

**311 The Ancient World: Rome (3)** (Same as History 311.)

**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 their effect on the Aegean World and Cyprus. Evidence for daily life, religion, trade, and foreign commerce. Architecture, wall paintings, and artifacts. Prereq: One of the following: 232, 231, ancient history (Ancient Near East or Ancient Greece), or consent of instructor. Writing-emphasis course.

**334 Cities and Sanctuaries of the Greek and Roman World (3)** Major centers or emphasis on development of architec-ture, sculpture, and vase painting. Includes minor arts and their effect on the Aegean World and Cyprus. Evidence for daily life, religion, trade, and foreign commerce. Architecture, wall paintings, and artifacts. Prereq: One of the following: 232, 381, ancient history (Ancient Near East or Ancient Greece), or consent of instructor. Writing-emphasis course.

**462 Roman Law (3)** This course covers the historical development of Roman law in the Classical period (50 B.C.-250 A.D.) with particular attention to the analysis of case-law in the areas of contract, property, or delict. (Same as Legal Studies 362.)

**381 Greek Civilization (3)** Major aspects of ancient Greek civilization: religion, fine arts, political life, pan-Mediterranean relations, the prominence of Athens, the role of modern archaeology in interpretation; emphasis on the sixth and fifth centuries B.C. Writing-emphasis course.

**382 Roman Civilization (3)** Major aspects of ancient Roman civilization: political institutions, art and architecture, history, culture and daily life, emphasizing the late Republic and early Empire. Writing-emphasis course.

**383 Women in the Greek and Roman World (3)** The condition of women in the apparently male-dominated world of Classical Greece and Roman Rome. Evidence from literature, vase paintings, and other arts is examined from 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 383.)

**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.

**462 Special Topics in Comparative Literature (1,3)** Content varies. May be repeated. Maximum 9 hours.

**452 Modern Drama, 1880-1945 (3)** (Same as English 452.)

**454 Twentieth-Century International Novel (3)** (Same as English 454.)

**491 Foreign Study (1-15)**

**492 Off-Campus Study (1-15)**

**493 Independent Study (1-15)**

### Comparative Literature (260)

**203 Cross-Cultural Perspectives in World Literature (3)** Literary perspectives and values in different time periods and cultures approached from an international context and including an introduction to the theory, methods, and objectives of comparative literature. Variable content. Writing-emphasis course.

**401-402 Special Topics in Comparative Literature (1,3)** Content varies. May be repeated. Maximum 9 hours.

**452 Modern Drama, 1880-1945 (3)** (Same as English 452.)

**454 Twentieth-Century International Novel (3)** (Same as English 454.)

**491 Foreign Study (1-15)**

**492 Off-Campus Study (1-15)**

**493 Independent Study (1-15)**

### Comparative and Experimental Medicine (262)

**411 Undergraduate Research Participation (1-3)** Experience in active biomedical research projects under supervision of faculty. Students in premedical and other biology majors may conduct their own research projects within designated areas. Prereq: Junior or senior standing. Consent of instructor. May be repeated with consent. Maximum 9 hours. Satisfactory/No Credit only.

### Computer Science (266)

**100 Introduction to Computers and Computing (3)** Basic concepts of computer hardware and software, computer systems and communications, networking and the Internet. The interdisciplinary science of computing. Does not satisfy any requirements for Computer Science major or minor. 2 hour lab required.
102 Introduction to Computer Science (4) Problem solving and algorithm development. Organization and characteristics of modern digital computers with emphasis on developing good programming habits and understanding the principal tools of a programmer. May be repeated. Maximum 9 hours. Prereq: 102. 3 hour lab required.

140 Data Structures (4) Advanced problem solving and algorithm development, structured programming, data structures and applications, I/O techniques, lists, queues, trees, algorithms, files. Prereq: 102. 3 hour lab required.

160 Computer Organization (4) Number systems, Boolean algebra, combinational and sequential circuits, registers, processor functional units and control, pipelining, memory and caching, stored program computing, memory management, computer system organization, assembly language programming. Prereq: 102. 3 hour lab required.

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

300 Scripts and Utilities (1) Practical tools available under Unix to enable students to become more efficient in performing labs and research projects. Topics to be covered: shell, find, grep, diff, find, ii, mail, ssh, perl, python, make, rcs, jgraph, gcc/cpp/purify/quantify. Prereq: 140 or consent of instructor. Satisfactory/No credit grading.

302 Fundamental Algorithms (3) Design, analysis, and implementation of fundamental algorithms, such as sorting and searching, and their data structures. Prereq: 140 and 160. 3 hour lab required.


340 Foundations of Software Engineering (3) Principles of analysis and design of information systems. Principles of program design and verification, formal objects, and object-oriented languages. Prereq: 140, 160, and 311. 3-hour lab required.

360 Systems Programming (3) Introduction to user-level systems programming; file control, process control, memory management, system utilities, network programming. Prereq: 302. 3 hour lab required.

365 Programming Languages and Systems (3) Language paradigms (procedural, functional, object-oriented, logic), language design and implementation issues and language issues related to parallelism. Prereq: 302.

370 Introduction to Scientific Computing (3) The design, implementation, and computation of numerical algorithms for solving problems in science and engineering. Emphasis on program design, including data structures, computational techniques, scientific computing environments, and high-performance software packages. Prereq: Mathematics 241 or 251. 3 hour lab required.


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

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

471 Numerical Analysis (3) (Same as Mathematics 471.)

472 Numerical Algebra (3) (Same as Mathematics 472.)

480 Advanced Topics in Theoretical Computer Science (3) Topics such as theory of computation, complexity theory, formal languages and graph theory and its applications. Emphasis on faculty 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 Computer Science faculty advisor, 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 6 hours may be applied to the major. Prereq: consent of instructor.

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

COUNSELOR EDUCATION AND COUNSELING PSYCHOLOGY (267)

205 Student Development (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 6 credit hours. S/N grading.

206 Facilitation of Technical Work Teams (3) Psychological and cultural dynamics of technical work team performance. Supervised experience in leading work teams. For engineering students sophomore level and above. Prereq: 140, 160, 206.

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

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

302 Special Topics (1-3) Study in selected disciplinary or professional areas of Physical Education. May be repeated. Prereq: Progression to major or consent of instructor.

391 Psychology of Coaching (2) Major topics and theories concerning the application of 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) (Same as Sociology 405.)

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

460 ECP Field Work (3) Capstone experience for the Engineering Communication and Performance Minor. Includes instruction, field work, and supervision. Satisfactory/No credit grading only. Prereq: CCEP 206 and CCEP 306.

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

470 Personality and Mental Health (3) Perspectives of mental health with applications to other social institutions.

493 Directed Independent Studies (1-15) Independent study in a specialized area with physical education. May be repeated. Maximum 9 hours. Prereq: Consent of advisor and progression to the major. Satisfactory/No Credit or letter grade.

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 16 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.

240 Tap: Level I(2) Instruction and practice in elementary tap dance techniques.

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

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

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

340 Tap: Level II (2) Instruction and practice in intermediate tap dance techniques. Prereq: 240 or consent of instructor.

380 Special Topics (1-3) Selected disciplinary or professional areas of dance. May be repeated.

410 Ballet: Level III (2) Instruction and practice in advanced classical ballet techniques. Available to minors or with consent of instructor. May be repeated. Maximum 16 hours.

415 Teaching Creative Dance for Children (2) Theory, methods, materials and practical experience in the presentation and integration or creative dance in grades K-6. A mini-teaching experience is involved in this class.

420 Jazz: Level III (2) Instruction and practice in advanced jazz and musical theater dance styles and techniques. Available to minors or with consent of instructor. May be repeated. Maximum 16 hours.

430 Modern: Level III (2) Instruction and practice in advanced modern dance techniques. Available to minors or with consent of instructor. May be repeated. Maximum 16 hours.

440 Composition I (2) Composition I (2) Choreographic skills emphasizing the basic techniques and concepts of dance composition. This course focuses on the choreography of solos and duets. Prereq: 4 hours credit in upper level modern dance technique (330 or 430) or approval of instructor.

445 Composition II (2) Choreographic skills emphasizing the advanced techniques and concepts of dance composition. This course will focus on the choreography of group works as it relates to practical aspects of production. Prereq: 440 or approval of instructor.

480 Dance History through the 19th Century (3) Survey of the dance of various societies and cultures from prehistory through the nineteenth century. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

490 Dance in the 20th Century (3) Survey of history and philosophy of dance in the 20th century. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

493 Directed Independent Studies (1-3) Independent study in a specialized area with dance. May be repeated. Maximum 9 hours. Prereq: Consent of instructor.

495 Dance Pedagogy (3) Principles and methods of the teaching of dance with practical application in a mini-teaching experience. Prereq: Upperclass or graduate standing and approval of instructor. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

EARLY CHILDHOOD EDUCATION (279)

410 Early Childhood Special Education Foundations (3) Introduction to the field of early childhood special education including the nature of disabling conditions; theoretical perspectives in the field; legislation; policies and procedures used in the field. Prereq: Admission to Teacher Education Program.

422 Early Childhood Teaching Methods (6) Methods and materials for teaching in early childhood classrooms focusing on K-4th grade. Emphasis on holistic integrative approaches to the curriculum development and presentation. Prereq: Pre-K-4th licensure program and admitted to Teacher Education.

445 Early Childhood Education: Program Development and Teaching in Kindergarten (3) Curriculum planning, classroom organization, problem solving and teaching practices for teaching young children; relationship of kindergarten to total elementary school. Prereq: Admission to Teacher Education Program.

471 Early Childhood Special Education (6) Assessment, diagnosis, and planning. May be repeated. Maximum 6 hours.

ECOLOGY AND EVOLUTIONARY BIOLOGY (278)

202-203 Ecology and Evolutionary Biology Colloquium (1, 1) Weekly discussions of current topics in ecology, behavior, and evolutionary biology including introductory-level research and career opportunities, for declared and potential departmental majors. Course familiarizes students with current literature in the departments of biology for the ecologist and evolutionary biologist. Prereq: Consent of instructor. RSC 101-102 or equivalent.

240 Human Anatomy (4) Gross and Microanatomy of the human. Credit may not be applied toward Biology 240. Prereq: Biology 101-102 or equivalent.

240 Human Anatomy (4) Gross and Microanatomy of the human. Credit may not be applied toward Biology 240. Prereq: Biology 101-102 or equivalent.

305 Evolution and Society (3) Issues and controversies surrounding the teaching and learning of evolution in America today. May not be applied to Ecological and Evolutionary Biology major. Prereq: General Biology or Anthropology 110 or consent of instructor. Writing emphasis course. (Same as Anthropology 305.)

350 Comparative Vertebrate Biology (4) Origins, phylogeny, and functional anatomy of invertebrates. Laboratories involve dissection of shark, cat, and selected other vertebrates. 2 hours and 2 labs.

360 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.

370 Ethology and Sociobiology (3) Basic concepts in the evolutionary approach to behavior, including applications to psychology, the social sciences, and the humanities. (Same as Psychology 370.)

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 (1-2) Research projects under the supervision of a faculty member. Prereq: prior consent of instructor. May be repeated for a maximum of 8 hours, but a maximum of 4 hours may be applied toward the Biology major.

402 Practicum in Ecology and Evolutionary Biology (2) Participation in individualized practical application of ecology, behavior, and evolutionary biology in community, government, and industry. Prereq: Biology 140, 240, 250 and prior consent of instructor.

407 Senior Honors Thesis (3) Written preparation and oral presentation of faculty-supervised student research. Prereq: Admission to honors program in EEB and EEB 400 or equivalent.

409 Perspectives in Ecology and Evolutionary Biology (3) Forefront considerations of ecology, behavior, and evolutionary biology. Emphasis on current developments for applications, including societal and economic impacts and ethical issues. Prereq: EEB 250. Prereq: Consent of instructor. An oral presentation and a referenced library-research essay are required.

411-412 Minicourse in Ecology and Evolutionary Biology (3) Selected advanced topics in ecology, behavior, and evolutionary biology, concentrated in time and subject matter. Consult departmental listing for topics offered. Prereq: As announced. May be repeated for credit but a maximum of 4 hours may be applied toward the departmental major.

419 Science as Method (3) The dynamic process of scientific discovery, as opposed to a static body of knowledge. Topics included will be comparisons of biological, chemical, and physical sciences, and the development of scientific methods. Prereq: Consent of instructor. (Same as Botany 419 and Philosophy 419.)

412 Plant Ecology (3) (Same as Botany 431.)

446 Introduction to Oceanography (4) Basic oceanography, including physical, chemical, geological and biological processes and patterns. Emphasis on oceanic subsystems such as upwellings, polar oceans, hydrothermal vents, gyres, coral reefs, estuaries, and coastal regions. Field trip to coastal required. Prereq: General Biology and Chemistry 120, 130; Biology 250 recommended.

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.)


461 Special Topics in Organismal Biology (3) Evolution, ecology, biogeography, communities, and ecosystem. Prereq: Consent of instructor. Prereq: Biology 250 or consent of instructor.

470 Aquatic Ecology (3) Introduction to the physical-chemical nature of inland waters with description of biotic communities and their interaction with their environment. Prereq: EEB 120-130 and Biology 250. 2 hours and 1 lab.

474 Ichthyology (4) Evolution, classification, collection and identification, distribution and biology of fishes with emphasis on freshwater fauna of Eastern North America. Prereq: Biology 250 or consent of instructor. 2 hours and 2 labs.

475 Field Ornithology (2) Intensive one week field course intended to introduce students to the behavior, ecology, and field identification of birds. Prereq: Biology 250 and consent of instructor. Sp

484 Conservation Biology (3) Application of principles and techniques of ecological research to conservation of biological diversity at genetic, population, community, and ecosystem levels. Prereq: Biology 240, 250.

490 Undergraduate Seminar (1) Student oral presentations of topics related to developmental and working concepts in the field of ecological studies. Prereq: As announced. May be encouraged to enroll. Coreq: Upper division standing in the Biology major. May be repeated for a maximum of 2 hours credit.

493 Independent Study (1-15) Independent study under the direction of a faculty member. Consent of instructor required. May be repeated for up to 15 hours. A maximum of 3 hours may be applied toward major. F, Sp, Su.

499 Evolutionary Ecology (3) (Same as Botany 499.)
ECONOMICS (283)
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 employment theory, money and banking, 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, production and costs, price and behavior of firms in perfect competition, monopolistic and imperfectly competitive markets, input prices, income distribution, welfare and general equilibrium. Prereq: 201.


321 International Economics (3) Balance of payments, exchange rate determination, monetary and fiscal policies in the aggregate economy. Prereq: 201 and permission of instructor. Writing-emphasis course.


341 Survey of Labor Economics (3) Extension of the international economic issues facing developing countries and other emerging markets. Theories of growth and policies used to promote economic improvement. Prereq: 201 or permission of instructor. Writing-emphasis course.

351 Monetary Economics (3) Role of money in the economy, Federal Reserve System, evaluation of monetary policy, U.S. depository institutions and money supply process. Prereq: 201.

361 Regional and Urban Economics (3) Overview of regional differences. Theory of industrial and agricultural location and human migration, economic bases for land use patterns, central places, and urban form, regional and urban structure, growth, and methods of analysis, examination of urban problems. Prereq: 201.

381 Econometrics (3) Methods of specification, estimation, testing and forecasting of economic relationships. Includes specification of models, estimation methods, statistical inferences of empirical results, forecasting procedures, econometric problem-solving techniques, multiplicity, heteroscedasticity, and autocorrelation. Prereq: 201, Statistics 201, Mathematics 123-125 or 141-142.

400 Special Topics (3) Topics vary. Prerequisites determined by department, each time course is offered. Numerical grade is given to law students. May be repeated when topic varies. Maximum 9 hours. Prereq: 201.

413 Macroeconomic Fluctuations (3) Analysis of historical data, methods of analyzing macroeconomic fluctuations, theoretical explanations of cycles, and the role of monetary and fiscal policies in the aggregate economy. Prereq: 313 or consent of instructor. Writing-emphasis course.

415 Western Economics Thought Since the 18th Century (3) Methods of studying doctrine. Origins and evolution of major doctrines: classical and neoclassical economics, economics of Keynes and his followers, principal economists of last half of 20th century. Major writing requirement. Prereq: 201 or equivalent and consent of instructor. Not available for graduate credit in History. (Same as History 415).


436 Economics of Health and Health Care (3) Medical care and health status; demand for medical care and insurance; physician and hospital supplies; government provision of services and insurance; regulation of health care markets. Writing emphasis course.

462 Economics of Resources and Environmental Policy (3) Economic analysis of environmental policy and allocation of resources. Benefits and costs of development of natural resources and impacts of growth on environment. Prereq: 201. Writing-emphasis course.

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

472 Public Finance: Taxation and Intergovernmental Relations (3) Individual taxes and tax system, non-tax sources of revenue, fiscal federalism. Prereq: 201. Writing-emphasis course.

482 Introduction to Mathematical Economics (3) Application of basic mathematical tools (e.g.) calculus, matrix algebra, etc. to major topics of economic theory. Prereq: Economics 311 with a grade of B or better, Mathematics 141-142 or 147-148.

482 Economics Off-Campus Study (1-6) Satisfactory, No Credit grading only. Prereq: Consent of instructor.

492 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.

499 Analysis of Economic Problems (3) Study of the effects of economics on modern society and the practice of economics from Service. Students will integrate learning from all fields of economics and other disciplines where appropriate, and work as teams to prepare written analyses of selected economic problems facing modern society. Prereq: Senior standing and completion of Economics 311, 313 and six other hours of upper division economics. Writing emphasis course.

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.

EDUCATIONAL PSYCHOLOGY (310)

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

401 Professional Studies: Applied Educational Psychology (2) Application of concepts, principles, techniques and models from Educational Psychology to facilitate student learning and creating of effective classroom environments. Prereq: Admission to Teacher Education.

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

431 Personality and Mental Health (3) (Same as Counselor Education and Counseling Psychology 431.)

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

460 Self-Management in the Helping Professions (3) Applications of self-management strategies to careers, social service, health, human services, helping professions and their clientele. Prereq: Introductory course in psychology or permission of instructor. Su

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

ELEMENTARY EDUCATION (322)
325 Teaching Science and Social Studies in Elementary and Middle School (3) Emphasis on the selection of materials for teaching science and social studies in elementary and middle schools. Teaching approaches common to both fields including inquiry, discovery, hands-on and group activities and approaches. For BS Education students. 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/readiness and writing). Includes methods and materials. For BS Education students only. Prereq: Admission to Teacher Education Program, F, Sp

351 Laboratory and Field Studies in Elementary Education (1-2) Simulated and actual experiences in which students apply concepts and skills from professional methods courses in a variety of school settings and levels. May be repeated. Maximum 3 hour. Prereq: Admission to Teacher Education Program. Coreq: Elementary Education 422. Satisfactory/No Credit grading only. E

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.

421 Elementary and Middle School Science and Social Studies Instruction (3) Methods and materials for teaching science and social studies. Development of functional relationships and individual elements 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 for teaching elementary and middle school reading, language arts, science, social studies and mathematics. Emphasis on planning, implementation and evaluation of integrative learning experiences. Prereq: Admission to Teacher Education Program; must be taken prior to Professional Year Internship. S

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; must be taken prior to Professional Year Internship. May be repeated. Maximum 8 hours. E

429 Language Arts/Reading Instruction 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/readiness and writing). Not open to students who have had recent course in language arts methods. Prereq: Admission to Teacher Education Program. F, Sp

ENGINEERING AEROSPACE (018)
201 Aerospace Seminar (1) An overview of aerospace engineering with lectures, laboratory demonstrations, and field trips. Aerospace history, aircraft and space flight fundamentals, propulsion techniques, wind tunnel testing, biomedical issues in aviation and space flight. S/NC. Prereq: Sophomore Standing in Aerospace Engineering or consent of instructor. F

341 Fluid Mechanics I (3) Introduction to fluid flow concepts; hydrostatics; development of mass, momentum, and energy conservation laws in integral and differential form; dimensional analysis and similarity; Viscous laminar and turbulent flows in pipes; introduction to boundary layers. Prerequisites: ME 231, Mathematics 341. F, Sp, Su

435 Aerospace Engineering Instrumentation and Measurements (3) Fundamentals of measurement systems; standards; dynamic characteristics of instruments; statistical data treatment; transducers; signal conditioning; strain, pressure, temperature measurements. Coreq: ME 363. Prereq: AE 341, EE 301. F, Sp
351 Compressible Flow (3) One-dimensional internal flow with shocks, friction and nonadiabatic conditions. Two-dimensional external flows. Prereq: ES 341, ME 352, Sp

363 Structural Analysis of Aerospace Vehicles (3) Fundamentals of structural analysis applied to configurations common to aerospace vehicles. Prereq: ME 321, Sp


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

422 Aerodynamics (3) Theory and design of aerodynamic bodies for desired characteristics. Potential flow theory, viscous effects, compressibility effects. Subsonic, transonic, and supersonic airfoils. Prereq: 351, 370, F

424 Astronautics (3) Astronautics, propulsion, atmospheric reentry of space vehicles including reentry thermal protection materials, human factors in space flight, the space environment, and current topics. Prereq: 351, Coreq: ME 344. F

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

426 Introduction to Aerospace Design (2) Design process, synthesis, safety, reliability, patents, product liability, economic analysis, optimization, design standards, design studies. Individual design reports required. Prereq: 351, 370, 363. Coreq: ME 344. F

429 Aerospace System Design (4) Synthesis and design of a complete aerospace system. Participation in team design effort includes conceptual presentations and design report. Prereq: 422, 425, 426, Sp

431 Mechanical Engineering/Aerospace Engineering Seminar (1) Topics related to engineering 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 standards and specifications. Analysis of data and formation of conclusions. 3 hours lab per week. Prereq: 349, 351, 425, Sp

494-495 Selected Topics in Aerospace Engineering (1-4) Problems and topics related to developments and practice in aerospace engineering. Prereq: Consent of instructor. F, Sp, Su

ENGINEERING BIOMEDICAL (192)

271 Introduction to Biomedical Engineering (3) Application of the skills developed in Engineering Fundamentals for biomedical engineers. The role of biomedical engineers in the design of artificial organs, orthopedic implants, medical imaging, and other biomedical applications with an emphasis on developing communication and teaching skills. Prereq: EF 201.

300 Engineering Physiology (3) The study of human physiology, with an emphasis on making engineering decisions, and the development of analytical and computational models. Prereq: Consent of instructor.

310 Biomechanics (3) The application of statics, dynamics, mechanics of materials, fluid mechanics to biomedical engineering problems. The special characteristics of living tissue and biological fluids and their incorporation into biomedical engineering problems will be introduced. Prereq: ME 321, AE 341.

320 FDA Regulation of Biomedical Devices (1) Federal medical device law and regulation requirements; pre-market approval of new medical devices. Consent of instructor.


401 Thesis (3) Research and design problems in biomedical engineering with prior approval of a professor. May be repeated to a maximum of 6 hours. Prereq: Senior standing or consent of instructor.


430 Biomedical Engineering Laboratory (3) This course provides experience with the unique problems associated with making measurements and interpreting data in living systems, experiments may include mechanical testing of biological materials and tissues, and Relevant test equipment and software. Prereq: 310 and 346 or consent of instructor.

431 Biomedical Seminar (1) Professionalism, teamwork, work, P.E. licensing, patents and intellectual property, professional ethics and other issues related to biomedical engineering. Formal written and oral reports. Prereq: Senior standing.

435 Biostatistics (3) Nature of biomedical signals, transducers, signal processing, analog, digital, telemetry and display devices. Prereq: 300 and ECE 301.

455 Biomedical Engineering Design I (2) Design of biomedical systems. Economics, optimization, reliability, patents and product liability. Participation in team design efforts: requires oral and written design reports. Prereq: 310, Coreq: 430 and MSE 474.

469 Biomedical Engineering Design II (4) Design of complete biomedical device: documentation includes complete specification, design calculations, preparation of working drawings and cost analysis. Written and oral reports. Prereq: 455.


494-495 Special Project in Biomedical Engineering (1-3, 1-3) Problems related to recent developments and practice. May be repeated once for credit. Prereq: junior or senior standing, consent of instructor.

ENGINEERING CHEMICAL (226)


230 Introduction to Chemical Engineering Thermodynamics (3) Introduction to the laws of thermodynamics, state functions, and their conceptual basis. Ideal systems, the gas law, Raoult’s law, and deviations from ideal behavior (fugacity and activity). Introduction to the principles of statistical mechanics and quantum mechanics. Prereq: EF 102, Chem 130. Coreq: Math 142.

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 241; Coreq: Mathematics 231.

250 Application of Chemical Engineering Thermodynamics (3) Basic concepts related to chemical engineering applications of thermodynamics; emphasis on flow processes, real gases and liquids, estimation of physical properties, phase equilibria of industrial mixtures, complex fluid systems, and chemical reaction equilibria. Prereq: ChE 200, 230.

301 Chemical Engineering Data Analysis (3) Analysis of experimental data; identification of system extremals; statistical properties of samples; empirical modeling of processes; statistical process control; optimization techniques. Prereq: Math 200 or permission of instructor.


340 Mass Transfer and Separation Processes (3) Stagewise operation; application of analytical, graphical and computer methods to design of stagewise separations column. Differential equations-application of analytical and computer methods to the design of diffusive processes. Applications include gas absorption, distillation, extraction, humidification, evaporation and membrane separations. Prereq: 200. Coreq: 230.

360 Process Dynamics and Control (4) Introduction to process modeling and industrial control system design. Mathematical tools for characterizing dynamic behavior of processes; theory and practice of operating and controlling such systems. Includes laboratory work. Lab. Prereq: 240, Mathematics 231.

380 Seminar (1) Presentation and discussion of topics in the practice of chemical engineering. Satisfactory/No Credit grading. May be repeated.


407 Honors Seminar (1) Presentations and discussions of topics important to the chemical engineers. Prereq: Consent of instructor. Satisfactory/No Credit grading. May be repeated.

408 Honors Seminar (1) Presentations and discussions on topics of importance to chemical engineers. Prereq: Consent of instructor. Satisfactory/No Credit grading. May be repeated.

410 Chemical Engineering Laboratory II (3) Laboratory investigations of mass transfer and chemical reaction phenomena in chemical engineering. Prereq: 310, 450, or permission of instructor.

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. Prereq: 340.


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

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

450 Chemical Reactor Fundamentals (3) Homogeneous and heterogeneous reaction kinetics; idealized homogeneous reactor models, both for closed and flow systems; conversion and reactor simulation; identification of scaling parameters; catalyst effectiveness factors and conversion in fixed bed catalytic reactors. Prereq: 240, 340, 360, 301.

467 Honors: Engineering Internship in Process Control (1) Internship experience with working engineers on industrial problems in process dynamics and control. Directed by faculty and engineers from host company. Prereq: 360 and consent of instructor.

477 Honors: Applied Process Automation Laboratory (3) Introduction to control of batch processes in the process control automation systems. Top down analysis with bottom up implementation, hierarchical structures and object oriented concepts are used to develop solutions including human-machine-interfaces. Workstations with modern industrial equipment provide an interactive graphical and visualization environment. Prereq: 360 and consent of instructor.
478 Honors: Applied Process Automation Design Projects (3) Industrial programmable logic controllers (PLCs) and industrial automation and human-machine- interface (HMI) design software are used on workstations to develop automation solutions by small teams of students. Advanced control strategies, networking and internet issues. Prereq: 477 and consent on instructor.


483 Introduction to Reliability Engineering (3) (Same as Nuclear Engineering 483.)

484 Introduction to Maintenance Engineering (3) (Same as Nuclear Engineering 484.)

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

488 Honors: Design Internship in Industrial Pollution Prevention (3) Significant improvement in small groups to address the prevention of industrial pollution through improved process design. Directed by faculty and engineers from host companies. Must be taken during the last 15 hours of the curriculum. Consent of instructor. Prereq: Sophomore standing.


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.

498 Honors Thesis (3) Research in problems related to recent developments in chemical engineering. Prereq: Consent of instructor.

ENGINEERING CIVIL AND ENVIRONMENTAL (254)

205 Professional Development I (2) Introduction to civil engineering specialties, history, and instruments. Professional responsibility, communication, and organizations. Prereq: Sophomore Standing.

210 Engineering Measurements (4) Menusarion through application of surveying techniques; theory of errors and applications; concepts of horizontal, vertical and angular measurements and control; construction surveys; route surveys through vertical and horizontal curves; use of maps, GPS and GIS. 3 hours, 1 lab. Prereq: Sophomore Standing.

261 Structural Analysis I (3) Reactions; shear and moment diagrams; forces in trusses; uniaxial stress and strain; area moments of inertia; torsion. Prereq: Engineering Fundamentals 102.

305 Professional Development II (1) Legal and ethical considerations, continuous improvement in small groups. Prereq: 205, Sophomore Standing.

321 Materials of Construction (3) Physical and mechanical properties of materials used in construction. Behavior of materials and structures under load. Testing standards, types and properties of horizontal, vertical and angular measurements and control; construction surveys; route surveys through vertical and horizontal curves; use of maps, GPS and GIS. 3 hours, 1 lab. Prereq: Sophomore Standing.

326 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.

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

380 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: 205 or Biosystems Engineering 243; Engineering Fundamentals 102; Nuclear Engineering 263.

395 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; rainfall and streamflow frequency analyses; groundwater flow. Prereq: 390.

400 Senior Design Project (3) Open-ended, comprehensive project emphasizing team approach to design process. Includes project formulation, site planning, project management, drawings and specifications, cost estimating, and various project components typical of those faced by practicing civil engineers. Prereq: Must be taken during the last 15 hours of the curriculum.

401 Review of Engineering Fundamentals (1) Review of selected topics covered on the Fundamentals of Engineering exam. Emphasis is on those topics relating to Civil and Environmental Engineering. Prereq: All course work in the Freshman Engineering sequence. Must be taken during the last 15 hours of the curriculum.

409 Special Topics (1-3) Recent developments and current practice in civil and environmental engineering through field internship and/or self-study. Prereq: Consent of instructor and department head. May be repeated.

421 Portland Cement Concrete Mix Design and Analysis (3) Aggregate properties and tests, tests of portland cement and concrete, mix design methods, admixtures, and nondestructive testing. Two lectures and 1 lab. Prereq: 321.

431 Geological Engineering (3) Influence of geologic origin and history on the engineering characteristics of rocks and soils; geology in the planning and construction of civil engineering projects. 2 hours lecture, 1 hour lab. Prereq: 330 or consent of instructor.

435 Foundation Engineering (3) Fundamentals of geotechnical aspects and analysis of soil and structural systems; subsurface investigation; design of shallow and deep foundations on rock. Lateral earth pressure and retaining structures. Prereq: 330.

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, environmental, water resources, structural analysis material. Emphasis on microcomputer applications. Prereq: Senior standing and Statistics 251.

442 Construction Methods and Equipment (3) Fundamental operations in 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 planning and design of highway facilities; covers both geometric and pavement design. Prereq: 210, 251, 352.

452 Traffic Engineering (3) Characteristics of driver, vehicle, and roadway and their interrelationships; traffic studies; basic engineering for traffic 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 engineering. Runway configuration, airfield capacity, geometrics and terminal layout, design. Railroad capacity, geometrics and system layout and design. Prereq: 210, 251, 352.

462 Analysis of Framed Structures (3) Vertical and lateral force resisting systems; gravity loads due to dead, live, and snow loads; lateral loads due to earthquake and wind. Computer techniques for the analysis; building modeling and analysis. Prereq: 361.

471 Introduction to Structural Design (3) Selection of rolled structural 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 beams; consideration of members subjected to combined stresses; design of a typical framed building including connections. Prereq: 361.

474 Reinforced Concrete Design (3) Design of continuous beams, floor slabs, and columns with combined axial loads and bending, footings; and design for torsion. Prereq: 471.

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

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

486 Air and Waste Management (3) Principles of air quality management, solid waste management and hazardous waste management. Review of regulations, environmental quality, treatment of raw materials and control technologies including treatment and disposal. Prereq: 390 or Chemical Engineering 200 or Agricultural Engineering 243.

490 Water Resources Project Design (3) Development of multipurpose reservoir and dam project, including data acquisition; spillway and outlet works design; earth and gravity dam stability analyses; drains and filters; maintenance and operation, and dam safety concepts, including dam break analyses. 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; decision making using risk-based methods; case studies. Prereq: Senior standing.

ENGINEERING ELECTRICAL AND COMPUTER (319)

206 Electrical Engineering Computations (4) Engineer- ing problem solving and algorithm development by program- ming computers. Emphasis on software engineering, object-oriented design, building abstractions with data and objects, and programming in a modern computer language. Includes Level 1 design projects which require laboratory work. Coreq: 255.

255 Introduction to Logic Design of Digital Systems (4) Standard codes, number systems, base conversions and computer arithmetic. Boolean algebra, minimization and synthesis techniques for combinational and sequential circuits. Use of HDL for the specification and verification of circuits using SSI, MSI and LSI components. Includes Level 1 design projects which require laboratory work. Coreq: 206.

300 Circuits (5) Fundamental laws of circuit analysis. Kirchhoff's Voltage and Current laws, the law of conservation of energy, circuits containing independent and dependent voltage and current sources, resistors, inductors and capacitors, transient analysis anal- yzed 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. Complex frequency, sinusoidal forcing functions, and natural response. Resonance; general case, special cases in series and parallel circuits. Scaling: magnitude and frequency. Admittance, impedance and hybrid parameters. Includes Level 1 design projects which require laboratory experi- ments. Prereq: All course work in the Freshman Engineer- ing curriculum; grade of C or better in Mathematics 141, 142, 231 and Physics 231.

Courses of Instruction 169
301 Circuits and Electromechanical Components (3) DC and AC Circuits, Transistors, Transformers, Motors, Generators. For non-majors only. Prereq: Mathematics 231, Physics 211.
315 Signals and Systems I (3) Continuous and discrete-time systems; time/frequency domain, signal energy and power, solution of linear differential equations, system properties, convolution, continuous and discrete-time Fourier series, continuous and discrete-time Fourier transforms, Bode diagrams, correlation. Prereq: 315.
325 Electric Energy System Components (4) Three phase systems, phasor analysis, ac power, ideal transformers, per unit notation. Magnetic Circuits. Practical transformers: construction, equivalent circuits, single and three phase. DC machines: construction, connec-
335 Electronic Devices (4) Semiconductor physics, theory of p-n junctions; diodes, field-effect transistors, and bipolar transistors; modeling of diode and transistor devices; analysis and design of diode switching and rectifier circuits; basic transistor switching circuits and single stage amplifier circuit simulation using SPICE. Includes 1 credit laboratory work involving Level I design projects. Prereq: 300, Coreq: 315.
336 Electronic Circuits (3) Multistage transistor amplifier biasing, gain stages, and output stages; frequency and transient response of open loop linear amplifiers; fundamentals of integrated circuits, operational amplifier design; basic transistor switching circuits. Includes laboratory experiments and design projects. Prereq: 335.
341 Fields (3) Coulomb’s law, Gauss’ law, Ampere’s law; Maxwell’s equations for electrostatics and magnetostatics cases; Maxwell’s equations for dynamic case, dynamic potentials, uniform plane wave propagation. Transmis-
sion lines. Prereq: 300, Math 241, and Physics 232.
342 Analog Communication Amplitude and Frequency Modulation (3) Probability and random vari-
ables, signal-to-noise ratio, propagation models, link budget analysis, bandwidth signals, amplitude modula-
tion, frequency modulation, spread-spectrum. Includes Level I design projects which require laboratory experi-
ments. Prereq: 315.
355 Computing System Fundamentals (3) Introduction to machine-level computer organization and program-
ming. Basic microprocessor architectures; memory archi-
tectures; structured assembly language program-
manship, intra- and inter-computer communication; I/O systems; device drivers; multi- and distributed processor systems; issues in computer security. Includes Level 1 design projects which require laboratory work. Prereq: 300, 206, 255.
395 Junior Seminar (1) Presentations and discussions related to professional development, including registra-
tion, ethics and current topics in electrical engineering. Prereq: 300. Satisfactory/No Credit.
400 Senior Design (5) A major design project that focuses the student’s attention on professional practice, based on first-year course work. May not be repeated. Prereq: 315, 325, 332, 342, 355.
416 Computer Control Systems (4) Computer controlled systems using state variables and 2-transform model representations with sampling theory and its effect on digital control systems and digital controllers for both the state space and frequency domain. Includes Level 2 design projects. Prereq: 316.
421 Electric Energy Systems (3) Structure and opera-
tion of the electrical energy grid; load flow; economic load dispatch; load shape; load duration; transmission and distribution electric substations. Effects of machine parameters on steady state and transient stability. Restorations of power systems. Includes Level 1 design projects. Prereq: 316, 325.
422 Power System Operations and Planning (4) Dy-
amic phenomena in power systems. Transient stability assessment and enhancement; direct and indirect meth-
ods for stability determination in nonlinear systems. Operations planning; unit commitment, economic dis-
patch; energy management system; generator and load control. Volt-var control, load management, cogenera-
tion and other topics of contemporary concern. Includes Level 2 design projects. Prereq: 421.
423 Electric Machines (3) Principles of electromechani-
cal systems; device drivers; multi- and distributed processor architectures; structured assembly language program-
ning; design of digital controllers for both the state space and frequency domain. Includes Level 1 design projects. Prereq: 316, 325.
431 Operational Amplifier Circuits (3) Linear and non-
linear active circuits using commercial operational ampli-
fiers. Includes operational, instrumentation, isolation, high-frequency, and differential amplifiers; analog to digital converters. Includes design projects. Prereq: 421. Includes Level 2 design projects which require laboratory work. Prereq: 316, 336, 342.
432 Electronic Amplifiers (4) Feedback amplifier prin-
ciples; wideband linear amplifier design; low-noise pream-
pifier design; audio power amplifier design; linear regul-
ated power supply design and switching regulator prin-
ciples; introduction to radio frequency amplifier design; oscillator principles. Includes laboratory experiments and design projects. Includes Level 2 design projects which require laboratory work. Prereq: 431.
441 Digital Communications (3) Quantization and pulse code modulation. Binary and M-ary signaling, spectra of 
line codes, link budget analysis, binary communication in the presence of noise, matched filtering and equaliza-
tion, bandwidth and distortion. Includes 1 credit laboratory work involving Level I design projects. Prereq: 316, 336, 342.
443 Electronic Antennas (3) Introduction to antenna elements, directivity, gain, patterns, etc. Antenna design and a comprehensive view of antennas and propagation as they relate to wireless systems. Includes Level I design projects which require laboratory work. Prereq: 441.
444 Communication System Design (4) Application of commu-
nication theory to system design. Development of communication systems, including communication sim-
umulation utilizing a graphical programming language. Hard-
ware and software design and simulation. Construction of a complete digital radio communication system. Includes Level II design projects which require laboratory work. Prereq: 444.
445 Digital Signal Processing (3) Quantization and pulse code modulation. Binary and M-ary signaling, spectra of 
line codes, link budget analysis, binary communication in the presence of noise, matched filtering and equaliza-
tion, bandwidth and distortion. Includes 1 credit laboratory work involving Level I design projects. Prereq: 316, 336, 342.
446 Electromagnetic Compatibility (3) Principles of elec-
trical and magnetic fields, antennas, and interactions with electrical devices. Parameters and coupling for dipole, biconical, and log-periodic antennas. High frequency effects in circuit elements; radiation; conducted and conducted emissions and susceptibility. Crosstalk, shielding, electrostatic discharge, and EMC regulations. Includes Level 1 design projects which require laboratory work. Prereq: 316, 341.
450 Computer Systems Architecture (3) Architecture and design of microcomputer systems with microproces-
sors or microcontrollers. Instruction set architectures, software interfaces, processor structures, memory hier-
archies, interfacing, interrupt systems, cache memories. Includes Level I design project which require laboratory work. Prereq: 355.
452 Design of Digital Systems and Computers (4) Considerations for design and application of digital systems and computers; includes embedded systems concepts and design, CPU issues, interrupt structures, and I/O channels. Includes Level II design projects which require laboratory work. Prereq: 451.
453 Computer Network Design (3) Principles of computer networking and software design of network protocol with an emphasis on the internet and TCP/IP protocol suite. Includes Level I design projects which require laboratory work. Prereq: 206.
471 Introduction to Pattern Recognition (3) Introduction to statistical decision theory, adaptive classifiers, and supervised and unsupervised learning. Students will engage in practical applications of these techniques in areas of current interest such as face recognition, speech pro-
cessing, remote sensing, data mining and bioinformatics. Includes Level 1 design projects. Prereq: 316. Non-
majors require consent of instructor.
472 Introduction to Digital Image Processing (4) Mathematical foundations and practical techniques for
digital manipulation of images, including image enhance-
mement, noise correction, image restoration, and color transformation. Includes Level II design projects. Prereq: 316. Non-majors require consent of instructor.
481 Power Electronics (3) Principles and characteristics of power semiconductor devices, single-phase and polyphase phase-controlled converters, converter con-
trol, ac voltage controller. Includes Level I design projects and laboratory work. Prereq: 316, 325, 332.
482 Power Electronics Circuits (4) Voltage-fed inverters, PWM controls, control of inverters, dc-dc converters, static synchronous compensators, field mill 
drives, brushless dc machine principles. Includes Level 2 design projects which require laboratory work. Prereq: 481.
491 Special Topics (3) Topics relating to either basic design and construction or advanced electrotechnology. May not be repeated to satisfy senior requirements for graduation. Maximum three hours. Prereq: Completion of all junior EE courses or consent of instructor. Includes Level 1 or Level 2 design projects which may require laboratory work.
495 Senior Seminar (1) Current topics in electrical 
engineering. May not be repeated. Prereq.: Completion of all junior EE courses or consent of instructor. Satisfac-
tory/No Credit or letter grade.

ENGINEERING FUNDAMENTALS (323)

100 Engineering Skills Development (1-3) Exercises in the use of tools and techniques essential to the practice of engineering. Credit cannot be used toward any engineering degree. May be repeated. S/NC grading.

101 Engineering Approaches to Physical Phenomena (6) Engineering problem solving emphasizing graphical and mathematical modeling. Introduction to the design of systems and the interaction of system, design with team projects and presentations, coverage of professionalism and engineering perspective. Intro-

102 Fundamentals of Engineering Mechanics (6) Funda-
mentals of statics and particle dynamics with applications to engineering problems. Graphical and mathematic-
al modeling software applications, team design and projects. Topics to be covered include vectors, forces and moments, equivalent force systems, free-body diagrams, equilibrium, frames, trusses, friction, kinematic, kinematics, simple applications of these techniques in statics, dynamics, operations, and control. Engineering problem solving emphasizing graphical and mathematical modeling. Introduction to the design of systems and the interaction of system, design with team projects and presentations, coverage of professionalism and engineering perspective. Introduction to stress, strain, rigid body motion, Newton’s laws, work, energy, impulse-momentum. A, B, C, NC grading. Prereq: EF 101. Coreq: Math 141 or higher. S

103 Review of Engineering Fundamentals (3) A review of statics and dynamics for students needing additional work after taking EF 102. Credit cannot be used toward any engineering degree. S/NC grading. Prereq: Consent of instructor.


201 Engineering Design Workshop (2) Introduction to the design process. Project experiences involving working in team projects, oral presentations, and written reports. Prereq: Consent of instructor.
ENGINEERING INDUSTRIAL (556)

202 Work Methods and Measurement (3) Productivity and work design. Techniques of work methods design including job evaluation, work measurement, and work environment as well as work methods improvement techniques and procedures. Human work design criteria for the improvement of work methods. Stopwatch time studies, predetermined time systems, and work sampling are used to establish, document, and maintain time standards, standard data, and allowances. Learning curves and wage payment systems. Design of ergonomic workplace including user-centered design. Co-Reqs: Fundamentals 101. Coreqs: Statues 251, F, Sp.

300 Engineering Data Analysis and Process Improvement (3) Engineering statistical methods as applied to modern engineering and business environments, process improvement, inferences about process output and behavior, and measurement systems. An introduction to the use of designed experiments to improve process. Lab components provide the design of an experiment. Coreqs: Engineering 201. F, S, or Prereq: Statistics 251 or Mechanical Engineering 345 or consent of instructor. F, Sp.

301 Operations Research in Industrial Engineering (3) Integrated system modeling concepts, linear mathematical programming models including the original simplex procedure, transportation and assignment problems, revised simplex procedure, dual simplex procedure, parametric linear programming (sensitivity analysis), and integer linear programming. Prereqs: Math 200 and 231, Coreqs: Statues 251, F, Sp.

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 characteristics, human factors aspects of human-machine interfaces, the analysis of stress on performance, environmental factors such as noise, lighting, and atmospheric conditions. Focus on designing the task to fit the person. Prereqs: Junior standing and consent of instructor. F, Sp.

306 Simulation (3) Simulation of complex production processes using current simulation software. Introduction to modeling concepts, flowcharting, random number generation, simulation, statistics, and computer and computer utilization. Utilization of statistical tools to analyze inputs and outputs to simulation models. Lab component provides simulation software and simulation exercises to develop fundamental understanding of the design process, software and hardware system. Prereqs: Math 200 and 234, F, Sp. or Prereq: Mathematics 200 and 201. F, Sp.


401 Integrated Manufacturing Systems (3) NC and CNC machine tools, robotics and related materials handling systems, hard automation, alternative integrated manufacturing systems, and manufacturing information control systems. Prereqs: 330, F.

402 Production System Planning and Control (3) Theory and application of forecasting systems including regression and time series models. Independent demand inventory models, including development of safety stock, inventory planning and control and expected value models. Analysis of resource planning and control (MRP) systems; Master Production Scheduling, Resource Requirements Planning, Bill of Material and Inventory File Structures, Material Requirements Planning, Capacity Planning, an Overview of Just-in-Time inventory concepts and MRP's role in manufacturing automation. Prereq: 202; Coreq: IE 401, F, Alt Su.

403 Production Facilities Design and Material Handling (3) Design of production facilities including plant layout and analysis and planning for overall moving, packaging and material handling equipment. Course offers office space and services areas. Principles applicable to design of facilities for such diverse groups as hospitals, banking, and industry. Prereq: 202, Coreq: IE 401, Sp.

404 Industrial Engineering Applications (2) To enhance and integrate an undergraduate education experience in preparing senior industrial engineering students for their transition to professional practice. Prereq: Term of expected graduation or consent of instructor. F, Sp.


421 Information Systems Analysis and Design (3) Systems engineering analysis design, development, and implementation of systems of information. Emphasizes informational requirements of industrial engineering systems. Involves utilization of relevant software packages. 2 hours lecture, 1 lab. Prereq: Senior standing or consent of instructor. F.

422 Senior Industrial Engineering Problems Analysis (3) Application of Industrial Engineering to field assignments in local organizations, including problem definition, analysis and presentation. Prereq: Expected term of graduation or consent of instructor. F, Sp.


440 Process Improvement Through Planned Experimentation (3) Review of fundamentals of continuous improvement, advanced statistical process control techniques, and strategies for short production runs. Use of experimental design techniques to improve processes, including single and multiple-factor designs, blocking and confounding, and statistical design techniques. Full factorial designs are compared to fractional designs to balance experimental efficiency with loss of information. Lab component provides statistical and simulation software to provide hands-on experience. 2 hours lecture, 1 lab. Prereq. 300. Sp.

483 Introduction to Reliability Engineering (3) (Same as Nuclear Engineering 483).

484 Introduction to Maintenance Engineering (3) (Same as Nuclear Engineering 484.)(3)

494-495 Special Topics in Industrial Engineering (1-3,1-3) Recent developments in Industrial Engineering including new areas of application, new research techniques and new methodologies. May be repeated once. Prereq: Senior standing and consent of instructor. F, Sp.

ENGINEERING INDUSTRIAL SCIENCE (638)

201 Introduction to Materials Science and Engineering (3) Correlation of atomic structure, crystal structure and microscopic structure in the various materials; microstructure, physical and chemical properties of engineering significance. Prereq: Chemistry 130, E.

290-291 Materials Seminar (0, 1) Professionalism, ethical considerations, safety, patents, product liability, field trips to material laboratories and science in a global societal context, teamwork, contemporary issues, life-long learning. May be repeated. Satisfactory/No Credit grading only. Electives 290 or 291 must be taken each semester by all MSE majors starting with the second year of residence.

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

301 Materials Science and Engineering Data Analysis (3) (Same as Chemical Engineering 301).

302 Mechanical Behavior of Materials I (3) Tensile testing of metals, ceramics and polymers; deformation mechanisms of the various materials; crystal line and non-crystalline forms; rubber elasticity, viscoelastic behavior, creep, time-temperature superposition in polymers; fatigue. Prereq: 201, 303, or consent of instructor. F


320 Diffusion and Phase Transformations (4) Thermodynamic treatment of phase equilibria, heat and mass transfer, chemical thermodynamics and kinetics to the processing of materials and manufacturing of products. Involves use of phase diagrams of real substances (metals, ceramics, polymers), geometries (bulk, fibers, films, coatings) and processes (casting, molding, extrusion, forging, powder processing, coating techniques, etc.) are studied as examples of processing technologies. Elementary ideas of process measurement and control. Prereq: 201, 320, CHBE 200, and CHBE 240, or equivalent. Sp.

380 Materials Selection in Design (3) Systematic materials selection in design. Review of materials properties, use of property selection charts and indices. Materials selection, with and without shape constraints, materials processing in design; case studies. Sources of material property data, utilization of material data bases in industrial design, aesthetics, economics, regulations, forces for changes. Prereq: Junior standing.

402 Principles of Metallic Materials (3) Property control through composition, mechanical and thermal processing; ferrous and nonferrous alloys; alloy selection. Prereq: 201.

405 Structural Characterization of Materials (4) X-ray diffraction and fluorescence; scanning and transmission electron microscopy; microanalytical techniques.


421 Mechanical Behavior of Materials II (3) Description of stress and strain; linear elastic constitutive equations, isotropic and anisotropic moduli in various materials; yield criteria; brittleness fracture; crazing; plastic strain constitutive equations, forming operations and limit criteria. Prereq: 302, ES 321, sophomore mathematics.

422 Chemical Process Metallurgy (3) Application of chemical thermodynamics to metalurgical processing. Ferrous and nonferrous pyrometallurgical refining, slag-metal equilbria, solidification, gas-metal processing. Prereq: 303. F.

423 Introduction to Ceramic Matrix Composites (3) Characteristics of composites, including ceramic-matrix composites; macromechanics and materials design; overview of fabrication techniques; microstructural characteristics, fatigue, fracture, delamination, materials property evaluation; current and potential applications. Prereq: 201 and ES 321, or equivalent. Courses of Instruction 171
434 Polymer Processing (3) Rheological measurements; flow through tubes and slits, including end effects and extrudate swell; selected applications, including screw extrusion, injection molding, synthetic fibers, including structure development, properties.

444 Plastics Fabrication and Design (3) Lectures, laboratories and field trips; unit operations of plastics fabrication; plastics classification; design and selection criteria; processing techniques; characterization laboratory. Sp

470 Environmental Degradation of Materials (3) Mecha-

nisms, measurement techniques and control of environ-
mental degradation processes in metals, polymers, ceramics and composites; material selection and design considerations. Prereq: 201. Recommended for chemical engineering, mechanical engineering, civil engineering and engineering science and mechanics majors. F

472 Fundamental Principles of Composite Materials (3) Physical principles basic to the design, manufacture and application of fiber reinforced polymers, metals and ceramics. Prereq: 302 or equivalent. F

474 Biomaterials (3) Metals, polymers and ceramics utilized in orthopedic, cardiovascular, and dental surgical implant devices; corrosion and degradation problems; material properties of primary importance; tissue response to synthetic materials. Prereq: 201. Recommended for chemical engineering, mechanical and mechanical majors.

484 Introduction to Maintenance Engineering (3) (Same as Nuclear Engineering 484).


494 Special Project Laboratory (1-3) Group or individual investigation of problems related to materials science and engineering. May be repeated to a maximum of 6 credits. Prereq: 201 and consent of instructor. F

495 Thesis (3) Research problems in materials science and engineering with prior approval of a professor. May be repeated once. Prereq: Senior standing or consent of professor.

496 Special Topics in Materials Science and Engineering (1-3) Recent developments in materials research, developments and applications. Prereq: Senior standing or consent of instructor.

ENGINEERING MECHANICAL (650)


331 Thermodynamics I (3) Energy and laws governing energy transformations; thermodynamic properties; ther-

modynamic cycles; applications to engineering prob-


332 Thermodynamics II (3) Properties of gases and mixtures; chemical reactions; equilibrium; compressible flow; applications to engineering problems. Prereq: 331. F, Sp, Su

344 Heat Transfer (3) Heat transfer by conduction, thermal radiation, free and forced convection. Prereq: 331, 391, AE 341, F, Sp, Su

345 Mechanical Engineering Instrumentation and Mea-

surement (3) Fundamentals of measurement systems; standards; dynamic characteristics of instruments; sta-

tistical data treatment; transducers; signal conditioning; strain, pressure, temperature and flow measurements. Coreq: 363; Prereq: AE 341, EE 301, F, Sp, Su

363 Mechanical Vibration (3) Free and forced vibrations of damped and undamped lumped parameter systems; energy methods; free vibration of continuous bodies. Prereq: ME 231, Mathematics 231. F, Sp, Su

365 Elements of Machine Design (3) Motion and forces related to plane and spacial mechanical linkages. Kine-


391 Engineering Analysis (3) Numerical and analytical techniques are developed for problems arising in me-

chanical and aerospace engineering. Numerical methods address root finding, direct and indirect techniques for linear and nonlinear systems, interpolation, curve fitting, quadratures, solutions to ordinary- and partial-differential equations. Analytic methods include Fourier series, solutions to linear systems of differential equations and, F

392 Fundamentals of Engineering (1) The course re-

views topics covered on the Fundamentals of Engineering exam. Letter grade only. Prereq: Senior standing in Engineering.

405 Microcomputer-Based Control of Electromechani-

cal Systems (3) Application of microcomputers to control electromechanical devices. Application and theory, dynamics of machine control, assembly language programming, microcontroller architecture, stepping and DC motors, photoelectric devices, A/D, D/A, integrated circuits. Prereq: EE 201 or EE 301 and consent of instructor.

431 Seminar (1) Topics related to engineering including ethics. Formal oral presentation by students on engineer-

ing topics. Prereq: Senior standing. F

449 Mechanical Engineering Laboratory (3) Designing, conducting and reporting results of experimental and computer-aided experiments. Analysis of data and formation of conclusions. 3 hours per week. Prereq: 332, 344, 345. Coreq: 475. F, Sp, Su

451 Systems and Controls (3) Analytical models of physical systems; comprised of combinations of me-

chanical, fluid, electrical, and thermal systems. Analysis and design of feedback control systems using transient and frequency response techniques, stability analysis, sampled data systems. Prereq: 331, 341, 346, 475. F, Sp, Su

452 Computational Mechanics (3) Integration of funda-

mental physical laws, mathematical methods, and com-


455 Introduction to Machine Design (2) Engineering economy, optimization, design for automation, reliability, patents and product liability; design of mechanical engineering solid mechanics systems. Participation in team design effort; requires design report. Prereq: 363 F

456 Introduction to Thermal Design (2) Engineering economy, optimization, design for automation, reliability, product and liability; design of mechanical engineering thermal-fluid systems. Participation in team design effort; requires design report. Prereq: 332, 344. F

466 Elements of Machine Design II (3) Application of strength and properties of materials, design factors, theories of failure to design of machine elements. Mini design experiences. Prereq: Materials Science 201, ME 321, F, Sp

469 Machine Design (4) Design of complete machine; documentation including complete specifications, design calculations, working drawings and analysis. Written and oral report. Prereq: 366, 455, 466. Sp

471 Refrigeration and Air Conditioning (3) Vapor com-

pression and absorption cycles; heat pump systems; psychrometric processes; air washers; cooling towers; solar radiation; building heat transmission. Prereq: 332, 344.

475 Thermal Engineering (3) Thermal systems with emphasis on thermohymeretic, air exchanges, combus-

tion and system analysis and design including second law and economic analysis. Prereq: 332, 344. F, Sp

497 Thermal Engineering Design (4) Design of a complete thermal-fluid system including economic, tech-

ical and optimization aspects. Participation in team design effort including formal presentations and design report. Prereq: 456, 475. Sp

483 Introduction to Reliability Engineering (3) (Same as Nuclear Engineering 483).

484 Introduction to Maintenance Engineering (3) (Same as Nuclear Engineering 484.)

494-495 Selected Topics in Mechanical Engineering (1-

4,1-4) Problems and topics related to developments and practice in mechanical engineering. Prereq: Consent of instructor. F, Sp, Su

ENGINEERING NUCLEAR (716)

200 Introduction to Nuclear and Radiological Engineer-

ing (1) Topics related to nuclear and radiological engineer-

ing. Satisfactory/No Credit.


301 Fundamentals of Nuclear and Radiological Engi-

neering (3) Nuclear systems, radiation interactions, radiation detection, health physics, cross sections, flux, reactor theory. Prereq: Physics 232, Math 231.

304 Nuclear and Radiological Engineering Laboratory I (3) Radiation detection and counting instrumentation, counting statistics, half-life and decay schemes, gamma spectrometry, heat transfer experiments. Prereq: 324. Coreq: 346.

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: 203.

342 Thermal Science (3) Fluid statics; conservation equations of mass, momentum, and energy; applications to fluid machinery; heat transfer processes, heat conduc-

tion, thermal radiation, free and forced convection.

351 Nuclear System Dynamics and Control (3) System modeling and time-domain response, transfer functions, frequency-domain response, stability, state-space meth-


360 Reactor Systems and Safety (3) Safety and oper-

ating limits of nuclear steam supply system components; NRC regulations; accident analysis and mitigation. Prereq: 342.

400 Senior Seminar (1) Current topics related to nuclear and radiological engineering including ethics, contem-
porary issues, and commitment to life-long learning. Prereq: Senior standing. Satisfactory/No Credit.

403 Nuclear and Radiological Engineering Laboratory II (3) Cross section measurements, diffusion properties of neutrons, shielding, dynamics and controls, alpha and beta spectroscopy, radiation fields and dosimetry. Prereq: 304.

404 Nuclear Fuel Cycle (3) Topics relative to nuclear fuel cycle including, mining, milling, fabrication, in-core man-

agement (breeder), waste disposal, regulatory and radiation health issues and requirements. Prereq: 470 or equivalent.


421 Introduction to Nuclear Criticality Safety (3) Fundamentals of nuclear criticality safety; criticality acci-

dents; safety standards; overview of experiments, balanced systems, reactor economics, and emergency core shutdown. Prereq: 301.

431 Radiation Protection (3) External and internal dosimetry, biological effects of radiation, radiation detection, radiation risk assessment. Prereq: 301.

470 Nuclear Reactor Theory I (3) Fundamentals of reactor physics relative to cross sections, kinematics of elastic scattering, reactor kinetics, reactor systems and nuclear data. Analytical and numerical methods applicable to nuclear reactor design, criticality, reactor perturbation theory, and the multigroup diffusion equations. Prereq: 301.

471 Nuclear Reactor Theory II (3) Thermal spectrum computational methods; heterogeneous effects in fast and thermal spectra; considerations in reactor core design; equations that relate thermal and neutronic variables; neutronic feedback calculations and reactivity control methods. Prereq: 470.

472 Nuclear System Design (4) First order design and analysis of a nuclear system, interface with nonnuclear aspects of system design including system reliability and economic class project. Prereq: 470.

483 Introduction to Reliability Engineering (3) Probabilistic failure models, parameter estimation (maximum likelihood, Bayes techniques), model identification and comparison, accelerated life tests, failure prediction, system reliability, preventive maintenance and warranties. Prereq: Senior standing or consent of instructor. (Same as Mechanical Engineering 483 and Industrial Engineering 484.)

484 Introduction to Maintenance Engineering (3) Principles of maintenance and reliability engineering, and maintenance management. Topics include information extraction, failure data collection, machinery measurements, rotating machinery diagnostics, nondestructive testing, life prediction, failure models, lubrication oil analysis, establishing a predictive maintenance program, and computerized maintenance management systems. Prereq: Senior standing in engineering and consent of instructor. (Same as Materials Science and Engineering 484, Industrial Engineering 484 and Mechanical Engineering 484.)

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

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

498 Research (1-3) Research related to recent developments in nuclear and radiological engineering. May be repeated up to a maximum of 3 credits. Prereq: Consent of department head. Satisfactory/No Credit.

ENGLISH (339)

101 English Composition I (3) Strategies for written argumentation, critical reading, and discussion; emphasis on audience analysis, the invention and arrangement of ideas, and revision for style and mechanics; typical assignments include formal essays, in-class essay exams, journals, quizzes, and collaborative projects; two individual conferences required. Students wishing additional help with writing should also register for English 103. A, B, C, NC grading.

102 English Composition II (3) Critical strategies for reading and writing about literature; emphasis on the documented essay, library skills, and continued development of style and voice; typical assignments include analytical essays, annotated bibliographies, journals, quizzes, and collaborative projects; two individual conferences required. Students wishing additional help with writing should also register for English 104. Prereq: 101. A, B, C, NC grading.

103 Writing Workshop I (1) Self-paced Writing Center tutorial for students wanting additional instruction while enrolled in English 101 or having ACT English and composite scores at or below 26 (or SAT verbal/composite scores at or below 560/1050). In-class instruction in critical reading 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 he or she is currently enrolled. Prereq: English 101. S/NC grading.

104 Writing Workshop II (1) Self-paced Writing Center tutorial for students wanting additional instruction while enrolled in English 102 or students advised to enroll by their 102 instructors. Individual instruction in critical reading 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 currently enrolled. Prereq: English 101. S/NC grading.

118 Honors English Composition (3) For students whose ACT English and Composite scores are at or above 28 (or SAT verbal/composite scores at or above 650/1260). Grading scale and workload are same as in regular sequence though course proceeds at an accelerated rate. Students must pass both the English Placement Exam and the 102 class in which they are currently enrolled. Prereq: English 101. S/NC grading.

121 Academic English for Non-Native Speakers (4) Development of academic English literacy, including reading, writing, vocabulary, and grammar as well as some attention to listening, oral presentation, and pronunciation. Required of all non-native English speaking students which present at or below the English Placement Exam. Examination 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 and composition 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, NC 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 writing research papers. Individual conferences. Admission to this course is by the English Placement Exam only. A, B, C, NC grading.

133 Black American Literature and Aesthetics (3) Black American literature and aesthetics since 1899, with emphasis on cultural evaluations and the principles of writing "American". Writing-emphasis course. (Same as African and African-American Studies 333.)

134 Film and American Culture (3) American films as both works of art and social documents. Relationship between the medium of film and American culture in the twentieth century. (Same as American Studies 334 and Cinema Studies 334.) Writing-emphasis course.


495 Special Topics in American Literature (3) Topics in American literature from its beginnings through the twentieth centuries, emphasis on the novel. Writing-emphasis course. (Same as African and African-American Studies 333.)

202 designed for students with a 3.25 or higher GPA. 207 Honors British Literature I (3) Victorian, and the Twentieth Century. Writing-emphasis course.

233 Major Black Writers (3) African-American literature as a, B, C grading.

232 American Literature II: Civil War to the Present (3) Development of American literature from Civil War to the present. Writing-emphasis course.

234 Film and American Culture (3) American films as both works of art and social documents. Relationship between the medium of film and American culture in the twentieth century. (Same as American Studies 334 and Cinema Studies 334.) Writing-emphasis course.

235 Introduction to Fiction (3) Fiction from the eighteenth through the twentieth centuries, emphasis on critical tools necessary for judging varieties of fiction. Writing-emphasis course.

236 Themes in Literature (3) Study of important themes in English, American, and World literatures. Some sample themes are religion, crime, law, ecology, science, exploration, revolution, colonization initiation, education. Multi-disciplinary focus. Writing-emphasis course. See Timetable for topic.

237 Introduction to Creative Writing (3) Practice in writing poetry and fiction, combined with study of models and techniques. Writing-emphasis course.

281 Introduction to Film Studies (3) Selected world cinema to the present. Critical techniques necessary for understanding and analysis of narrative cinema. Basic elements of film expression and contours of film history. Writing assignments. (Same as Cinema Studies 281.)

295 Business and Technical Writing (3) Principles of written communication in science and business.

301 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.

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.

303 Race and Ethnicity in American Literature (3) Examines the role of ethnic and racial identity in the history of American literature. (Same as African and African-American Studies 331.)

332 Women in American Literature (3) Women as writers and as subjects in American literature from its beginnings to the present. (Same as Women’s Studies 332.) Writing-emphasis course.

333 Black American Literature and Aesthetics (3) Black American literature and aesthetics since 1899, with emphasis on cultural evaluations and the principles of writing "American". Writing-emphasis course. (Same as African and African-American Studies 333.)


355 Rhetoric and Writing (3) Strategies of writing on personal and academic subjects. Discussion of student and professional writing. Open to sophomores with instructor’s consent.

360 Technical and Professional Writing (3) For students who need to sharpen their technical communication skills. Writing of definitions, process descriptions, proposals, abstracts, executive summaries, and major reports. Prereq: Junior standing in student’s major or consent of instructor.

363 Writing Poetry (3) Introduction to writing poetry.

364 Writing Fiction (3) Introduction to writing novels and short stories.

365 Writing Drama and the Screenplay (3) Introduction to writing one-act and full-length plays, as well as screenplays.

371 Foundations of the English Language (3) Phonology, morphology, and syntax of English. History of the English language to 1800. (Same as Linguistics 371.)

372 The Structure of Modern English (3) Survey of approaches—traditional, descriptive, and generative transformational—to the structure of modern English. (Same as Linguistics 372.)

376 Colloquium in Literature (3) Methods and objectives of literary study; conferences to plan student’s program in major. Prereq: Sophomore literature package or consent of instructor.
381 Introduction to Folklore (3) Essential terms and concepts in modern folklore/folk-life studies. Emphasis on North American materials: folklore, folksong, myth, legend, proverbs, riddles, superstitions, dances, games, and architecture. (Same as American Studies 381.)

389 Literature of the English Bible (3) Types of literature in the Bible: legend, folk tale, history, biography, poetry, prophecy, apocalyptic. (Same as Religious Studies 389.)

389 Junior-Senior Honors Seminar (3) Seminar for students admitted to English honors program. Variable content determined by instructor, but usually focussed on a particular literary period, genre, or issue. Enrollment limited to 15. See Director of Undergraduate Studies in English for details.

401 Medieval Literature (3) Reading and analysis of selected medieval literary masterpieces in modern English. Writing-emphasis course. (Same as Medieval Studies 405.)

402 Chaucer (3) Reading and analysis of the Canterbury Tales and Troilus and Criseyde in Middle English. (Same as Medieval Studies 406.)

404 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).

405 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).

406 Renaissance Drama (3) English theatre between 1590 and 1640. Representative plays by Shakespeare's contemporaries (e.g., Marlowe, Webster, Jonson).

409 Spenser and his Contemporaries (3) Principal achievements in prose and poetry of sixteenth-century authors such as Spenser, Wyatt, Marlowe, More, Sidney, and Bacon.

410 Milton, Donne and their Contemporaries (3) Principal achievements in prose and poetry of the first two-thirds of the seventeenth century (such as the poetry of Milton, Donne, Marvell; and the prose of Browne, Bacon, Walton).

411 Literature of the Restoration and Early Eighteenth Century: Dryden to Pope (3) Survey of English literature and culture from 1660 to 1715.

412 Literature of the Later Eighteenth Century: Johnson to Burns (3) Survey of English Literature and culture from 1745 to 1800.

413 Restoration and Eighteenth-Century Genres and Modes (3) Study of major generic or literary mode such as drama, novel, poetry, nonfiction, prose, satire, romance, or epic written between 1660 and 1800. May be repeated for credit.

414 Romantic Poetry and Prose I (3) Emphasis on Keats, Shelley and Byron, with readings from Hazlitt, Peel, Peacock, and other prose writers.

415 Romantic Poetry and Prose II (3) Emphasis on Keats, Shelley and Byron, with readings from Hazlitt, Peacock, and other prose writers.

416 Early Victorian Literature (3) May include poetry by Tennyson and the Brownings; prose by Carlyle, Newman, and Mill.

419 Later Victorian Literature (3) May include poetry by the Pre-Raphaelites, Arnold, Hopkins, and Hardy; prose by Arnold, Ruskin, and Carroll; plays by Gilman and Wilde.

420 The Nineteenth-Century British Novel (3) Major novelists from Scott to Hardy.

421 Modern British Novel (3) Authors such as Joyce and Woolf through contemporary British fiction writers.

422 Women Writers in Britain (3) Emphasis on the literary consciousness and works of women writers in Britain. Course content will vary. Authors covered may include Marie de France, Margery Kempe, Aemilia Lanyer, Elizabeth Cary, Aphra Behn, Frances Burney, Mary Wollstonecraft, Mary Shelley, George Eliot, Virginia Woolf, and Doris Lessing. May be repeated. Maximum 6 hours. (Same as Women's Studies 422.)

431 Early American Literature (3) From the earliest texts to 1830, including exploration and discovery, Native American, colonial, revolutionary, and early national works.

432 American Romanticism and Transcendentalism (3) Prose and poetry of the American Renaissance, from c. 1830 to the end of the Civil War. Includes writers such as Cooper, Poe, Hawthorne, Melville, Emerson, Thoreau, Stowe, Douglass, Whittman, and Dickinson.

433 American Realism and Naturalism (3) Literature from the Civil War to World War I, including such writers as Twain, Howells, James, Jewett, Freeman, Crane, and Norris.

434 Modern American Literature (3) World War I to the present.

435 American Novel Before 1900 (3) From earliest sentimental novels through Brown and Cooper, and major figures to 1900, including Hawthorne, Melville, Stowe, Clemens, and James.

436 Modern American Novel (3) Authors such as Faulkner, Steinbeck, Welty.

441 Southern Literature (3) Southern writing from colonial period into the twentieth century, including frontier humorous color writers, and southern literary renaissance.

442 American Humor (3) Development of American humor from the early nineteenth century into the twentieth century, with particular emphasis on Mark Twain. (Same as American Studies 442.)

443 Topics in Black Literature (3) Contents vary according to particular genres, authors, or theories from 1845 to the present, including Langston Hughes and the Harlem Renaissance, Richard Wright and Gwendolyn Brooks, writing by Black women, international Black literature in English, and Black American autobiography. (Same as African and African-American Studies 443.)

451 Modern British and American Poetry (3) From Yeats and Frost to Auden, Stevens, and more recent poets.

452 Modern Drama, 1880-1945 (3) Survey of British, American, and international drama from the advent of modernism to the end of World War II. (Same as Comparative Literature 452.)

453 Contemporary Drama (3) Survey of British, American, and international drama since World War II.

454 Twentieth-Century International Novel (3) Fiction in English translation from such writers as Kafka and Camus through contemporary authors. (Same as Comparative Literature 454.)

455 Persuasive Writing (3) Focuses on writing and analyzing persuasive texts in public, private, and academic contexts. Prereq: 355 or consent of instructor.

456 Contemporary/Postmodern Literature (3) Studies in literature written after World War II. Content will vary and may be repeated once with permission of instructor.

460 Technical Editing (3) Editing technical material for publication. Principles of style, format, graphics, layout, and production management. Prereq: 360 or consent of instructor.

462 Writing for Publication (3) Principles and practices of writing for publication. Dissertations, theses, articles, and reports in science and technology. Prereq: 360 or consent of instructor.

463 Advanced Poetry Writing (3) Development of skills acquired in basic English Poetry course. Prereq: 353 or consent of instructor.

464 Advanced Fiction Writing (3) Development of skills acquired in basic Writing Fiction course. Prereq: 364 or consent of instructor.

466 Writing, Layout, and Production of Technical Documents (3) Principles of design for desktop publishing. Production of various documents to be incorporated into a professional portfolio. Prereq: 360 or consent of instructor.

470 Special Topics in Rhetoric (3) Topics vary. May be repeated with consent of instructor. Maximum 6 hours. Prereq: 355 or consent of instructor.

471 Sociolinguistics (3) Language in relation to society. Empirical and theoretical focus. Emphasis on large-scale units: tribes, nations, social groups. Prereq: 371 or 372 Linguistics 200 or consent of instructor. (Same as Linguistics 471 and Sociology 471.)

472 American English (3) Phonological, morphological, and syntactic characteristics of major social and regional varieties of American English, with attention to their functions, and implications for cultural pluralism. Prereq: 371 or 372 or Linguistics 200 or consent of instructor. (Same as Linguistics 472.)

474 Teaching English as a Second or Foreign Language I (3) Includes major issues surrounding teaching ESL/EFL, including political implications of teaching cultural pluralism; introduction to second language acquisition; learner variables in language learning; traditional and innovative approaches to ESL/EFL, based on features of American English grammar necessary for teaching ESL. Prereq: 371 or 372 or English 200 or consent of instructor. (Same as Linguistics 474.)

475 Teaching English as a Second or Foreign Language II (3) Covers issues, principles, and techniques in teaching grammar, speaking, pronunciation, reading, and writing in ESL/EFL. Includes observations and teaching practice in ESL classes and development of ESL materials and tests. Prereq: 474. (Same as Linguistics 475.)

476 Second Language Acquisition (3) How humans learn second languages. Examines theoretical models and research on such issues as differences between first and second language acquisition, cognitive factors in second language acquisition; learner variables; sociocultural factors; and implications for second foreign language instruction. (Same as Linguistics 476.)

477 Pedagogical Grammar for ESL Teachers (3) Approaches of English syntax and morphology presenting difficulties for non-native learners of English. Basic and complex sentence structures; the noun and article system; verb tense, aspect, modality, and complementation. (Same as Linguistics 477.)

479 Literary Criticism (3) Historical survey of major works of literary criticism.

480 Fairy Tale, Legend, and Myth: Folk Narrative (3) Study of forms of folk narrative: normally includes Grimm's, Andersen's, Irish, English, Appalachian, and Native American tales.

481 Studies in Folklore (3) Topics vary. May be repeated with different topic. Maximum 6 hours.

482 Major Authors (3) Content varies. Concentrated study of at least one of the most influential writers in British or American literary history: e.g., Donne, Pope, Austen, Thoreau, Whitman, Faulkner, Lawrence, Baldwin, or Morrison. May be repeated. Maximum 6 hours.

483 Special Topics in Literature (3) Topics vary. May be repeated. Maximum 6 hours.

484 Special Topics in Writing (3) Original writing integrated with reading, usually taught by a professional author. Topics vary. May be repeated. Maximum 6 hours.

485 Special Topics in Language (3) May be repeated. Maximum 6 hours with consent. (Same as Linguistics 485.)

486 Special Topics in Criticism (3) Content varies. Special topics in theoretical and practical approaches to British and American literature. May be repeated with consent of department. Maximum 6 hours.

489 Special Topics in Film (3) Content varies. Particular directors, film genres, national cinema movements, or other topics. May be repeated with consent of department. Maximum 6 hours. (Same as Cinema Studies 489.)

490 Language and Law (3) Language in the Anglo-American legal process: focus on differences between spoken and written language; lexical and syntactic ambiguities; pragmatics; speech act analysis; and the language rights of linguistic minorities. Prereq: 371 or 372 or consent of instructor. (Same as Legal Studies 490 and Linguistics 490.)

491 Foreign Study (1-15) Seeing, studying, and writing about drama as performed in New York City.

492 Off-Campus Study (1-15) Seeing, studying, and writing about drama as performed in New York City.
493 Independent Study (1-6) Tutorial in subjects not adequately covered in regular courses. May be repeated for a total of 6 hours credit.

495 Introduction to Rhetoric and Composition (3) Introduction to the historical, theoretical, and empirical modes of inquiry in rhetoric and composition and their implications for the teaching of composition. Prereq: 355 or consent of instructor.

496 The Rhetoric of Legal Discourse (3) Applying basic principles of rhetoric to legal materials. Writing, position papers, briefs, and memoranda, students learn issue identification and argument. Critical reading and discussion of both professional and student writing. Introductory legal research techniques. No prior legal knowledge necessary. Prereq: 355 or consent of instructor. (Same as Legal Studies 496.)

498 Senior Honors Paper (3) Second semester of English honors program. Working individually, the student produces a substantial critical or creative project under the direction of two members of the professorial staff. Prereq: 398.

499 Senior Seminar (3) Intensive study in an author, period, genre, or of problems in language, literary history, or theory. Content varies, but all sections address problems of value from an interdisciplinary perspective. Substance in research required. Restricted to majors who have completed the major in English. Writing emphasis course. Capstone experience.

ENGLISH EDUCATION (340)

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. Satisfaction of core only. F, Sp

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

456 Teaching Speech and Drama, Grades 7-12 (3) Purposes, techniques, and materials for teaching speech and drama in secondary schools. Requires certification in Speech. Prereq: Admission to Teacher Education Program. F

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

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

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, Su

ENTOMOLOGY AND PLANT PATHOLOGY (341)

201 Impact of Insects and Plant Diseases on Human Societies (3) Insects and plant diseases have had a significant influence on human history, culture, and lifestyles. The science of entomology and plant pathology help humankind understand the impact of insects and plant pathogens on these dimensions of human existence. The development of strategies to capitalize on the beneficial aspects of these organisms will also be explored. 3 hours of instruction. 1 hour of laboratory.

306 Forest Protection (3) Biological, economic and legal consideration of fire, pathogens, insects, vertebrates, wind, and pollutants in the forest ecosystem. One or more all day or overnight field trips may be required. Prereq: FWF 311, or consent of instructor. 2 hours and 1 lab. (Same as Forestry 306.) Sp.

313 Plant Pathology (3) Introduction to the microorganisms and environmental conditions causing disease in plants. Symptoms, identification, epidemiology of pathogens, host-pathogen interactions, disease development and principles of control. Prereq: Six hours of Biological Science. 2 hours and 1 lab. (Same as Botany 313.)

321 Economic Entomology (3) Structure, life history, habits and properties of some of important insect pests of farm, garden, orchard and household. Prereq: Six hours of Biological Science. 2 hours and 1 lab. Sp, E

325 Veterinary Entomology (3) Identification, biology and control of arthropods that attack major livestock species. Introduction to entomology, methods of insect control, major pest species groups and problems associated with specific host production operations. Prereq: Biology 122 or equivalent. 2 hours and 1 lab. F, E

410 Diseases and Insects of Ornamental Plants (3) Symptoms, identification and management of diseases and insects pests that affect plants in greenhouse, nursery, and landscape environments. Prereq: 313 or 321 (or consent of the instructor). 4 hours. Sp, A

ENVIRONMENTAL AND SOIL SCIENCES (345)

110 Introduction to Environmental and Soil Sciences (1) Invited speakers on current topics; career opportunities in the environs; field trip with departmental faculty. S/NC grading. F

210 Introduction to Soil Science (4) Differences in soils; soil genesis; physical, chemical, and biological properties of soil; relation of soil to land use and pollution; soil management relative to tillage, erosion, moisture supply, temperature, aeration, fertility and plant nutrition. Prereq: One semester chemistry. 3 hours lecture and one 2-hour lab. F, Sp

242 Soil Morphology (1) Intensive course involving describing, classifying and interpreting soils in preparation for regional and national soil judging contests. Prereq: Consent of instructor. May be repeated. Maximum 4 hours. 1 hour and 1 lab. F, Sp

301 Professional Development (1) Techniques of effective presentations, preparation and delivery of speeches; ethics; interviewing and the job search. Prereq: Junior standing. Sp.

324 Soil and Water Conservation (3) Investigation of hydrologic principles regarding soil and water conservation. Topics include: hydrologic cycle, water quality, soil properties, erosion prevention and control, and techniques to protect natural resources. Prereq: 210. 2 hours lecture and one 2-hour lab. Sp.

334 Soil Nutrient Management and Fertilizers (3) Influences of soils on nutrient availability to plants. Management of inorganic and organic fertilizer materials and the determination of their fate in the soil-plant system. Nutrient management as it relates to agricultural sustainability and soil quality. Prereq: 210. 2 hours and 1 lab.

355 Environmental Soil Biology (3) Biology and biochemistry of the soil environment as it applies to environmental and agricultural processes. Topics include: microbial ecology, biogeochemical cycling of soil elements, soil quality and bioremediation. Prereq: 210 and Microbiology 210. Sp.

434 Environmental Soil Chemistry (3) Composition and chemical properties of soils and processes that govern the fate and behavior of chemicals in the soil environment. Topics include: clay mineralogy; soil organic matter; mineral weathering and stability; aqueous speciation; surface chemistry; ion exchange, adsorption, and molecular retention; oxidation-reduction; and soil acidity, alkalinity, and salinity. Prereq: ESS 210 and Chemistry 350. F

442 Soil Genesis and Classification (3) Soil genesis and formation; observing and describing morphology of agricultural and forest soils; chemical and physical properties, classification. 3 weekend field trips. Prereq: EBS 210, 2 hours lecture and one 2-hour lab. F

444 Environmental Soil Physics (3) Basic understanding of soil physical properties and processes; practical experience in measurement and analysis of physical soil properties; methods of analysis related to agricultural, environmental, and engineering applications. Prereq: 210 and Physics 221 or equivalent.

462 Environmental Climatology (3) Study of atmospheric processes and processes related to exercise in the environment. Health and environmental effects of environmental conditions. Prereq: Six hours of Environmental Science and Soil Sciences. 2 hours and 1 lab. (Same as Forestry 462.)

481 Capstone in Environmental and Soil Sciences (3) Integrative course in which students work individually and collaboratively to develop solutions for soil and water related problems. Course requirements include making a detailed report. Prereq: 434 and senior standing.

492 Internship (1-6) Supervised experience with a departmentally-approved employer. Student is responsible for arranging the experience. Requirements include maintaining a daily log, supervisor evaluations, and a final report. May be repeated with a maximum of 6 hours credit. Prereq: Junior standing. S/NC.

493 Problems in Environmental and Soil Sciences (1-3) Special research problems in environmental sciences. May be repeated. Maximum 6 hours. Prereq: Approval of Department and Junior Standing.

EXERCISE SCIENCE (347)

100 Orientation to Exercise Science (1) Overview of discipline and professional areas for incoming Exercise Science majors. May be taken prior to admission to the Exercise Science major.

260 Exercise Science Practicum (1) First practicum experience to support and clarify career goals. Satisfactory/No Credit grading only. Prereq: 100.

276 Fitness for Life (2) Evaluation and discussion of factors that lead to optimal health: cardiorespiratory function, muscular strength and endurance, flexibility, low back function, nutrition, and stress. Emphasis on evaluation of current status with recommendations for change toward reasonable health-related goals. (Same as Physical Education 276.)

322 Fitness Activities (2) Methods of instructing and leading fitness activities, including jogging, exercise to music, water activities, and fitness games. 1 hour lecture. 3 hour lab. Prereq: At least junior standing and progression to major.

325 Athletic Training Techniques (3) Prevention of athletic injuries through sound conditioning programs and practices; recognition and immediate treatment of injuries. Prereq: 332 and progression to the Exercise Science major or consent of instructor.

332 Applied Anatomy (3) Structure and roles of bones, joints and muscles in human movement and exercise; exercise related biomechanical principles. Prereq: Junior standing.

350 Disease and Injury: Epidemiologic and Demographic Perspectives (3) Disease and injury mortality and morbidity patterns, trends, differentials and causes are examined from perspectives of population-based sciences of epidemiology and demography. Completion of college course in statistics or mathematics is recommended.

380 Special Topics (1-3) Study in selected disciplinary or professional areas of Exercise Science. May be repeated. Maximum of 6 hours. Prereq: Progression to major.

411 Physical Activity for Special Populations (3) Nature of various disabilities and implications for physical activity programming. Course requirements include out-of-class practice working with individuals who have disabilities. Prereq: ES 332 Applied Anatomy or consent of instructor. Exercise Science majors, minimum cumulative 2.5 GPA.

412 Practicum in Adapted Physical Activity (1) Working with individuals in education or clinical settings, where an emphasis is placed on teaching gross and fine motor skills. Prereq: Coreq: 411.

414 Fitness Testing and Exercise Prescription (3) Relationship between exercise to cardiorespiratory function, body composition, strength and flexibility. Measurement and evaluation of fitness in normal populations. Prereq: Biochemistry and Cellular Biology 230; Exercise Science majors, minimum cumulative 2.5 GPA.


426 Exercise Science Practicum II (1-6) Supervised experience in exercise/fitness areas. May be repeated for a maximum of 10 hours. Satisfactory/No Credit grading only. Prereq: Progression to the major and consent of instructor.
490 Exercise Physiology/Exercise Internship (12-15)
Full-time practicum in exercise/fitness at approved agency. Satisfactory/No Credit grading only. Prereq: 414, 442, 426, 480, progression to major, and consent of instructor.

493 Directed Independent Studies (1-3) Independent study in a specialized area with Exercise Science. Prereq: 301, Accounting 202, and Business Administration 201. May be repeated; maximum 3 credit hours. Prereq: Senior standing.

497 Honors Research Project (3-6) Senior research project done under supervision of a faculty member. Includes design of research project, writing proposal for institutional review board approval, data collection and analysis, and presentation of results. Project should be approved with two semesters of study remaining. Prereq: Senior standing.

FINANCE (349)
Accounting 202, Business Administration 201, and Finance 301 are prerequisite to all 400-level Finance courses.

201 Personal Finance (3) Financial planning, investing, managing assets, insurance, and retirement planning for nonbusiness majors. May not be used to satisfy Finance elective requirements. Offered as faculty resources allow.

250 Introduction to Real Estate (3) This course is designed to provide a detailed survey of the real estate market and its analysis. In particular, the course focuses on developing an understanding of the unique legal, institutional, and economic features of the real estate market. In addition, the basics of real estate financing, and investment analysis will be considered. This course may not be used to satisfy Finance elective requirements. (Same as Urban Studies 280.)


402 Special Topics in Finance (3) Junior and senior level students who finance seminars to be announced prior to offering. Prereq: 301, Accounting 202, and Business Administration 201.

421 Investment Analysis (3) Principles and concepts of asset valuation in competitive and efficient financial markets. Basic analytical tools are developed and used to study valuation of different types of securities. Major writing requirement. Prereq: 301, Accounting 202, and Business Administration 201.

422 Portfolio Analysis and Management (3) Portfolio theory and evidence of behavior of security returns with a view to determining rational investment policy. Includes statistical analysis for risk and return of portfolios, portfolio evaluation and revision, capital market theory, and extensions of portfolio analysis. Prereq: 301, Accounting 202, and Business Administration 201.

430 Financial Markets (3) Role of short and long term financial markets in the process of capital formation and allocation. Theories and mathematics of interest rates in money and capital markets. Prereq: 301.


460 Advanced Topics in Financial Management (3) Contemporary issues in corporate finance, liquidity and current asset management, corporate growth and control, international financial management, and pension fund management. Prereq: 301, Accounting 202, and Business Administration 201.

470 Risk Management and Insurance (3) Identification, measurement and decision making with regard to insurable and uninsurable risks facing the firm. Identifies and examines these risks in the most cost-efficient manner. Prereq: 301, Accounting 202, and Business Administration 201.

471 Estate and Financial Planning (3) Process of estate accumulation, safekeeping, and distribution, with particular emphasis on impact of insurance and taxation on these processes. Prereq: 301, Accounting 202, and Business Administration 201.

481 Real Estate Finance and Investment Analysis (3) Principles of financing and investing in real property. Utilizes discounted cash flow models and ratio analysis. Current federal tax law applicable to real property. Limited partnerships and other joint ventures. Prereq: 301, Accounting 202, and Business Administration 201. (Same as Urban Studies 481.)


490 Off-Campus Study (3) Satisfactory/No Credit grading only. Prereq: Consent of Instructor and Department Head.

493 Independent Study (1-6) Letter grade only. Prereq: Consent of Instructor and Department Head.

FIRST YEAR STUDIES (355)

101 Approaches to the University (2) Integration into the academic life of the campus, including the nature and purpose of a college education, career planning, the organization of university disciplines, and assessment of special needs in areas such as time management, study skills, counseling, and financial aid. Satisfactory/No Credit grading only. Meets twice weekly.

401 Peer Mentor Techniques (1) Training of upperclass students as mentors and advisors for freshmen. Includes cognitive and developmental theories of the college-aged student, teaching and learning styles, group communication, and listening techniques, mentoring and advising skills. Prereq: Consent of instructor.

402 Peer Mentor Practicum (1) Peer mentoring of First Year Studies students. Prereq: 401and consent of instructor. S/NC only. May be repeated. Maximum 3 hours.

FOOD SCIENCE AND TECHNOLOGY (390)

140 The Food Industry (3) Introduction to the food industry, including contributions of an adequate, safe food supply for national and international markets.

240 Field Observations in Food Processing (2) Introduction to, observation of and familiarization with processing, packaging, quality control and distribution of different types of foods. Prereq: 140; juniors and seniors must obtain permission of instructor. 1 hour and 1 lab.

259 Evaluation and Grading of Dairy Products (2) Evaluation and scoring of milk, ice cream, cheddar cheese, cottage cheese, yogurt and butter. Prereq: 140 or consent of instructor. 2 75-minute lectures/labs.

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

301 Professional Development (1) Professional development requirements, resources and opportunities. Individual written and oral report and group discussion on careers and skills. Prereq: Junior standing or consent of instructor.

340 Food Preservation and Packaging (3) Principles, methods and equipment used for preservation of foods. Prereq: 140 and 240 or consent of instructor. 2 hours lecture and 1 lab.

401 Professional Food Science Communication (1) Individual reports and group discussion on current topics. May be repeated; maximum 3 credit hours. Prereq: Senior standing or consent of instructor.

410 Food Chemistry (4) Reactions of water, proteins, lipids, carbohydrates, minerals, enzymes, vitamins, and additives in foods. Prereq: Chemistry 110 or equivalent. Coreq: Biochemistry 310. 3 hours lecture and 1 lab.

420 Food Microbiology (2) Physical, chemical and environmental factors modifying growth and survival of foodborne microorganisms; pathogenic and spoilage microorganisms affecting quality of foods and their control. Prereq: Microbiology 210. Coreq: 429.


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

442 Special Topics In Food Science and Technology (1-3) Topics of current concern to the food industry. May be repeated. Maximum 9 hours. Prereq: Consent of instructor. Letter grade or Satisfactory/No Credit grading. S

445 Application of Food Chemistry and Processing Principles (4) Interactions and functions of dairy, egg, meat, and other plant based ingredients, processing, production and storage of processed food products. Prereq: FST 340 and 410 or consent of instructor. 3 hours lecture and 1 lab.

452 Science of Dairy Foods (3) Science and technology of the processing of milk and its products. Prereq: 290, 310, 320-29, and 340 or consent of instructor, 2 hours lecture and 1 lab.

460 Meat Science (3) Carass characteristics of meat animals, muscle structure and composition, cut identification, curing, freezing, and cookery. Prereq: 140 or consent of instructor.

469 Meat Science Lab (1) Slaughter and processing methods for beef, pork, lamb and poultry. Coreq: 460. 1 lab.

490 Food Laws and Regulations (3) A comprehensive examination of the laws and regulations designed to preserve the safety, wholesomeness, and nutritional quality of the United States food supply with an in-depth analysis and discussion of precedent case studies and their impacts on laws and regulations. Core courses in Food Science and Technology will serve as an essential basis for understanding of material covered in this course. Prereq: 140; non-majors must obtain consent of instructor.

493 Practical Experience In Food Science and Technology (1-12) Specialized research experiences for interested students under faculty direction. Field experience in supervised internship in the food industry. May be repeated; maximum 12 hours. Prereq: Consent of instructor. E

495 Quality Assurance and Sanitation Practices (3) Design and evaluation of a food processing operation to produce a safe and acceptable quality food product. Prereq: 310, 320, and 340 or consent of instructor.

FOREIGN LANGUAGE/ESL EDUCATION (394)

455 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.

FORESTRY (396)

100 Forests and Forestry in American Society (3) Introductory course examining the role of forests in shaping American culture and society and exploring the evolution of the forestry profession in the North America.

306 Forest Protection (3) (Same as Entomology and Plant Pathology 306.) Sp.

314 Economics of Forest and Wildland Resources (2) Basic principles of forest resource economics: microeconomic applications in forestry; non-market valuation and analysis; financial analyses of private and public forest resource management decisions. Prereq. Economics 201, or consent of instructor. F.


321 Wildland 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. Prereq. English 102 and Speech 210 or 240 or consent of instructor. F.


323 People and Forest Practices (2) Examination of how people, social systems, and institutions are affected by forest management practices. Case studies and field applications will concentrate on the wide variety of linkages that exist in society among people and forests. Application of basic skills of collaborative problem solving will be emphasized. Overnight field trips required. Letter grade only. Coreq. 305, 306, 322, 324, 326, 329, 330. 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 its components; characteristic of the woody cell wall to the physical properties; wood use in important commercial products; day field trip may be required. Prereq. Botany 110 or consent of instructor. Coreq. 332 for Foresty majors. Sp.

332 Wood Identification (1) Cell structure and arrangement as a tool for species identification; microscopic and hand lens identification of important commercial softwoods, hardwoods and foreign woods; laboratory procedures for tree issues presented by interested student. Prereq. 332 for Foresty majors. Sp.

402 Forest Resource Management (2) Introduction to forest-level management concepts from an economic perspective. Harvest determination; goal setting under multiple-use concepts; tax; classical approaches to regulation, linear programming and harvest scheduling; goal programming. Prereq. 314 and 324, or consent of instructor. F.

416 Forest and Wildland Resource Economics (3) Production functions, supply-demand and market analysis; non-market programs and projects; economic analysis and decision models; investment and financial analysis; management; forest products marketing. Prereq. 324 or consent of instructor. F.

421 Forest and Wildland Resource Policy (3) Policy formulation; criteria for policy determination; forest and wildland law and regulation; theory of conflict resolution; biomass and information. Prereq. Senior standing or consent of instructor. F.

423 Wildland Recreation Planning and Management (3) Planning processes, master and site planning, site design projects; management strategies, methods of visitor and recreation management; case studies. Weekend field trips may be required. Prereq. 321 and Junior standing in Wildland Recreation concentration, or consent of instructor. 2 hours and 1 lab. Sp.

433 Wood Adhesives and Glued Wood Products (2) Theory of adhesives and wood substrates; die bonding for wood substrate adhesive interface for bonding; principles of adhesions; wood adhesives; gluing of solid wood and composite wood products; wood adhesives manufacture and/or testing of adhesives, adhesive bond strength and glued-wood product performance; day field trips may be required. Prereq. 331 and 332, or consent of instructor. Coreq. 2 hours and 1 lab. F.

434 Wood Processing and Machining (2) Processing of wood including primary log breakdown and secondary processing into major products. Fundamentals of machining; technology and mathematical models of cutting operations including sawing, boring, planing, veneer cutting, and laser machining; day field trip may be required. Prereq. 331 and 332 or consent of instructor. 1 hour lecture and 2 hour lab. F.

435 Wood Drying and Preservation (2) Discussion of wood-moisture relationships. Introduction to commercial wood drying equipment and practices. Proper use, specification, and disposal of preservative treated wood. Day field trips may be required. Prereq. 331 and 332 or consent of instructor. F.

436 Wood Industry Survey (1) Industry descriptions and plant visitations to include sawmills, pulp and paper, plywood, furniture, and wood treating. Day field trips may be required. Prereq. Junior standing. Utilization Concentration or consent of instructor. Sp.

492 Practicum in Forestry (1-6) Supervised experience at departmental-approved, employment location. Prereq. Junior standing. Satisfactory/No credit only. E.

493 Independent Study in Forestry (1-15) Special study for further information. F.

495 Internship in Wildland Recreation (1-6) May be repeated. Maximum 6 hours. A highly structured field experience guided by specific learning objectives pre-approved by the instructor and the field supervisor. The student is responsible for field placement. One credit per two weeks of full-time field experience. Prereq. Junior standing, consent of instructor. E.

496 Internship in Forestry (1-6) Supervised experience at departmental-approved, employment location. An experience directed by the student. Internship learning objectives must be pre-approved by the advisor/instructor and the field supervisor. Day field trips may be required. Final report and final field required. One credit per two weeks of full-time supervised field experience maximum. Prereq. Junior standing, consent of instructor. May be repeated. Maximum 6 hours.

FORESTRY, WILDLIFE AND FISHERIES (398)

100 Current Issues in Sustainable Natural Resources (1) Current issues in environmental, resource, and wildlife related topics. Speaker each week; student discussion and interaction with speaker; some written work; topics and speakers change each offering; attendance required at all class meetings. May be repeated. Maximum 3 hours. Satisfactory/No credit only. F.

211 Introduction to Forestry, Wildlife and Fisheries (3) History of natural resources policies and practices; social perspectives and attitudes concerning natural resources and environmental issues; forest resource management, ecological principles, current policies, social trends, and forest and wildlife resource use. Sp.

250 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. Sp.

311 Dendrology and Silvics of North American Trees (3) Identification, classification and nomenclature of North American trees and woody shrubs; forest associations; silvicultural characteristics of trees and stands as the basis for the practice of silviculture. Day-long field trips may be required. Prereq. 1 year of Botany or Biology. 2 hours and 1 lab. F.

312 Principles of Silviculture (3) Principles for treating forest stands to achieve selected objectives. Prereq. Chemistry 100. Coreq. PSS 210, 311, and (for Forestry majors) 313. 2 hours 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, Agriculture and Natural Resources Mathematics 125. Coreq. FWF 312. 1 hour and 1 lab. F.

317 Principles of Wildlife and Fisheries Management (3) Ecological relationships of wild animals with other animals and their habitats. Biological, social and economic aspects of wildlife and fisheries. Prereq. Wildlife 211 or 250. Coreq. Statistics 201, Agriculture 290, Mathematics 125, Chemistry 100 and Biology F.

410 Wildlife Habitat Evaluation and Management (3) Ecological relationships between wildlife and their habitat. Evaluation, models, and management of wildlife habitat. Effects of land-use practices on wildlife habitat. Weekend field trips required. Prereq. 317 or consent of instructor. F.

412 Managing Natural Resource Organizations (3) Human, bureaucratic and managerial factors influencing the effectiveness of natural resource organizations. Alternative stakeholder and public involvement objectives, strategies and mechanisms including client-customer, partnership and adversarial. Conflict resolution, proactive collaborative problem solving and alliance building. Prereq. 317 or consent of instructor. (Formerly: 211, 317 and Junior standing) 2 hours and 1 lab. Sp.

416 Planning and Management of Forest, Wildlife and Fisheries Resources (3) Integrated forest and wildlife management through developing land management plans and analyzing public issues including conflict resolution. Prereq. Senior standing. 1 hour and 2 labs. Sp.

420 International Natural Resource Issues (2) Identification and analyses of issues regarding forestry, wildlife, and fisheries; and associated natural resources beyond U.S. borders. Ecological, economic, and cultural elements impacting natural resources at the international level. Cases: Northern Europe, Latin America, Indonesia, and Africa. F.A.

FRENCH (405)

111-112 Elementary French (3.3) Language Laboratory required. Must be taken in sequence. Not available to students eligible for French 150. E.

150 Intermediate French Transition (3) Prereq: Two years of high school French and a placement score below the level required for admittance to French 211. Since 150 is a review of elementary French, students who receive a C- in this course will forfeit the six hours of elementary language credit awarded through placement examination. For elective credit only.

199 French Language and World Business (3) The course will determine the student抯 proficiency in French trade at the local, state, and national levels. An interdisciplinary team of faculty from the colleges of Business and Arts and Sciences will provide an overview of the value of language study toward technical and cultural awareness in world trade and business. Restricted to students majoring in the Language and World Business major concentration. See the Director for further information. F.
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 research, and upper division students desiring reading knowledge of the language. Undergraduate credit only. Not for credit for those having 111-112 or equivalent. No auditors.

333 Intermediate Composition and Grammar (3) Emphasizes writing skills. Review of major grammatical points in French. Prereq: French 212, 218, French 300 or permission of instructor.

334 Intermediate Conversation (3) Emphasizes speaking skills. Further review of French grammar. Required of all majors. Prereq: French 212, French 218, French 300 or permission of instructor.

345 French for Business (3) Contemporary French language and international transactions. Understanding and composing business letters; oral communication and elements of French culture related to good business practices. Either 334 or 345 may be applied toward the major but not both. Prereq: 333 or consent of instructor.

351-352 History of French Literature (3,3) Chronological view of French literature in relation to the specific historical developments that have influenced it. Prereq: 333 or 334 or permission of department.

400 Consecutive and Simultaneous French-English and English-French Translation (3) Consecutive Translation to and from English, Introduction to simultaneous translation to English. Prereq: 334, 345 or equivalent.

410 Medieval French Literature (3) Major representative works of Medieval French literature. Texts in modern French. Prereq: a 300-level literature course. Writing emphasis course. (Same as Medieval Studies 410.)

411 French Literature of the 16th Century (3) Highlights of 16th-century French literature. Excerpts from Rabelais and Montaigne; readings of poems from the writers from Lyon and members of the Pleiade. Writing emphasis course. Prereq: a 300-level literature course.


413 French Literature of the 18th Century (3) Major works of the Enlightenment. Writing emphasis course. Prereq: a 300-level literature course.


420 Cinema (3) The French cinema from its earliest days through the New Wave directors. Prereq: a 300 level literature course. Can be applied to major. Writing-emphasis course. (Same as Cinema Studies 420.)

421 Phonetics (3) Foundation in the science of phonetics. Practical exercises and individual performance. Graduate credit not offered to students majoring in a Romance language. Prereq: French 333 or 334 or permission of department.

422 Advanced Grammar (3) Improving one's written French by studying basic and more refined structures of the French language. Writing creative free-style compositions. Writing emphasis course. Prereq: French 333 or 334 or 345.

423-424 Advanced Conversation (1,1) Informal conversation with native speaker on contemporary topics. Stress on correct spoken French. Prereq: French 333 or 334. 424

425 Introduction to Descriptive Linguistics (3) Initiation into the theory and practice of linguistics in the subfields of phonetics, phonology, sociolinguistics, syntax, semantics, pragmatics and historical linguistics; discussion of their relevance to the teaching and learning of foreign languages and to the study of literary texts. Writing emphasis course. (Linguistics 200 strongly recommended.) (Same as German 425, Linguistics 425, Russian 425, and Spanish 425.)

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

429 Romance Linguistics (3) Development of Classical Latin through Vulgar Latin into major Romance Languages. Writing emphasis course. (Same as Spanish 429 and Linguistics 429.)

430 Theatrical French (4) Comprehensive introduction to theatrical production and performance in French. Students collaborate in the creative staging of a French play, and they actively participate in its public performance. Prereq: 300-level literature course. May apply toward major.

431 Highlights of French Civilization (3) Survey of French civilization from the Gauls to World War II. Historical events, daily life, all forms of arts. Prereq: a 300-level literature course. Writing-emphasis course.

432 Contemporary French Culture (3) Current French cultural issues placed in historical perspective with a comparative emphasis. In English; readings in French for majors. Prereq: a 300-level literature course. Writing creative free-style composition.

433 Cultural and Francophone Women Writers (3) Works by women writing in French considered in cultural context. In English; readings in French for majors. May apply toward French major. Writing emphasis course. (Same as Women's Studies 433.)

434 Literature of Quebec (3) Survey of literature of Quebec and French literature connected with North America. Readings include explorer and missionary works, such as the Voyages of Champlain and the Journals of the Jesuits, as well as the literature of contemporary Quebec. Writing emphasis course. Prereq: a 300-level literature class.

440 Capstone Experience in French (3) Synthesizing senior colloquium and tutorial in which students reflect on the raison d'etre of the discipline from a multidimensional point of view. Writing-emphasis course. Prereq: a 400-level literature course.

445 Advanced French for Business (3) Study of advanced contemporary French language and culture as they relate to business transactions. A comparative approach is used to explore differences and similarities between Francophone business culture(s) and those of North America and Japan. Students build upon their knowledge of business terminology while being sensitized to culture differences and the dangers of simplistic stereotyping. Writing emphasis course. Prereq: 345 or consent of instructor.

490 Internship (1-15) Career-related experiences in the United States or abroad with permission of the Language & World Business Director. Can be applied to major. Writing-emphasis course. (Same as Cinema Studies 420.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

498 Internship (1-15) Career-related experiences in the United States or abroad with permission of the Language & World Business Director. Can be applied to major. Writing-emphasis course. (Same as Cinema Studies 420.)

499 Foreign Study (1-15)

499 Independent Study (1-15)
410 Global Positioning Systems and Geographic Data (3) Theory and field and laboratory use of Global Positioning Systems for capturing digital geographic data; management of geographic data, including coordinate systems, datum issues, scanning digitizing, map standards, and uncertainty in Geographic Information Systems. 2 hours lecture and 2 hours lab per week.

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 or consent of instructor. (Same as Information Management 431.)

412 Advanced Cartography Techniques (3) Cartographic design and data display techniques for reference and thematic maps. Basic principles and methods of map reproduction. Prereq: 310 or consent of instructor. 2 hours lecture and 2 hours lab per week.

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) Geographic application of statistical techniques, point pattern analysis, and analysis of areal units. Prereq: Mathematics 115 or 116 and Statistics 201 or consent of instructor.

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

423 Geography of American Popular Culture (3) Geographical study of regional variation in popular cultures, especially focused on youth cultures in the United States. Writing emphasis course. (Same as American Studies 423.)

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

434 Climatology (3) General circulation system leading to world patterns of climates. Climatic change and modification, and interrelationships of climate and human activity. Prereq: 131 or consent of instructor.

435 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 climatic change, and human activity on world biota are emphasized. Prereq: 131-132 or consent of instructor.

436 Water Resources (3) Global water resources and hydrologic processes, including water availability, flooding, and water quality issues examined from physical and economic geographic perspectives. Prerequisite: 131-132 or consent of instructor.

439 Plant Geography of North America (3) Characteristics of vegetation, especially focused on youth cultures in the United States. Writing emphasis course. (Same as Urban Studies 441.)

440 Geography of Transportation (3) Examination of transportation systems, emphasizing their effects on trade patterns, land use, location problems, and development.

445 Process Geomorphology (3) (Same as Geology 450.)

466 Teaching and Learning Geography (3) Preparing prospective teachers in the content, skills, strategies, and understandings needed for the effective teaching and assessment of geography in the K-12 schools. Course organization and content based largely on that of the national Geography Standards.

490 Internship (3) Career-related experience with business, nonprofit, and government organizations. For geography majors. Prereq: Prior written permission of geography department head or authorized internship director. May be repeated. Maximum 6 hours. Satisfactory/No Credit.

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

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

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

494 Undergraduate Research Experience (1-3) Supervised participation in active research projects. Prereq: Consent of department head. May be repeated once; maximum 6 hrs. Satisfactory/No Credit.

497 Honors: Senior Thesis (3) Students develop undergraduate thesis topic under the guidance of a faculty advisor. Prereq: Open to second semester juniors and first year seniors who have a 3.2 or better overall GPA and permission of advisor.

498 Honors: Senior Project (3) Completion of senior thesis. Prereq: 497 with grade of “A” and permission of thesis advisor.

499 Seminar in Geography (3) Major themes in geography, especially trends over the past 40 years. Required for majors. Prereq: 101 or 2 lecture hours and one 2-hour lab or field period.

501 Quantitative Methods in Geology (3) Laboratory course emphasizing statistical techniques, point pattern analysis, and analysis of areal units. Prereq: Mathematics 115 or consent of instructor. 1 lecture hour plus field trips.

504 Geology Beyond the Earth (3) The geologic evolution of other bodies in the solar system, including Mercury, Mars, Venus, meteorites, and large moons of Earth and Jupiter. Focus on interactions among internal earth processes, surficial earth processes, and human interactions. 3 lecture hours plus one optional field trip. Writing emphasis course. May not be applied toward the Geology major.

504 Geology Beyond the Earth (3) The geologic evolution of other bodies in the solar system, including Mercury, Mars, Venus, meteorites, and large moons of Earth and Jupiter. Focus on interactions among internal earth processes, surficial earth processes, and human interactions. 3 lecture hours plus one optional field trip. Writing emphasis course. May not be applied toward the Geology major.

507 Modern Problems and Solutions (3) Study of the earth as an integrated system between physical and biological processes. Focus is on human influences on the interaction between biological and physical processes that can be identified and understood from spacecraft missions, remote sensing, and laboratory study of extraterrestrial samples. No prerequisites. May not be applied toward the Geology major.

510 Mineralogy (4) Introduction of crystallography, crystal chemistry, x-ray diffraction, optical mineralogy, and the structures of rock-forming minerals. Laboratory includes hand specimen identification, x-ray diffraction techniques, and microscopic identification of minerals. Prereq: 101, Chemistry 120-130 or equivalent. 3 hours lecture and 1 lab.

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

530 Igneous and Metamorphic Petrology (3) Classification and properties of igneous and metamorphic rocks, the processes that produce them, and the tectonic environments in which they form. Prereq: 310, 2 lecture hours and one 2-hour lab or field work.

545 Geology of East Tennessee (1) Geology of the Southern Appalachians in Tennessee. Prereq: Completion of major core courses or consent of instructor. 1 lecture hour plus field trips.

570 Structural Geology (4) Common geologic structures (folds, faults, cleavage) and their genesis. Laboratory includes map interpretation, cross-sections, projections, stereonets, and spacecraft missions, remote sensing, and laboratory processes that can be identified and understood from spacecraft missions, remote sensing, and laboratory study of extraterrestrial samples. No prerequisites. May not be applied toward the Geology major.

581 Minerals and Energy Resources: Geologic Constraints and Environmental Impacts (3) Distribution and extraction of mineral resources, and the environmental impact of exploitation and utilization of conventional and alternate resources. No prerequisite. Writing emphasis course.

591 Quantitative Methods in Geology (3) Applications of calculus and differential equations to problems in the earth sciences. Examples of the diffusion equation in hydrogeology; the wave equation in geophysics; mechanical modeling and boundary conditions in structural geology and tectonics. Prereq: 101-102 or 107-108. Mathematics 141-142. 3 lecture hours.

591 Quantitative Methods in Geology (3) Applications of calculus and differential equations to problems in the earth sciences. Examples of the diffusion equation in hydrogeology; the wave equation in geophysics; mechanical modeling and boundary conditions in structural geology and tectonics. Prereq: 101-102 or 107-108. Mathematics 141-142. 3 lecture hours.


594 Optical Mineralogy (2) Laboratory course on the principles of optical mineralogy. Use of petrographic microscope to identify rock-forming minerals with applications to petrology and environmental mineralogy. Prereq: 310.

595 Elements of X-ray Diffraction (2) Laboratory course on the principles of X-ray diffraction. Phase identification, quantitative determination of mineral abundances in rocks and minerals, and crystal structure determination. Prereq: 310.
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 (4) Survey of invertebrate animal phyla, with emphasis on skeletal structure and preservation. Includes normal morphology, ecology, and the stratigraphic distribution. Prereq: 320 or consent of instructor. 2 hours and two 2-hour labs.

431 Geological Engineering (3) (Same as Civil Engineering 431.)

440 Field Geology (5) Summer field course for advanced undergraduates and first-year graduate students in geology. Taught off-campus and requires the full time of the student. The course provides a synthesis of the major aspects of the geological sciences in a societal context. Field techniques demonstrated and practiced, and applied to the solution of geologic problems. Prereq: Completion of other major core courses (310, 320, 330, 340, 370) and consent of instructor.

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 geological sciences toward a comprehension of the effects of geological processes on humans and the effects of human activities on the earth’s environments. Prereq: 101.

460 Principles of Geochemistry (3) Applications of chemical principles to geologic systems with emphasis on problem-solving techniques. Topics include phase diagrams, partitioning of trace elements, thermodynamic principles for evaluating stability of mineral assemblages, aqueous solutions, and applications of radioisotopes and stable isotopes to geologic systems. Prereq: Chemistry 120-130, Mathematics 141-142, recommended: Geology 330 or consent of instructor. 3 hours lecture and one 2-hour tutorial.

470 Applied Geophysics (3) Basic principles of geophysical exploration, with emphasis on applications to environmental problems. Includes seismic and electromagnetic methods. Prereq: 6 hours of geology courses numbered above 300, Physics 221-222. 3 lecture hours.

471 Fieldwork in Geophysics (2) Summer field course for advanced undergraduates or graduate students. Taught off-campus and requires the full time of the student for 2 or more weeks. Geophysical investigations applied to the solution of a problem in tectonics, hydrology, or environment. Prereq: 470 or consent of instructor.

475 Physical and Chemical Systems of the Earth (3) Development of the physical earth from the solar nebula to the present. Formation, composition and evolution of the hydrosphere, atmosphere, and core. Interdependence of earthquakes, volcanism, plate tectonics, geochemistry, and chemical and isotopic processes of the interior, and the earth’s temperature. Historical perspective on major controversies of the past, and problems unresolved today. Writing emphasis course. Prereq: 16 hours geology courses numbered 300 and above. 2 lectures and 1 discussion period.

480 Principles of Economic Geology (4) Ore-forming processes, classification of mineral deposits, survey of different types of mineral deposits with examples, and metallogeny. Prereq: 310 and 330 or equivalents. Recommended: 460. 3 lecture hours and one 2-hour lab.

485 Principles of Hydrogeology (3) Physical principles of flow, flow equations, geologic controls, aquifer analysis, water well design/testing, introduction to transport processes. Prereq: 101, Math 141 and 142, Physics 133 or 134 or equivalent, and consent of instructor. (Same as Civil Engineering 485.)

486 Hydrogeology Laboratory (1) Application and demonstration of hydrogeological principles in the field and laboratory. Prereq: 485 or Environmental Engineering 495, or Environmental Engineering 535, or consent of instructor.

490 Special Problems in Geology (1-3) Directed study or special topics. Prereq: 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)

GERMAN (443)

101-102 Elementary German (3,3) Language laboratory required. Must be taken in sequence. Not available to students eligible for German 150. 111 Language Laboratory (0) 112 Language Laboratory (0)

150 Elementary German Transition (3) This course is designed to prepare students for enrollment in German 201. Prereq: Two years of high school German and a placement score below the level required for admittance to German 201. Since 150 is a review of elementary German, students who receive credit in this course may not also receive credit for any other 100 level German course and therefore also forfeit the six hours of elementary language credit awarded through placement examination.

199 German Language and World Business (3) The course will examine the importance of foreign trade at the local, state, and national level. An interdisciplinarian team of faculty from the Colleges of Business Administration and Arts and Sciences will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students majoring in the Language and World Business major concentration. See the Director for further information.

201-202 Intermediate German (3,3) Must be taken in sequence. Prereq: 102 or 150 or appropriate placement exam score.

215 German, Special Topics (3) If content varies, may be repeated for credit. Maximum 6 hours.

301-302 Introduction to German Literature (3,3) Prereq: 202 or equivalent. Need not be taken in sequence.

305 Readings in German (3) Topics in both literary and nonliterary fields. Students or student groups are encouraged to suggest topics for future courses. May be repeated twice with approval of department. Prereq: 202 or equivalent.

311-312 Conversation and Composition (3,3) Prereq: 202 or equivalent.

323 German Film (3) A study of the German cinema from the earliest days to the present. Writing-emphasis course. (Same as Cinema Studies 323.)

331-332 Elements of German for Upper-division and Graduate Students (3,3) For advanced students in German, including advanced readings and a final 10,000 word translation project. Open to graduate students preparing for language examination, and upper-division students desiring reading knowledge of the language. Undergraduates credit only. No credit for students who have completed 101-102. 332 may be repeated only once for credit. A, B, C, no credit grading.

350 German-Jewish Topics in Literature and Culture (3) Selected themes, issues, figures, movements, and problems in the German-Jewish relationship as reflected in literature and culture from the 1750s to the present. Variable content. Available for both majors and non-majors. May be repeated with the approval of the department. Maximum 6 hours. (Same as Judaic Studies 350.)

363 Modern German Culture (3) German culture from the mid-nineteenth century to the present: customs, art, music, literature, society, state. Readings in English for non-majors and in German for majors. Major credit, but no foreign language credit. A writing-emphasis course. Fulfills Upper-level Distribution Requirement for Foreign Studies for those who have not satisfied the history requirement with Western Civilization. Writing-emphasis course.

411-412 Advanced Conversation and Composition (3,3) Prereq: 311-312 or equivalent or consent of department.

415 German, Special Topics (3) If content varies, may be repeated for credit. Maximum 6 hours.

420 Selected Topics in German Literature from 1750 to the Present (3) Prereq: 6 hours of 300 courses excluding 331-332 and courses in English translation, or equivalent.

421 German Lyric Poetry (3) Prereq: 6 hours of 300 courses excluding 331-332 and courses in English translation, or equivalent.

422 German Drama (3) Prereq: 6 hours of 300 courses excluding 331-332 and courses in English translation, or equivalent.

423 German Narrative Prose (3) Prereq: 6 hours of 300 courses excluding 331-332 and courses in English translation, or equivalent.

424 German Literary Movements (3) Major periods in the development of German literature since 1750, with emphasis on the problems and developments of language.

425 Introduction to Descriptive Linguistics (3) (Same as Russian 425, French 425, Spanish 425, and Linguistics 425.)

426 Methods of Historical Linguistics (3) Phonetics, distinctive feature analysis, sound change types, nature of sound change, principles of reconstruction and fundamental assumptions about language change through time. Non-phonological linguistic change, language families, Proto-Indo-European and other proto languages. Prereq: 6 hours of upper-division foreign language courses excluding courses in translation or graduate reading courses. (Same as Russian 426, French 426, Spanish 426, and Linguistics 426.)

435 Structure of the German Language (3) Contrastive English-German segmental and suprasegmental phonemes, contrastive English-German linguistic structures, selected topics in advanced German grammar and syntactic analysis. Prereq: 6 hours of upper-division German language courses excluding courses in translation and graduate reading courses. (Same as Linguistics 435.)

436 History of the German Language (3) Development of the German language from Indo-European through Proto-Germanic; Old High German, Middle High German to New High German. Internal and external linguistic history of the language. Prereq: 6 hours of upper-division German language courses excluding courses in translation and 331 or 332. (Same as Linguistics 436.)

477-478 German Honors (1,1) Preparation of honors paper portfolio and oral presentation. Prereq: Permission of the department.

485 Business German (3) German used in fields of business, government, administration and economics. Prereq: 6 hours of upper-division German excluding courses in translation and 331 or 332.

490 Internship (1-15) Career-related experiences in the U.S. or abroad with permission of the Language & Business World Director. For Language & World Business majors only. Satisfactory/No Credit only.

491 Foreign Study (1-15) 492 Off-Campus Study (1-15) 493 Independent Study (1-15)

497 Senior Honors (1-6) Admission by consent of department. May be repeated. Maximum six hours.

GREEK (257)

121-122 Beginning Greek (3,3) Must be taken in sequence.

261 Intermediate Greek: Grammar Review and Readings (3) Systematic review of Attic Greek and readings from selected authors. Prereq: 122.

264 Intermediate Readings in Greek (3) Content varies. Prereq: Classics 261.

401 Greek Poetry (3) Epic, lyric, drama. Authors vary. Prereq: 261.

402 Greek Prose (3) History, philosophy, and oratory. Authors vary. Prereq: 261.

405-406 Selected Readings from Greek Literature (3,3) For advanced students in Greek, the study of plays, the historical writings, the poetry of Homer, and a selection of the original Greek. May be repeated for credit. Maximum 9 hours. Prereq: 401-402 or consent of instructor.
HEALTH (449)
110 Personal Health and Wellness (3) Information and behavior to approach health and wellness scientifically and to develop confidence in judgments affecting personal health and wellness. Students who have received credit for Health 330 may not thereafter receive credit for this course. E
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.
225 Alcohol/Drugs and the College Student (2) Problems related to the use 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 cardiac life support following cardiac arrest due to such conditions as heart attack, drowning, electrocution, suffocation, poisoning, drug intoxication, and vehicular and other accidents. Educational and preventive aspects of controlling cardiovas-
cular 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 for women; health behavior and intervention techniques; health appraisal techniques; health promotion strategies. F
305 Health of Adolescents (3) Profile of health needs, interests, and behaviors of adolescents and attention to the roles and functions of practitioners relating to youth and youth culture. F
306 Health Instruction in Elementary Grades (3) School health program for the child in elementary grades. Teachers become familiar with organizing and presenting health content, health materials, health curricula, community resources, and communicating healthful lifestyle. Prereq: Admission to Teacher Education Program. F, Sp
310 Advanced First Aid and Emergency Care (3) Theory and practice of first aid and emergency care. Provides essential information for developing functional first aid capabilities of lay persons. Course leads to Advanced First Aid and Emergency Care certification. Applicant must be at least 18 years old for certification. E
330 Wellness For Health Professions (3) Emphasis on taking personal responsibility for one’s health. Includes topics related to the healthy lifestyle, and provides specific guidelines of how to change inappropriate behaviors. Students who have received credit for 330 may not thereafter receive credit for Health 110. Sp, Su
375 Health Communications (3) Communication strategies for health educators in various settings. Emphasis on interpersonal skills, public relations, leadership, small group processes, health teams, and effective use of media. Prereq: Health 300; Public Health 300. Sp
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 make alcoholism a serious health and safety problem. Various types of instructional/educational and intervention programs. F
406 Death, Dying and Bereavement (3) Aspects of dying, death and grief, including the history of loss, physical, emotional, legal and social implications of death. F, Sp
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 how to consumers in nation’s health care 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
426 Health Education Program Planning (3) Principles of curriculum development, administration, implement-
tation, methodology, and evaluation. Prereq: Health 300; Health 375; Public Health 300; and Psychology 430.
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 related causes; pharmacology of drugs and effects on society, strategies for intervention and education. Sp, Su
465 Aging and Health (3) Aging process in a health perspective as it relates to health promotion and wellness of the aged. F, Sp
470 Special Topics (1-3) For advanced students, teachers, school administrators, nurses and other paramedical 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 ident-
fication and study of a health/wellness or health promotion problem/issue. Prereq: Consent of instructor. May be repeated. Maximum 12 hours. E
483 Field Practice (12) Off-campus health internship or field practice in an educational or other agency with qualified professional. Prereq: Progression and approval for internship. Satisfactory/No Credit only. Usually taken in final semester. E
HEBREW (458)
141-142 Elementary Modern Hebrew I,II (4,4) (Same as Asian Studies 141-142.)
241-242 Intermediate Modern Hebrew I,II (4,4) (Same as Asian Studies 241-242.)
HISTORY (462)
221-222 History of the United States (3,3) 221—Settlement to 1877. 222—1877 to present. Writing- emphasis course. E
227-228 Honors: History of the United States (3,3) Consent of department required. Students will attend the appropriate 221-222 lectures and the designated honors discussion section.
241-242 Development of Western Civilization (3,3) Historical survey of the civilization of the western world. 241—Ancient world to 1715. 242—1715 to 1799. Writing-emphasis course. F
247-248 Honors: Development of Western Civilization (3,3) Consent of department required. Writing-emphasis course. Students will attend the appropriate 241-242 lectures and the designated honors discussion section.
255-256 Introduction to Latin American Studies (3,3) Students will examine the history of Latin American peoples on dominant culture patterns, social changes, and impact of nationalism. 255—Pre-Colonial and Colonial periods through Independence era. 256—Later 19th century and the Modern period. Writing emphasis course. (Same as Latin American Studies 251-252.)
261-262 A History of World Civilization (3,3) Historical survey of world civilization. 261-Origins to 1500. 262-1500 to present. Writing-emphasis course.
307 Honors: Introduction/Historical Problems (3) Historical analysis, philosophy of history, principles and techniques of research emphasizing the roles of contexts of opinion and frames of reference and the problems of evidence, interpretation and objectivity. Required of students working for honors in history. Prereq: Consent of the department.
310 The Ancient World: Greece (3) (Same as Classics 310.)
311 The Ancient World: Rome (3) Origins of Roman imperialism and its consequences: militarism, empire, socioeconomic changes, constitutional crises, emerg-
ence of military and political autocracy. Writing empha-
sis course. (Same as Classics 311.)
312-313 Medieval History (3,3) 312—Early Middle Ages: 300-1100. Formation of medieval society and institutions. 313—Later Middle Ages: 1150—Height of medieval civilization, and its waning in the fourteenth century. (Same as Medieval Studies 312-313.)
340-401 History of Russia (3,3) 340—To the middle of the 19th century. 401—On the rise of the 19th century.
342 History of Nazi Germany (3) The coming to power of the Nazi party in Germany, origin of ideology, rise and fall of the “Third Reich.” Topics include foreign policy, social policy, World War II, Hitler’s brutal rule and racial politics, programs in mass murder and genocide against the Jews of Europe. Writing-emphasis course.
346 The Environment in U.S. History (3) Environmental consequences of competition for scarce resources among Indians, European Americans, and Hispanic Americans in colonial, migration, industrialization; urbanization; conservation; and environmentalism. Writing emphasis course.

350 Colonial America to 1763 (3) Social and cultural developments in the American colonies from the point of contact between European and Native American cultures to the mid-eighteenth century. Writing emphasis course.

351 The American Revolution, 1763-1789 (3) The growing estrangement of the American colonies from the British Empire, the War for Independence, and the creation of a new American republic. Writing emphasis course.

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 struggle between nationalistic and sectionalism.

353 The Civil War and Reconstruction Eras, 1860-1877 (3) An examination of the major political, economic, 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 Cold War. Emphasis on domestic history but includes military and foreign policy.

356 The 1960s in America (3) The politics, social movements, and cultural revolutions of the 1960s. Topics include race riots, antiwar protests, new art forms, Great Society legislation, the rise of nonconservatism, empowerment movements by people of color, Cold War brinkmanship in Cuba, and the escalation of ground and air wars in Vietnam. Writing emphasis course. (Same as American Studies 356.)

360-361 History of Latin America (3,3) 360-Colonialism and Independence, 1500-1825. 361-National Development, 1825 to present. Writing emphasis course. (Same as Latin American Studies 360-361.)

362-363 History of East Asia (3,3) 362—East Asia: History and Culture to 1800. Chiefly China and Japan, Korea and Vietnam also included. Confucianism, Buddhism, social structure, political tradition, and Japanese feudalism. Comparison and contrast with Western history and culture. 363—Modern East Asia since 1800. China, Japan, Korea and Vietnam. Comparative modernization. Western influence on information, communist movement, and Japan's militarism and postwar economic success. Writing emphasis course.

364 History of China (3) Changes and continuities of the world's longest uninterrupted civilization with a quarter of the world's population. Emphasis on the changes in the human race differences between China and Western civilizations; Chinese revolutions in historical context. Writing emphasis course.

365 History of Japan (3) Japanese history from mythological origins to the postwar age, with emphasis on politics and society. Focus on the influence of disease on society, Japanese feudalism, popular culture in the 1700s, the Meiji Restoration, and Japanese militarism. Writing emphasis course.

366 History and Archaeology of Mesopotamia (3) Mesopotamia (Assyria and Babylonia) from the fifth millennium to the Iron Age. Specific topics will include the development of village and state-level societies, and the emergence of social and political institutions, literacy, imperialism, and intercultural interaction. Writing emphasis course.

367-370 History of the Middle East (3,3) 369-Rise and spread of Islamic civilization to the sixteenth century. 370-The Middle East to the present. Impact of the West and background of current problems in the area. Writing emphasis course. (Same as Judicis Studies 369-370.)


373 Historical Issues (3) Variable content. Broad thematic issues in historical perspective. Lecture-discussion. Especially suitable for non-majors; also open to majors. May be repeated. Maximum 9 hours.

374 A History of Imperialism since 1850 (3) Relationships between the West and Africa, Asia, and Latin America since 1870 across a broad spectrum of critical issues. Includes economic interdependence and underdevelopment, ideologies in conflict between non-Western and Western world views, and the search for individual identity in circumstances of cultural disruption. Writing emphasis course.

375 Revolutions in Historical Perspective (3) Comparative history of major revolutions that transformed political, social, and economic structures and values, such as those in France, Russia, China, Mexico, and Iran. Contrasts of causes and outcomes. Relations between leaders and masses. Major theories of revolution. Writing emphasis course.

381 History of South Africa (3) South African history from the pre-colonial period through the apartheid and post-apartheid eras. Topics include African state formation and resistance to European colonization, the impact of industrialization, the evolution of modern resistance movements, and the first democratic elections in 1994. Writing emphasis course. (Same as African and African-American Studies 381.)

383 History of Jewish Civilization (3) Biblical-Talmudic Periods (1200 BCE-600CE). Origins of the Israelites, development of individuals and Jewish states in the ancient Near East, rise of Jewish Diaspora communities, cultural convergences with Hellenism and early Christianity, and the development of Rabbinic Judaism. Writing emphasis course. (Same as Judaic Studies 383.)

384 History of Jewish Civilization II (3) Medieval—Present. The resiliency of Jewish civilization in the face of external pressures; of Sephardic and Ashkenazi Jewry in medieval Europe; North Africa and the Middle East; Jewish mysticism; Judaism's encounter with modernity; Hasidism, the Haskalah; the Reform movement and Zionism; the Holocaust; pogroms in eastern Europe; the state of Israel; and assimilation and the future of Judaism. Writing emphasis course. (Same as Judaic Studies 384.)

385 Studies in World History (3) Variable content. Selected topics in world history involving analysis of two or more world cultures. May be repeated. Maximum 9 hours.

389 The Crusades and Medieval Christian-Muslim Relations (3) The major Christian crusades in the Middle East and Spain, 1050 to 1500; their political and religious content, and larger context of the medieval religious, cultural, intellectual, and diplomatic confrontations between Christians and Muslims. Writing emphasis course. (Same as Judaic Studies 389.)

407 Honors: Senior Paper (3) Bibliographic search, research and conceptual clarification for the senior paper. Required of students working for honors in history.

408 Honors: Senior Paper (3) Organization and writing of the senior honors thesis. Required of students working for honors in history. Grade of A or B required for honors credit.

421 Comparative Studies in African and African-American Societies (3) (Same as African and African-American Studies 421.)

429 Medieval Intellectual History (3) The evolution of thought in Europe from late antiquity to the advent of Humanism, especially connections between major thinkers and their social, economic, and professional contexts. Writing emphasis course.

430-431 European Intellectual and Cultural History (3,3) 430—Renaissance to 1600-1700. 431—Romanticism to Relativism, 1750-Present.

432 Women in European History (3) Comparative analysis of the roles of women in Medieval, Renaissance and Victorian Europe. Relationship between family structure, sexual attitudes and the economic and political roles of women with an emphasis on autobiographical writings by women. Writing emphasis course. (Same as Women's Studies 432.)

439 Southeastern Indian History (3) Southeastern Indian history from the protohistoric period to the present. Interaction of Euroamerican, African-American, and Native American forces, warfare, slavery, resettlement, and other policies from the American Revolution to twentieth-century problems such as tribal sovereignty and dependency. Writing emphasis course.

441 The American West (3) From 1803 to present, with emphasis on the American West; relations of external pressures; of Sephardic and Ashkenazi Jewry in medieval Europe; North Africa and the Middle East; Jewish mysticism; Judaism's encounter with modernity; Hasidism, the Haskalah; the Reform movement and Zionism; the Holocaust; pogroms in eastern Europe; the state of Israel; and assimilation and the future of Judaism. Writing emphasis course. (Same as African and African-American Studies 445.)

442 Indian and White Relations in United States History (3) Comparison of two cultures existing side by side; background and formulation of official Indian policy; undermining of policy by frontier circumstances; Indian wars and campaigns; present-day relationships. Writing emphasis course.

443-444 History of the South (3,3) 443—Old South from colonial period through the Civil War. 444—New South from Reconstruction through the Second Reconstruction.

445 The African-American Experience from the Colonial Periods 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 and African-American Studies 445.)

446 History of African Culture (3) Topical examination of the origination and development of Africa'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; challenges of modern culture; rural and urban values; cultural upheaval 1920s-30s; present nature of African culture. Writing emphasis course.

449 History of Tennessee (3) Tennessee's history from the 18th century to the present.

450 History of U.S. Foreign Relations to World War II (3) Examines the ideology and practice of U.S. international relations from independence to entry into the Second World War.

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 weaponry involved in wars, and relationship between American society and its armed forces. (Same as Military Science 450.)

452 The American Experience in World War II (3) Diplomacy and warfare in Europe and Asia and the impact of the war on American society.

453 Women in American History (3) Approaches of 432 applied to American society. Writing emphasis course. (Same as Women's Studies 453.)

454 Cities and Urbanization in American History (3) Origins, growth, and influence of American cities in the development of the nation, from colonial era to present. Writing emphasis course. (Same as Urban Studies 454.)

455 Environmental History of Urban America (3) Pre-industrial, industrial, and modern environmental crises, including animal pollution; epidemic disease, infrastructure construction; hinterland resource exploitation; and urban renewal and clean-up. Writing emphasis course.

456 History of Sports in the United States (3) Development of sports and their significance in American life from colonial period to present. Emphasis on social, cultural, economic and political impact of both spectator and participatory sports in 20th century. (Same as American Studies 456.)

459 Jefferson's America, 1789-1815 (3) Nation-building in the United States from the Constitution to the War of 1812. Economic modernization, the new national government, the first political party system, foreign relations, the War of 1812. Writing emphasis course. (Same as American Studies 459.)

460 History of Brazil (3) History of Latin America's largest nation. History of boom and bust economic cycles, slavery and the abolition of slavery, populism, military rule, and re democratization. Writing emphasis course. (Same as Latin American Studies 460.)
461 Cuban Revolution in Historical Perspective (3) Cuban history with major emphasis on Cuban Revolution and Cuban-U.S. relations. Writing-emphasis course.

462 History of Mexico (3) Pre-Columbian, colonial, national, and modern Mexican history, emphasizing the twentieth century’s first true social revolution, the Mexican Revolution, and contemporary social and economic problems. (Same as Latin American Studies 462.)

463 Modern Latin American History in Film (3) Major events and trends in Latin America since 1945 as represented in five films made by Latin Americans. Topics include: plastic development, the Cuban Revolution, and Authoritarianism. Writing-emphasis course.

470 Studies in British History (3) Variable content. Selected 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, revolts, or nationalism. May be repeated. Maximum 9 hours.

472 Studies in Central European History (3) Variable content. Particular aspects of Central European history. 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. Writing-emphasis course.

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. Particular aspects of United States history. May be repeated. Maximum 9 hours.

480 Studies in African History (3) Variable content. Different areas 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 historical writing, including critical analysis of both primary and secondary sources. Recommended for seniors. Writing-emphasis course.

483 History of U.S. Foreign Relations Since WW II (3) Examines the ideology and practice of U.S. international relations since World War II.

484 Studies in Jewish History (3) Variable content. Significant topics in the study of Jewish civilization and culture, including the development of the synagogues, Judaism and ethnicity, and the history of Jerusalem. May be repeated. Maximum 9 hrs. Writing emphasis course.

485 Studies in Cross Cultural History (3) Variable content. Analysis of specific historical issues or specific facets of the relationships between two or more cultures. May be repeated. Maximum 9 hours.

486 Studies in the Ancient Near East (3) Variable content. History and archaeology of Egypt, Anatolia, Turkey (Asia Minor), Iran, the rise of social complexity, and social boundaries in antiquity. May be repeated. Maximum 9 hours. Writing-emphasis course.

489 Oral Histories of War and Peace (3) Oral history methodologies and interviews with veterans and others who have shaped modern American military history. Special topics: World War II, the Korean War. History 451, U.S. Military History, is recommended but not required.

490 Internship in the Center for the Study of War and Society (3) A structured field work experience in public history. Students will work with the Center for the Study of War and Society. May be repeated. Maximum 6 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

HOTEL AND RESTAURANT ADMINISTRATION (512)

101 Food Quality Principles (3) Scientific principles involved with selection, preparation, evaluation and safety of quality food. 2 hours and 1 lab.

119 Introduction to the Service Industry (3) Organization and basic operations for the career paths available in the hospitality, retail and recreation and tourism industries. Managerial competencies necessary for success in these fields. (Same as HRA and RCS 119.)


211 Hotel Operations (3) Operational theory of lodging and an exploration of the lodging industry in terms of nature of work, organizational structure of lodging segments, the meaning of guest services, differentiation of brands, current industry issues, and evaluation of the market place. Coreq: HRA RCS 119/119.

311 Developing the Service Workforce (3) Personnel management procedures and policies to develop the service workforce. Topics include leading organizational change; labor cost; benefits; employee retention issues. Prereq: HRA RCS 210 or HRA 211 or RTS 310. (Same as HRA 311 and RTS 311.)

321 Quantity Food Procurement, Production and Service Laboratory (1) Application of principles in determining menu items, maximization of purchasing and serving foods in volume. Prereq: 120, 220, NTR 100 or 107, HRA 101, Micro 210 or Ph130; progression into HRA program or consent of instructor. Coreq: HRA RCS 119/119.

322 Diversity in the Service Marketplace (3) Market-place (3) Survey of diversity in the service marketplace. Implications for the manager of a diverse workforce in the delivery of goods and services to a multiplicity of consumer groups. Coreq: HRA RCS/HRA/RTS 311. (Same as RCS 323 and RTS 323).

324 Tourism and Travel Administration (3) Economic and social forces influencing domestic and international tourism; services, functions of retail, wholesale travel agencies. Coreq: HRA/RTS 210 or HRA 211, or consent of instructor.

326 Food and Lodging Cost Control (3) Budget, cost analysis, computer, financial statement use in decision making in lodging and foodservice systems. Prereq: HRA/RTS 210 and Act 220 or consent of instructor.

335 Convention and Meeting Planning Management (3) Practical insights into types of convention/meeting services, roles of the association, corporate, and government convention and meeting planners, setting of objectives and format, site selection, negotiations, program design, speaker selection, budgeting, contracting, marketing, registration, on-site logistics, and evaluation. Prereq: HRA/RTS 210.

341 Food Safety and Sanitation for the Food Service Industry; Hazard Analysis Critical Control Point (HACCP) (3) Students will be eligible to become ServSafe certified. Prereq: or Coreq: HRA 210.

376 Strategies for Growth (3) Issues concerning achievement of business growth with focus upon the consumer, operational, and financial dimensions of the service industry. Prereq: Mkt 300, HRA 326 or RTS 310, or RCS 310, RCS 341. (Same as RTS 376 and RCS 376.)

390 Professional Development (3) Development of skills important to career success; focus on business communications, time and stress management, motivational and negotiation skills. Coreq: HRA RCS 326 or RTS 310 or RTS 310 and progression into the program. (Same as RCS 390.)

410 Strategic Restaurant Planning (3) Restaurant Management from a strategic planning perspective; development and implementation of hotel strategy from financial, operational, and customer orientation. Prereq: HRA 390.

420 Professional Experience in Restaurant and Food Service Management (6) Supervised educational experiences in selected hotel and restaurant operations. Prereq: Progression into the program and HRA 326 and 390.

421 Professional Experience in Hotel/Tourism Management (6) Supervised educational experiences in selected hotel/tourism operations. Prereq: Progression into the program and HRA 326, 390.

423 Hospitality Sales and Marketing (3) Strategic marketing for lodging and restaurant organizations; includes properly/product, market, and competition analysis; promotion and sales planning; internal and external sales and promotion techniques. Prereq: Marketing 301; progression into HRA program or consent of the instructor.

424 Strategic Hotel/Tourism Planning (3) Hotel Management from a strategic planning perspective; development and implementation of hotel strategy from financial, operational, and customer orientation. Prereq: HRA 390.

425 Legal Issues in Service Management (3) Legal issues and problems facing service managers and their staff and clientele. Prereq: HRA/RCS/RTS 311; progression into the program or consent of the instructor. (Same as RCS 425.)

429 Hospitality Computer Applications (3) This course is designed to provide the student with a broad exposure to software program applications specifically for the hospitality industry. The course covers computer usage for guest room accountings, reservations, payables, receivables, management reporting, inventory control, point of sale, revenue control, labor control, and product cost control. Prereq: HRA 326, 390.

440 Special Topics: Hotel and Restaurant Administration (1-3) Developments, issues and problems in Hotel and Restaurant Administration; topics variable. Prereq: Junior or Senior Standing in Hotel and Restaurant Administration Program or consent of the instructor. May be repeated. Prereq: HRA 326 and 390.

445 Advanced Food Production and Service Management (3) Application of management concepts in menu design, personnel, cost control and production and service of food. 2 hours and lab. Prereq: HRA 210.

450 Advanced Lodging Management (3) This course is designed to build upon the course in operational problems currently occurring in the hotel industry in a case study, interactive environment. The student will analyze management opportunities and threats within a hotel and determine reasonable alternatives. Prereq: HRA 211, 326, 425, Mkt. 301.

480 Professional Experience in Restaurant and Food Services Management II (9) Supervised professional experience in selected food services operations that builds upon first professional experience. Prereq: HRA 410, 420, HE 410. Coreq: HRA 485.

481 Professional Experience in Hotel/Tourism Management II (9) Supervised professional experience in selected hotel operations that builds upon first professional experience. Prereq: HRA 421, 424, HE 410. Coreq: HRA 486.

485 Managerial Issues in Restaurant and Food Service (3) Managerial problem solving involving staffing and retention of personnel, conflict resolution, financial analysis, and crisis management. Coreq: HRA 480 or 490, Prereq: HRA 420, HE 410.

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.

310 Design in Everyday Life (3) Aesthetic environment. Planning and organizing interior spaces to meet personal and family needs. Relationship of materials and furnishings to architectural space.

410 Human Ecological Systems (3). Systems theory as a component of human ecology; factors impacting on the nature of finding and understanding environments. Prereq: HRD 210, CFS 210 or CFS 220 or RCS 341; 6 upper division hours in major.

445 Field Experience in Community-Based Programs (1-15) Placement in Home Economics-related programs as a means for business and industry cooperation with an element of architectural drafting. May be repeated. Maximum 15 hours. Prereq: Consent of instructor. Satisfactory/No Credit only.

450 Special Topics: Human Ecology (1-3) Study in a selected professional area within the College of Human Ecology. Topics vary. May be repeated. Maximum of 6 credit hours.

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

497 Honors: Human Ecology (3-6) Issues or topics affecting areas within Human Ecology. Designed to meet particular interests of the student Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

HUMAN RESOURCE DEVELOPMENT (529)
161 Graphic Communications (3) Drifting as a means of communication in technology. Orthographic and multiview drawing, conventional practices, pictorial techniques and applications, sheetmetal development, auxiliary view development, line and letter size, architectural drafting. Introduction to sketching, dimensioning and CAD.

163 Power and Energy Systems (3) Automotive technology and internal combustion engines. Includes various aspects of both systems, including design and transmission of power. Engine tune up and overhaul and small engine maintenance and repair is stressed through experimental and applied laboratory experiences. F

201 Field Experience in Teaching (1-3) Field experience in public school Business, Family and Consumer Sciences, or Technology Education programs. May be repeated for a maximum of 3 hours. S/N credit only. E

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; spread sheets, word processing, and database. Prereq: Declared major in College of Human Ecology. Satisfactory/No Credit grading.

285 Introduction to Human Resource Development (3) This online course will be an overview of human resource development, organizational theory and design, training, productivity and evaluation. Prereq or Coreq: HRD 210, F, Sp

300 Individuals, Society, and Technology (3) An overview of how technology and human innovation is used to meet needs and solve problems. Hands-on opportunities to develop teamwork and individual problems in a tools and material context.

305 Construction Systems (3) Introduction to construction technology, preparing for the construction project, designing and planning the project, managing construction, designing and engineering projects, manufacturing the product, marketing the product, and performing financial activities.

325 Development of Instructional Resources (3) The first in a series of four online core courses designed to prepare instructors for the learning environment. It includes the design and development of instructional materials, the preparation of teaching aids, and sequencing instruction based on the Instructional Systems Development (ISD) model. Each student will develop a training module. Prereq: HRD210.

330 Instructional Strategies and Techniques (3) The third in a series of four online core courses focuses on methodologies and techniques of facilitating learning through application of communication theory, teaching and training concepts, and delivery methods and skills. Students will provide a deliverable product in facilitated training as a final course product. Prereq: 325. E

335 Program Planning for Training, Development, and Education (3) The second in a series of four online core courses focuses on methods and techniques of facilitating learning through application of communication theory, teaching and training concepts, and delivery methods and skills. Students will provide a deliverable product in facilitated training as a final course product. Prereq: HRD 320.

336 Teaching Technical Skills-Based Business Education and Marketing Education (3) Methods and techniques for teaching Business Education and Marketing Education technology-based content that results in learner acquisition and refinement of technical skills. Sp

350 Related and Applied Theory in Occupations (1-15) Applicants must show evidence of bona fide 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 only. Prereq: Junior standing and departmental approval. E

351 Manipulative Skills in Occupations (1-15) Applicants must show evidence of bona fide 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 only. Prereq: Junior standing and departmental approval. E

352 Practicum in Industrial Education (1-3) Updating and upgrading experiences in nontraditional settings for technical teachers. May be repeated. Maximum of 8 hours. Satisfactory/No Credit only. E

361 Graphic Reproduction Processes (3) Principles of printing, duplicating, photography, and other forms of graphic communication; includes laboratory experience in SLR camera applications, camera copy preparation, line and halftone photography, layout, stripping, plate-making, and offset presswork. F

369 Plastic Technology (3) Characteristics and applications of thermoplastic and thermosetting materials. Plastic production equipment and tools designed for the molding and processing of plastics. Prereq: 165 and admission to Teacher Education Program. Sp

370 Technology Systems I (3) A systems approach to the study of the design, development, implementation and use of technology systems. Emphasis on the development process with an emphasis on the production and measurement tools used to create products and structures. Prereq: 161, 305, and 306.


411 Managing Occupational Education Programs (3) Unique needs of instructors of occupational education: laboratory organization and safety; community resources and relation activities; building advisory councils; clubs; and adapting instruction for special needs learners. Prereq: 325.

415 Coordination Techniques (3) An online course with an overview of policy, procedures, roles, and responsibilities necessary for the analysis, design, development, implementation, and evaluation of a cooperative education program in vocational education. Prereq: HRD 210.

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.

421 Adult Education Program Design and Management (3) Principles of program development and special application to adult training programs.

422 Adult Development and Training (3) Application of adult development concepts to design and management of training programs for adults. Sp

423 Methods of Teaching Basic Business and Accounting (3) Instructional methodology for teaching secondary-level and post-secondary-level basic business and accounting. Integrative strategies are introduced and developed. F

430 Principles and Best Practices of Business Education and Marketing Education (3) This course provides an overview of how Business Education and Marketing Education curricula are designed. Special attention is given to the national standards, state-based curricular frameworks, and learner competency expectations which shape Business Education and Marketing Education instruction. F

434 Teaching Conceptual and Human Skills-Based Business Education and Marketing Education (3) Methods and techniques for teaching Business Education and Marketing Education conceptual skills and human skills based on subject matter content. Involves exploration of theoretical models, research and practical applications. F

441 Materials and Processes I (3) Classification systems of materials, control methods, survey of production processes, ie. Separating, forming, conditioning, and combining. C

442 Materials and Processes II (3) Production of industrial materials, primary process, product planning and design, materials specification matching to product. Includes problem solving and hands-on activities. Prereq: 371 and 441.

452 Technology in Learning Environments (3) The fourth in a series of four online courses addresses the use of diverse technology for creating and facilitating instructing and learning. Involves posting and managing an online lesson. Interactive strategies that aid in stimulating, channeling, and sustaining learning. Prereq: HRD 325 and 330. E

455 Learner and Program Evaluation (3) This online course teaches students to assess the effectiveness of training or educational programs, determine performance-based measures, evaluate job performance, and measure learner progress. Prereq: HRD 210 or equivalent.

471 Principles of Supervision/Leadership (3) This online course examines management problems such as motivation, communication, interpersonal relationships, and leadership. Prerequisite: HRD 285. Sp

473 Integrating Organizational and Career Development (3) This online course examines methods of organizing development, management, and control. Prerequisite: associate with employee empowerment, involvement, and reorganization. Effective utilization of human resources through personnel development, personnel policies, and human resource management. Prereq: 471, 455, and Satisfactory/No Credit grading.

Courses of Instruction

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Courses of Instruction 185

475 Human Resources Policies, Practices, and Procedures (3) This course examines employer/organizational activities related to personnel and human resource programs, employee recruitment, employee assistance programs, exit considerations, and legal aspects. Prereq: HRD 210 or equivalent and HRD 471.

476 Supervised Occupational Experience (3) Practical field experiences in business/industry/community-based settings related to the area of study. May be repeated for a maximum of 9 credits. Prerequisites: Senior standing and approval of advisor. E

479 Internship in Human Resource Development (3-9) Enrichment of the knowledge gained in the classroom, applied in a Human Resource and/or Training Department in various business areas. The internship is the capstone experience to be completed after HRD 452, 473 and 475 and all other prerequisites. Students who have only 473 or 475 remaining may petition the intern coordinator to take the remaining course concurrent with 479. Must be a senior with a GPA of 2.7. May be repeated to a maximum of 9 semester hours. Satisfactory/No Credit Only.

480 Directed Study in Human Resource Development (1-3) Topic arranged by student in collaboration with a supervising faculty member. Approval form must be filed in the departmental office. May be repeated for a maximum of 6 hours. Prereq: Junior or senior standing.

482 Directed Study in Family and Consumer Sciences Education (1-15) Special conferences, workshops, or in-service programs. May be repeated. Maximum 6 hours. Satisfactory/No Credit Only.

485 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 and human resource development. Identification and evaluation of information for 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

400 Prefield Seminar (2) Prefield Seminar (2) Preparation for field sequence. Exploration of field/work settings within human service through in-class activities, field trips, and guest lecturers; includes current topics and professional behavior. S/NC only. F, Sp

420 Human Services Methodologies II (3) Includes reality therapy, behavior modification, 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 Writing emphasis course.

440 Human Services Field Work (6) Human Services Field Work (6) Practical field experiences within an approved and supervised human services setting. Explores day to day activities within a human services organization. Develops specific helping skills: involvement in roles and function of human services profession; provides direct service in a supportive learning setting. For majors only. Prereq: Progression to the major, 380, 400, 420. S/NC only. F, Sp, S

441 Human Services Field Work II (6) Human Services Field Work II (6) Practical field experience within an approved and supervised human service setting in a different venue than previous 440 field placement. Explores day to day activities within a human service organization. Develops specific helping skills: involvement in roles and function of human services profession; provides direct services in a supportive learning setting. For majors only. Prereq. 420; 440. S/NC only. F, Sp, S

450 Special Topics in Human Services (3) Issues, methods, values, and trends with implications for helping practitioners, such as legal, ethical, 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)

INFORMATION SCIENCES (560)

101 Information Foundations (3) Nature of information: sources, value, creation, organizing principles, transfer, uses in society. Issues: ethics, privacy, copyright, preservation, national information policy, equity of access. Information oriented careers. Undergraduate credit only.

102 Technologies for Information Retrieval (3) Principles, selection, and use of computer-based information management applications; software identification and task appropriation. Applications of communications, utilities, and memory management systems; multiple operating systems and technology for national network connections; information services via computers. Undergraduate credit only.

310 Information Seeking: Resources and Strategies (3) Information as critical resource for research and decision making; emphasis on planning, executing, and evaluating information searches. Focus on topic of student’s major. Undergraduate credit only.

330 Books and Related Materials for Children (3) Materials for children in leisure time or classroom activities; criteria for selecting books, magazines, recordings, films and related materials; storytelling and other devices for encouraging reading. Undergraduate Credit Only.

350 Information Consumer (3) Information in society, information economy, knowledge/learning society; information overload and anxiety, science fraud, gatekeeping concepts; updating systems, environmental scanning; information consumption techniques. Undergraduate credit only.

430 History of the Book (3) History of writing and various methods of bookmaking.

450 Writing About Science, Technology and Medicine (3) (Same as Journalism 450).

485 Introduction to Electronic Communications and Information Resources on the Internet (3) Exploration of worldwide information and communications resources including e-mail, newsgroups, and the world wide web. Discussion of information issues including copyright, censorship, privacy, and access.

486 Advanced Electronic Communications and Information Resources on the Internet (3) Exploration of advanced information and communications issues, resources and tools including forms, scripting and search engines. Prereq: IS 485 or consent of instructor.

490 Information Environment (3) Generation, production, management, dissemination, and use of information. Roles of information in society, information seeking and user behavior, information industry, economics of information products and services, technological and organizational change, information professions, and issues. E, Su-A

INSTRUCTIONAL TECHNOLOGY, CURRICULUM, AND EVALUATION (577)

203 Field Study in Education (1-3) Problems of persons in active service in the field, includes methods of evaluating current curriculum related to community relations, and school organizations. May be repeated. Maximum 6 hours.

304 Microcomputers and Instructional Design (3) Introduction to basic operations and application of the microcomputer as related to curriculum development and instructional design. Prereq: Admission to the Teacher Education Program.

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.

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

404 Problems in Improvement of Instruction (1-3) Special conferences, workshops, or in-service programs. May be repeated. Maximum 6 hours. Satisfactory/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 Information Science 475).

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.

486 Introduction to Instructional Computing (3) Classroom uses of computers, applications for teachers, overview of computer operation and software for teachers of all grades. Prereq: Admission to Teacher Education.

INTEGRATED PLANT SYSTEMS (IPS)

230 Introduction to Crop Science (3) Introduction to world crop and food production systems. Emphasis on production terminology, origin and development, environmental interactions, plants and human nutrition, ecological processes, control of plant diseases and pests, genetics, and practices of crop production. Prereq: One year biological science. 2 hours lecture and one 2-hour lab. F

334 Weed Management (3) Principles of weed interference, integrated management, herbicide selectivity and behavior, specific recommendations for various crop and non-crop situations. Prereq: Environmental and Soil Sciences 210. 2 hours and 1 lab. F

340 Turfgrass Management (3) Practical turfgrass management; cultivar selection, identification, and establishment; basic applied fertility programs, mowing, and irrigation practices, and thatch and compaction control; pest identification and basic controls. Prereq: Environmental and Soil Sciences 210. 8 hours biological sciences or consent of instructor. 2 hours and 1 lab. F

431 Physiology and Ecology in Agroecosystems (3) Plant physiology and ecology applied to crop production and management. Emphasis on plant physiology and ecology principles as they relate to crop production practices from seed to harvesting and handling interaction of crops with their environment and sustainable agroecosystems. Prereq: 230. 2 hours lecture one 2-hour lab. F

433 Agricultural Pesticides (3) Regulation of pesticide development, manufacture, transportation, marketing and use. Structure, use, mode of action, degradation and environmental impact of pesticides used in agriculture, forestry and related areas. Prereq: 1 year biological sciences and 1 semester chemistry. 2 hours and 1 lab. Sp

272 Fundamentals of Interior Design II (6) Problem solving, spatial organization of micro environments, increasingly larger scale; communication of total design solution graphic, audio and photographic techniques; emphasis on the use of color. Five hour studio. Prereq: 271. Sp

311 History of Interior Architecture (4) Interior architecture, decoration and decorative arts within cultural context, ancient through nineteenth centuries, emphasis on Italy, France, England, and America. Prereq: Art History 172 and 173 or consent of instructor. F

312 History of the Contemporary Interior Architecture (2) Interior architecture, furniture, design philosophies, nineteenth century roots for twentieth century developments, Europe and America. Design as influenced by movements in the fine arts, technological advances, cultural context. Prereq: 311 or consent of instructor. Sp


371 Intermediate Interior Design I (6) 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. Five hour studio. Prereq: 272 and Third year standing in interior design. F

372 Intermediate Interior Design II (6) Studio problems of intermediate complexity with emphasis on program development, schematic design processes, in-depth analysis of current programming methods; integrates and extends previous knowledge of spatial organization and planning of micro and macro environments. Five hour studio. Prereq: 231, 371. Sp

400 Proxemics (2) Analysis of space and behavior; within a cultural context. Application to design and the design process. Examination of theoretical foundations and concepts from environment and behavior. Simulation techniques and methods for identifying behavioral design requirements. Two hour studio. Prereq: 200, 231. Coreq: 471 or consent of instructor. F

411 History of American Interior Architecture (3) Historical developments in interior architecture and decorative arts within cultural context, colonial era through nineteenth century. Prereq: 311 or consent of instructor. F

417 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 for Interior Design (3) Supervised experience in a professional design firm; business practices, project management and design philosophy. Prereq: 360, 372 and consent of instructor.

431 Computer-Aided Design (3) Interaction between computer-aided design process, database, spreadsheet software, cost estimating, construction drawings related to space planning. One hour lecture and four hour studio. Prereq: 231, 371. Coreq: 372 or consent of instructor. Interior Design majors only. Sp

464 Environmental Factors in Design (3) Human factors and associated research techniques and design methodologies related to the built environment.

471 Advanced Interior Design I (4) Non-residential studio problems of advanced complexity; integrates and extends previous experiences utilizing systematic design methodologies. Five hour studio. Prereq: 372, 420. Coreq: 400, or consent of the instructor. F

472 Advanced Interior Design II (6) Comprehensive studio problems of advanced complexity; integrates and extends previous experiences utilizing systematic design methodologies. Six hour studio. Prereq: 471 or consent of instructor. Sp

480 Furniture Design (4) Human factors data applied to design of body support, task support, storage and systems, construction drawings and scale models; advanced millwork design, materials and manufacturing processes. Two hour lecture and two hour studio. Prereq: 471 or Arch 372 or consent of instructor. Sp

484 Needs Assessment and Design Programming (3) Systematic methodology and multidisciplinary research methods as a part of design problem solving experience. Appropriate for evaluating various environments: commercial, corporate, hospitality, institutional, and retail. Seminar, readings, field experiences. Prereq: 280. Fourth year standing or graduate student in architecture and/or planning or consent of instructor.

491 International Study (1-15) Individual or group studio and/or study abroad; academic research, field investigation of cultural experiences, and/or study abroad; academic research, field investigation of cultural experiences. Prereq: Consent of the director of Interdisciplinary Studies. Consent of director of Interdisciplinary Studies.

492 Off-Campus Study (1-15) Individual or group study and/or study abroad; academic research, field investigation of cultural experiences, and/or study abroad; academic research, field investigation of cultural experiences. Prereq: Consent of the director of Interdisciplinary Studies. Consent of director of Interdisciplinary Studies.

494 Directed Studies in Environmental Design (1-3) Independent research in environmental design analysis. Prereq: Consent of instructor.

ITALIAN (584)

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

199 Italian Language and World Business (3) This 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 Arts and Social Sciences will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students majoring in Language and World Business. See the Director for further information.

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. F

311-312 History of Italian Literature (3,3) Chronological view of Italian Literature in relation to the specific historical developments that have influenced it. Prereq: 212 or equivalent.

314 Highlights of Italian Civilization (3) Survey of Italian civilization with special attention to major social, political and cultural achievements. Prereq: 212 or consent of instructor. (Same as Medieval Studies 401.)

341-342 Intermediate Grammar, Composition and Conversation (3,3) Grammatical analysis of Italian prose; review of grammatical principles and their application in free composition. Prereq: 212 or equivalent.

401 Dante and Medieval Culture (3) Introduction to the significance of this great Italian writer. Prereq: 212 or consent of instructor. (Same as Medieval Studies 402.)

402 Petrarch and Boccaccio (3) Prereq: 212 or consent of instructor. (Same as Medieval Studies 402.)

403 Literature of the Rinascimento (3) From Pucci to Tasso, the Quattrocento and the Cinquecento. Prereq: 212 or consent of instructor.

404 Modern Italian Poetry (3) Prereq: 212 or consent of instructor.

405 Modern Italian Poetry (3) Prereq: 212 or consent of instructor.

406 The Modern Italian Novel (3) Prereq: 212 or consent of instructor.

409 Directed Readings (3)

410 Italian Theatre (3) Survey of Italian theatre from Renaissance to present. Prereq: 212 or consent of instructor.

414 Italian Cultural Studies (3) This course will examine Italian culture as a set of practices characteristic of Italian society, from its mode of material production to its eating habits, dress codes, celebrations, and rituals. The objective of the course is to achieve a greater understanding of contemporary Italian culture.
421 Topics in Italian Literature and Cinema (3) Examination of Italian literature and cinema from 1930 to the present focusing on literary works translated into English and adapted into film. Objectives of the course are to investigate the relationship between literature and cinema and to achieve a greater understanding of Italian culture since 1930. Films will be shown in Italian with English subtitles. May be repeated. Maximum of 6 hours.

(Prev. as Cinema Studies 421.)

490 Internship (1-15) Career-related experiences in the United States or abroad with permission of the Language and World Business Director. For Language and World Business majors only. Satisfactory/No Credit only.

491 Foreign Study (1-15)

493 Independent Study (1-15)

JAPANESE (589)

151-152 Elementary Japanese I, II (5,5) (Same as Asian Languages 151-152.)

251-252 Intermediate Japanese I, II (5,5) (Same as Asian Languages 251-252.)

313-314 Japanese Literature in English Translation (3,3) (Same as Asian Languages 313-314.)

351-352 Advanced Japanese I, II (4,4) (Same as Asian Languages 351-352.)

451 Readings in Japanese Literature (3) (Same as Asian Languages 451.)

JOURNALISM (594)


203 Editing (3) Methods and practice in judging news, editing copy, writing headlines and designing newspapers and magazines. Emphasis on precise word use and news display. Prereq: 200.

280 Communications Graphics (3) Principles and practice in the development of communications. Emphasis on graphic design, typography, illustration and photography, printing and production techniques and publication design. Lecture and laboratory. Prereq: 200 or 201, or consent of instructor.

290 Photожournalism (3) Principles and practice of photography as a creative tool of communication. Basic camera technique, darkroom work, historical and contemporary photojournalism. Lecture and laboratory.

310 Feature Writing (3) Skills of journalism for writing feature articles for newspapers, magazines and company publications. Critiquing of students’ work in writing workshops, and writing short in-class pieces as assigned.


403 International Communications (3) Development and operations of world mass communications channels and agencies. Comparative analysis of media, media practices, flows of news throughout the world. Print and broadcast systems studied in terms of relevant social, political, economic, and cultural factors. Relation of communication practices to international affairs and understanding.

412 Opinion Writing (3) Analysis of editorial positions, practices, and pages. Writing editorials and columns for newspapers, magazines, and company publications, with emphasis upon study and use of rhetorical devices and logic. Prereq: 203 or consent of instructor.

414 Magazine Article Writing (3) Techniques of writing in-depth articles for mass circulation and specialized magazines. Organizing and presenting material, with attention to problems in areas such as business, science, agriculture, and the humanities. Prereq: 203 or consent of instructor.

416 Issues in Journalism (3) Topics vary. May be repeated. Maximum credit 6 hours. Prereq: Consent of instructor.

420 Print Media Management (3) Current business practice among print news media, especially newspapers. Problems in management and production, and the outlook for new technologies. Prereq: 6 hours math and/ or accounting, and senior standing.


433 Advanced Editing (3) Primary focus is on sensitivity to language and editing skills. Includes headline writing, layout and production. Prereq: 203.

444 Journalism as Literature (3) Study of writers from the 17th century to the modern era whose works have endured as both journalism and literature. An emerging genre called literary journalism will be examined as means of cultural reporting with a personal narrative style. Prereq: Consent of instructor.

450 Writing about Science, Technology, and Medicine (3) Writing workshop to analyze examples of successful science writing and write series of articles for several public based on scientific journals, news conferences, technical meetings and interviews. Prereq: Consent of instructor. (Same as Information Sciences 450.)

451 Environmental Reporting (3) Writing for news media on such environmental issues as strip-mining, water pollution, air pollution, allergens, nuclear power, fossil fuel power, and solid wastes. Students hear presentations from and interview experts in environmental science and reporting. Exemplary popular literature in environmental reporting is reviewed. Prereq: 203 for majors; consent of instructor for non-majors.

455 Issues in Science Communications (3) May be repeated. Topics vary. Prereq: Consent of instructor.

456 Science Writing as Literature (3) Survey of important science writing for the general public across the spectrum of science, engineering, and medicine. Works by authors such as Arthur C. Clarke, Stephen J. Gould, and Richard Selzer will be analyzed for literary qualities in a quest to understand why some science writing succeeds. Prereq: Consent of instructor.


465 Women and Mass Media (3) Media affects on women. Media coverage and portrayal of women. Historical and current status of women in mass communication industries. (Same as Women’s Studies 465.)


491 Foreign Study (1 - 15) Advance approval of hours and topics by language required for registration. May be repeated for maximum of 15 hours credit.

492 Field Experience (1-2) Approved internships and other supervised practice in journalism. May be repeated for a maximum of 4 credit hours. Prereq: 360, senior standing, and consent of instructor. Satisfactory/No Credit grading only.

493 Independent Study (3) May be repeated for maximum of 6 hours. Prereq: Consent of instructor.

HELIX STUDIES (595)

311 Ancient Hebraic Religious Traditions (3) (Same as Religious Studies 311.)

312 Religious Aspects of Biblical and Classical Literature (3) (Same as Religious Studies 312.)

320 Women and Religion (3) (Same as Religious Studies 320 and Women’s Studies 320.)

322 Medieval Philosophy (3) (Same as Philosophy 322 and Medieval Studies 322.)

350 German-Jewish Topics in Literature and Culture (3) (Same as German 350.)

369 History of the Middle East (3) (Same as History 369.)

370 History of the Middle East (3) (Same as History 370.)

381 Introduction to Judaism (3) (Same as Religious Studies 381.)

383 History of Jewish Civilization I (3) (Same as History 383.)

384 History of Jewish Civilization II (3) (Same as History 384.)

385 Contemporary Jewish Thinkers (3, 3) Writing emphasis. May be repeated. Maximum 6 credit hours. (Same as Religious Studies 385.)

386 Voices of the Holocaust (3) (Same as Religious Studies 386.)

395 The Crusades and the Medieval Christian-Muslim Relations (3) (Same as History 395)

405 Modern Jewish Thought (3) (Same as Religious Studies 405.)

425 Early Christian and Byzantine Art, to 1530 (3) (Same as Art History 425 and Medieval Studies 371.)

431 Medieval Art of the West, 800-1400 (3) (Same as Art History 431 and Medieval Studies 381.)

484 Studies in Jewish History (3) (Same as History 484.)

LATIN (257)

111-112 Beginning Latin (3,3) Must be taken in sequence. Not available to students eligible for Latin 150.

150 Latin Transition (3) This course is designed to prepare students for enrollment in Latin 251. Prereq: Two years of high school Latin and a score on the Latin placement exam below that required for admission to Latin 251. Since 150 is a review of elementary Latin, students who receive credit in this course may not also receive credit for any other 100 level Latin course and therefore also forfeit the six hours of elementary language credit awarded through placement examination.

251 Intermediate Latin: Grammar Review and Readings (3) Prereq: 112 or 150 or placement through the Latin placement examination.

252 Intermediate Latin: Vergil’s Aeneid (3) Prereq: 251 or equivalent.

351 Cicero and Sallust (3) Prereq: 252 or equivalent.

352 Roman Lyric Poetry (3) Poetry of Catullus, Horace, and the elegists. Prereq: 252 or equivalent.

414 Cicero and Techniques of Latin Prose Composition (3) For advanced students in Latin. Practice in prose composition, the writings of Cicero the model. Prereq: 351-352 or consent of instructor.

431-432 Selected Readings from Latin Literature (3,3) For advanced students in Latin. Oratory, historical writings and poetry of ancient Rome, in the original Latin. May be repeated for credit. Maximum 9 hours. Prereq: 351-352 or consent of instructor.

435 Medieval Latin (3) Selected readings from the Latin prose and poetry of medieval Europe. Prereq: Consent of instructor.

LATIN-AMERICAN STUDIES (600)

251-252 Introduction to Latin American Studies (3,3) (Same as History 255-256.)

311 Aspects of Luso Brazilian Literature (3) (Same as Portuguese 311.)

313 Peoples and Cultures of Mesoamerica (3) (Same as Anthropology 313.)

314 Peoples and Cultures of South America (3) (Same as Anthropology 316.)

315-316 Aspects of Luso-Brazilian Literature (3,3) (Same as Portuguese 315-316.)
402 Latin American Studies Seminar (3) (Same as Spanish 331.)

324 Survey of Hispanic Literatures: Beginnings to 1700 (3) (Same as Spanish 330.)

360 History of Latin America (3) (Same as History 360.)

361 History of Latin America (3) (Same as History 361.)

372 Geography of Middle America (3) (Same as Geography 372.)

373 Geography of South America (3) (Same as Geography 373.)

401 Cultural Plurality and Institutional Changes in Latin America (3) (Same as Spanish 401.)

402 Latin American Studies Seminar (3) (Same as Spanish 402.)

411 Linguistic Anthropology (3) (Same as Anthropology 411.)

423 The Development of Diachronic and Synchronic Linguistics (3) (Development of Western linguistic thought from the Hebrews and Greeks through modern times. Readings from Boas, Sapir, Bloomfield, and others. Prereq: 9 hours of courses required for the Linguistics major [300-level or above] or consent of instructor.)

425 Introduction to Descriptive Linguistics (3) (Same as English 425, German 425, Russian 425, and Spanish 425.)

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

429 Romance Linguistics (3) (Same as French 429 and Spanish 429.)

431 Topics in Hispanic Linguistics (3) (Same as Spanish 430.)

435 Structure of the German Language (3) (Same as German 435.)

436 History of the German Language (3) (Same as German 436.)

471 Sociolinguistics (3) (Same as English 471 and Sociology 471.)

472 American English (3) (Same as English 472.)

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.)

476 Second Language Acquisition (3) (Same as English 476.)

477 Pedagogical Grammar for ESL Teachers (3) (Same as English 477.)

485 Special Topics in Language (3) (Same as English 485.)

490 Language and Law (3) (Same as English 490.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

LEADERSHIP STUDIES (288)

200 Student Leadership Development (3) Designed to enhance the knowledge and skill of emerging student leaders and include theoretical and experiential content related to leadership role, skill, and effectiveness. Satisfactory/No Credit grading only.

LEGAL STUDIES (617)

300 Law in American Society (3) (Same as Political Science 332.)

331 Sociological Research (3) (Same as Sociology 331.)

340 Women, Politics, and the Law (3) (Same as Women's Studies 340.)

344 Professional Responsibility (3) (Same as Philosophy 344 and Religious Studies 344.)

362 Roman Law (3) (Same as Classics 362.)

392 Philosophy of Law (3) (Same as Philosophy 392.)

400 Mass Communication Law and Ethics (3) (Same as Communication 400.)

430 United States Constitutional Law: Sources of Power and Restraint (3) (Same as Political Science 430.)

431 United States Constitutional Law: Civil Rights and Liberties (3) (Same as Political Science 431.)

442 Administrative Law (3) (Same as Political Science 442.)

451 Criminal Justice (3) (Same as Sociology 451.)

455 Society and Law (3) (Same as Sociology 455.)

469 Freedom of Speech (3) (Same as American Studies 469 and Speech Communication 469.)

470 International Law (3) (Same as Political Science 470.)

490 Language and Law (3) (Same as English 490.)

496 The Rhetoric of Legal Discourse (3) (Same as English 496.)

LINGUISTICS (623)

200 Language, Linguistics and Society (3) Introduction to linguistics with focus on language development and use of language by individuals and groups. Prereq: Completion of Freshman English or equivalent.

371 Foundations of the English Language (3) (Same as English 371.)

372 The Structure of Modern English (3) (Same as English 372.)

400 Topics in Linguistics (3) Content varies. May be repeated. Maximum 6 hours.

411 Linguistic Anthropology (3) (Same as Anthropology 411.)

420 Language and Law (3) (Same as English 477.)

421 Language and Law (3) (Same as English 490.)

LIMITED COURSES OF INSTRUCTION

441 Logistics and Transportation Analytical Methods (3) Introduction to the principle analytical tools and models used in logistics and transportation; applications of analytical tools to logistics and transportation problems; using analytical methods to support negotiations. Prereq: Business Administration 331.

445 Global Logistics and Transportation (3) Multinational logistics strategy, import-export process, global sea, land, and air operations, and the operations management and control of transportation systems analysis. Prereq: Business Administration 331.

450 Logistics Information Infrastructure Strategy and Design (3) An introduction to the use of information tools to design and create applications to support business processes in networked organizations. Students will be expected to design and use groupware, both static and dynamic web sites, relational-database base applications and e-commerce applications. Prereq: Business Administration 331.

460 Seminar in Logistics and Transportation Strategy (3) Senior seminar in development of strategy for logistics and transportation in a supply chain perspective. Prereq: 411, Statistics 365, senior standing.

492 Logistics and Transportation Off-Campus Study (1-6) Satisfactory/No Credit grading only. Prereq: Consent of instructor.

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.

MANAGEMENT (625)

300 Organizational Management (3) Not for Business majors. The study of the theories of organizations and the practice of management within them. Prereq: Business Administration 201 and Junior standing.

321 Organizational Structure and Behavior (3) Behavioral processes in organizations; motivation, leadership, decision making, communication; behavioral consequences; group behavior, informal organizations, organizational structure, conflict, politics, change and development. Prereq: Business Administration 201 and Junior standing.

341 Operations Management (3) Design of operations systems. Process and methods analysis and measurement, location and layout, project management, operational forecasting. Prereq: Business Administration 341, F, S.

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 strategy 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. F, S.

410 Management Science (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 123, 125 and Statistics 201.

411 Labor Relations and Collective Bargaining (3) American labor history, structure, and philosophy of contemporary unions, nature of collective bargaining, and dispute settlement.

421 Total Quality Management (3) TQM is characterized by three main principles: customer focus, continuous improvement, and teamwork. Course focuses on the managerial perspective that is necessary to successfully implement and sustain a TQM philosophy, while briefly introducing its underlying statistical concepts. Prereq: Statistics 201, Business Administration 341, F, S.

431 Human Resource Management I (3) Theory, methods, and issues pertaining to successful personnel management. Prereq: Business Administration 341, senior standing, F, S.

432 Human Resource Management II (3) Methods of identifying, developing, implementing, and evaluating various personnel programs. Prereq: 431, senior standing, S.

440 Organizational Psychology (3) (Same as Psychology 440.)

441 Operations Management II (3) Planning and control of operations systems. Aggregate planning, scheduling systems, materials management. Prereq: 341.
471 International Management (3) Factors significant to the manager in international business activities.
492 Management Off-Campus Study (1-6) Satisfactory. No Credit grading only. Prereq: Consent of instructor.
493 Independent Study (3) Readings, research, and special projects. Prereq: Consent of instructor. May be repeated one time for credit.

MARKETING (632)
300 Marketing and Supply Chain Management (3) Not for Business majors. Practical applications-oriented overview of what every manager needs to know in order to effectively provide value to customers of the organization, and determine performance through the systematic, strategic coordination of traditional business functions within a particular company and across businesses. Prereq: Business Administration 201 and Junior standing.
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 terms, the results of a research study, and possess the ability to design a sound marketing project. Major writing requirement. Prereq: Business Administration 332.
340 Special Topics in Marketing (3) Topics of current interest to marketing faculty and community are announced prior to offering. May be repeated once for additional credit provided topic is different. Maximum 6 hours. Prereq. Business Administration 332.
410 Advertising Management (3) Business side of advertising. Budget, account representation, strategic planning, measuring ad effectiveness, advertising ethics. Managerial focus emphasizing types of decisions and the personal and professional development of students. Prereq: Accounting 202 and Marketing 310; or consent of instructor.
420 Sales Force Management (3) Personal selling function and its management in the business firm. Focuses on the activities and problems of first line sales managers. Subjects include organization, recruiting, motivating, forecasting, territory design, and evaluation. Prereq: Business Administration 332.
430 Marketing Analysis and Strategy (3) Approaches for finding and exploiting the opportunity gap. Concepts, types of information and analysis techniques combined into a framework for strategic decisions. Major writing requirement. Prereq: Business Administration 201; Accounting 202 and Marketing 310, 330.
440 International Marketing (3) Specific issues involved in entering overseas markets and conducting marketing operations on a global as opposed to a “domestic” scale. Topics include international operations, assessing global marketing opportunity, joint ventures, timing and sequencing of entry, global strategic planning. Prereq: Marketing 310.
450 Services Marketing (3) Specific issues involved in developing marketing strategy for service firms. Takes the perspective of both the customer and the manager, understanding determination and delivery of service quality. Prereq: Marketing 310.
470 Marketing Forecasting (3) Overview of techniques, systems, and management approaches used to develop sales forecasts of markets. Performance measurement of sales forecasting and the use of forecasts in business planning are also covered. Prereq. Marketing 310 and 450.
492 Marketing Off Campus Study (1-6) Satisfactory/No Credit grading only. Prereq: Consent of instructor.
493 Independent Study (1-6) Directed research on subjects of mutual interest to student and staff member. May be repeated. Maximum six hours credit. Prereq: Consent of instructor.
497 Honors I (3) Topics may include nonbusiness marketing applications, macroenvironmental issues, market segmentation, international marketing, services marketing, marketing channels and related issues. 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, and applications. Prereq: Preparation for enrollment in Mathematics 110, 115, 119, 130, 201, and 202. Course does not count toward the total Cumberlands degree requirements. If it fulfill any mathematics requirement, A, B, C, NC grading.
109 Algebra Workshop (1) Self-paced tutorial center for students taking Math 119, 130, or 141 who need additional help (as determined by placement exam, instructor’s recommendation or performance). Individual and computerized instruction on various pertinent algebraic skills. To receive credit, a student must pass the Math 119, 130, or 141 class in which he/she is currently enrolled. May be taken for credit three times. S/N/NC grading.
110 Algebraic Reasoning (3) A course in the applications of elementary mathematics to life in the modern world. Includes applications in financial mathematics, consumer mathematics, and other areas. Students preparing to take 123-125 should take 119 instead of 110. Prereq: Two years of algebra and one year of geometry in high school and either satisfactory placement test scores or Math 100. This course should not be taken without an entrance requirement.
115 Statistical Reasoning (3) An introduction to probability and statistics without calculus. Not available for credit to students in the Business Administration program. Prereq: Two years of algebra and one year of geometry and either satisfactory placement test scores or Math 100.
119 College Algebra (3) A review of algebraic functions, equations, and inequalities for students who satisfy the course prerequisites for 123 or 125 but whose placement test scores indicated additional preparation is necessary. Students who receive a grade of C or better in 119 may subsequently receive credit for 119. Prereq: Two years of algebra and one year of geometry and either satisfactory placement test scores or Math 100. This course should not be taken without an entrance requirement.
123 Finite Mathematics (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Exponential and logarithmic functions, interest and annuities, linear systems and matrices, optimization. Prereq: Two years of algebra and one year of geometry in high school and either satisfactory placement test scores or Math 100.
125 Basic Calculus (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Graphing, exponential, and logarithmic functions, with applications. Prereq: Two students who have received credit for Math 141 or 152 with a grade of “C” or better may subsequently receive credit for 125. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test score, or 119 or 130.
126 Calculus I (3) First course, emphasizing solution techniques. Includes first-order equations and applications, theory of linear equations, equations with constant coefficients, Laplace transforms, and series solutions. Prereq: 142 or 148.
127 Calculus II (3) Functions in two or more dimensions. Includes partial differentiation, multiple integration, and selected topics in vector calculus. Prereq: 142 or 148.
241 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 and the use of vector spaces, linear transformations, eigenvalues, and eigenvectors. Prereq: 141-142.
257 Honors: Matrix Algebra I (3) Prereq: 148 or invitation of the department.
299 Studies in Mathematics (1-3) May be repeated. Maximum 9 hours. Prereq: Consent of instructor.
300 Introduction to Abstract Mathematics (3) Algebra of sets, relations, mathematical induction, algebraic structure of the real number system, order properties, and completeness. Prereq: Math 142.
323 Probability and Statistics (3) Discrete and continuous random variables; conditional probability, expectation, moment generating functions; laws of large numbers, central limit theorem. Elements of statistical inference, estimation, and hypothesis testing. Prereq: 241 (or 247) and 300.
341 Analysis I (3) Introduction to the theory of the real number system, limits of sequences, and functions of a real variable. Prereq: 241 (or 247) and 300.
351 Algebra I (3) Introduction to abstract algebra, emphasizing integers and polynomial rings. Prereq: 251 (or 257) and 300.
371 Numerical Algorithms (3) Development and application of fundamental algorithms for finding roots of equations, solving systems of linear equations, interpolation, fitting data using least-squares, differentiation, integration, and solving ordinary differential equations. Prereq: A high level programming language (e.g., 171 or Computer Science 102), 231, 241 (or 247), and basic matrix algebra (e.g., 200 or 251 and 257).
399 Studies in Mathematics (1-3) May be repeated. Maximum 9 hours. Prereq: Consent of instructor.
460 Geometry (3) Axiomatic and historical development of neutral, Euclidean, and hyperbolic geometry stressing proof technique and critical reasoning. Models of Non-Euclidean geometries. Prereq: 300, or consent of instructor.

461 Topology (3) Includes topology of line and plane, separation properties, compactness, connectedness, continuous functions, homeomorphisms, continua, and topological invariants. Prereq: 241 (or 247) and 300, or consent of instructor.

471 Numerical Analysis (3) Introduction to computation, instabilities, and rounding. Interpolation and approximation by polynomials and piecewise polynomials. Quadrature and numerical solution of initial and boundary value problems of ordinary differential equations, including stiff systems. Prereq: 371 or consent of instructor. (Same as Computer Science 471)


475 Industrial Mathematics (3) Modeling, analysis, and computation applied to scientific/technical industrial problems. Prereq: 241 and familiarity with an operating system and a programming language (e.g., 171 or Computer Science 102).

480 Principles of Supervision and Education in Medicine (1) Seminars in basic principles of management, supervision, and education theories and methods. Comprehensive examination covers entire course.

MEDIEVAL STUDIES (674)

201-202 Medieval Civilization (3,3) Introduction to basic historical and cultural themes in the medieval world, approached from interdisciplinary points of view and including philosophy and religion, art and architecture, language and literature, and political history. Writing-emphasis course.

261 Medieval Culture: Readings from the Early Middle Ages, 500-1000 (3) Critical analysis and interpretation of selected works from the early medieval period. Focus on major types of literature produced during the period 500-1000 A.D., e.g., cultural, religious, rhetorical, lyric, epic, biographical. Includes Augustine’s Confessions, Boethius’ Consolation, St. Gregory’s Life of St. Benedict, The Life of Charlemagne, etc. Writing-emphasis course.

262 Medieval Culture: Readings from the Later Middle Ages, 1000-1500 (3) Critical analysis and interpretation of selected works from the later medieval period. Focus on romantic, 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 Calamities. Should be taken in sequence with 261. Writing-emphasis course.

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

322 Medieval Philosophy (3) (Same as Philosophy 322 and Judicai Studies 322.)

372 Northern European Painting, 1350-1600 (3) (Same as Art History 441.)

381 Medieval Art of the West, 800-1400 (3) (Same as Art History 431.)

382 The Art of Italy, 1250-1450 (3) (Same as Art History 451.)

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

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

403 Seminar in Medieval Studies (3) Interdisciplinary treatment of selected topics. Content varies. May be repeated. Writing-emphasis course.

405 Medieval Literature (3) (Same as English 401.)

406 Chaucer (3) (Same as English 402.)

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.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)
MILITARY SCIENCE (688)

110 Basic Military Science (2) Formation and functioning of the Army defense establishment and its relationship with American society, customs and traditions of the army, aspects of military physical fitness training, and military procedures during emergency duties. Emphasizes challenges facing the military in the future. Adventure training skills lab introduces mountaineering, riflmarksmanship, and optional field training exercises. Coreq: United States citizen; freshman or sophomore standing. Students with higher standing require consent of instructor. Letter grade only. F

120 Basic Military Science II (2) Introduction of basic leadership theory, principles and skills, with emphasis on effective oral communication. Students present a military skills subject briefing. Skills taught include rifle marksmanship, small unit communications, and land navigation. Leadership lab focuses on advancement and personal fitness. Lab includes rappelling, tactical formation, drill and ceremony and optional field exercises. Coreq: US citizen; freshman or sophomore standing. Letter grade only.

130 Army Conditioning Program (1) Challenging instruction that concentrates on students’ individual weaknesses and directly applies exercises designed to increase flexibility, muscular strength, and cardiorespiratory endurance. Student also develops the ability to design and lead a fitness program. May be repeated.

200 Basic Military Studies - Practicum (4) 240 contact hours of instruction and evaluation at Fort Knox, Kentucky over a five week period during the summer. Prereq: United States citizen; minimum of 55 credit hours passed and at least freshman standing with two years remaining at the University (either undergraduate, graduate or in pursuit of additional degree). Coreq: GPA 2.0 or above. Legally qualified. Letter grade only. Su

210 Basic Officer Skills I (2) The study of American Military History from 1775 to present. Includes the record of military forces in peace and war and focuses on the history of military art, arts, battles, battle, and the relationship of armed forces with society. Labs teach rappelling, physical training, drill and ceremony. Includes overnight and historical field trips. Coreq: US citizen, freshman or sophomore standing; 3 years remaining to complete degree. Letter grade only.

220 Basic Officer Skills II (2) 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. Coreq: 210 or consent of the Professor of Military Science. Letter grade only.

310 Advance Military Studies I (4) Discussion and practical exercise of leadership including operation of the military team, small unit leader, small unit planning and physical fitness. Tactical and administrative roles in the military are developed in the classroom and applied during leadership labs and field training. Prereq: United States citizen,junior or senior standing, 3.2 minimum grade point average in all course work and 3.5 in Microbiology courses, and consent of department head. E

310 Advance Military Studies II (4) Preparing the cadet to excel at MS 400 Advanced Camp Practicum. Instruction builds on lessons learned in the 310 and refines small unit leadership skills, map reading, techniques and written communication skills, and physical fitness. Includes three field exercises and a leadership laboratory. Prereq: 310. Letter grade only. 3 hours and 1 hour lab.

420 Military Ethics and Law (4) Military profession, ethical reasoning, staff operations, military briefings and leadership, military justice system, individual leadership, law of land warfare. Prereq: 310, 320 and 400, 410 or consent of instructor. Letter grade only. 3 hours and 1 hour lab. Sp

430 U.S. Military History, 1754 to the Present (3) (Same as History 451.)

493 Military Leadership Topics (1) Topics on principles and skills of military science and leadership taught within the Military Science Department. Letter grade only. May be repeated for credit with additional credit provided topic is different. Maximum 4 hours. Letter grade only. Prereq: Consent of instructor. F, Sp

MUSIC EDUCATION (707)

200 Conducting Laboratory (1) A laboratory course designed to afford conducting opportunities for student conductors and to acquaint students with a variety of music literature. May be repeated. Can be taken as elective credit by any student except those registered for MUS Ed 310 and 320. Letter grade only.

201 Field Experience in General Music (1) Observing and assisting in an approved elementary or middle school classroom. May be repeated. Maximum 3 hours. Satisfactory/No Credit only.

210 Class Windwood Methods I (4) Structure, use, techniques of playing, care and repair of the flute and saxophone in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

211 Class Windwood Methods II (4) Structure, use, techniques of playing, care and repair of the oboe and bassoon in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

212 Class Windwood Methods III (4) Structure, use, techniques of playing, care and repair of the upper brass instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

220 Class Brass Methods (4) Structure, use, techniques of playing, care and repair of the lower brass instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

221 Class Brass Methods II (4) Structure, use, techniques of playing, care and repair of the oboe and bassoon in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

230 Class Percussion Methods I (4) Structure, use, techniques of playing, care and repair of principal instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

231 Class Percussion Methods II (1) Ethnic instruments, marching percussion trends and concepts, percussion literature and training concepts, traditional and non-traditional percussion accessories, steel drums. Letter grade only.

240 Class String Methods I (4) Structure, use, techniques of playing, care and repair of upper string instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

249 Class String Methods II (1) Structure, use, techniques of playing, care and repair of upper string instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.
241 Class String Methods II (1) Structure, use, techniques of playing, care and repair of lower string instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. May be repeated. Letter grade only.

250 Functional Piano for Teachers (1) Practical piano skills for the elementary/vocal teacher who does not have a keyboard instrument as the applied principal. Transposition, improvisation, reading open vocal scores, simple accompaniments. May be repeated once for credit. F, Sp

260 Eurhythmics (1) Principles and practice of eurhythmics, as developed by Emile Jaques-Dalcroze. Prereq: Consent of instructor. May be repeated once for credit. Maximum 2 hours. Letter grade only. F, Sp

300 Music for Elementary Teachers (2) Singing, rhythmic activities, instrumental activities, listening, music reading, and creative activities appropriate for the elementary grades. For elementary education majors only. Prereq: Admission to Teacher Education Program. Letter grade only. F, Sp

310 Conducting I (3) Basic skills of conducting: baton, time beating of traditional patterns, preparatory beat, cutoffs, cueing. Development of the left hand, fermata, subdividing. Mechanisms of full score. Conducting "live" groups. Prereq: Two years of music theory or consent of instructor. Letter grade only.

320 Conducting II (2) Developing advanced baton technique. Multiple rhythms, modern beat patterns and their variations. Studying, analyzing and interpretation of the full score. Achieving complete physical control. Rehearsal techniques. Conducting "live" groups in advanced works. Prereq: Conducting I or consent of instructor. Letter grade only.

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

340 General/Vocal Music Methods (3) School methods and materials for teaching music in the elementary, middle and high schools. Intended for the instrumental music education major. Letter grade only.

350 Field Experience in Music Education (1) Prereq: Consent of instructor. Admission to Teacher Education Program. May be repeated. Maximum 3 hours. Satisfactory/No Credit only. E

400 Student Teaching in Music (12) Full time teaching practicum in an approved public school. Prereq: admission to the teacher education program and completion of all Music Education courses required for the Bachelor of Music degree (four-year alternative) in Music Education. Coreq: Music Education 401.

410 Senior Seminar (0) Issues related to the music teaching profession will be examined in Student Teaching. Coreq: Music Education 400.

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.

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.

441 String Orchestra Pedagogy and Rehearsal Techniques (2) Function, organization and direction of a school orchestra program. Letter grade only.

482 Internship II: Grades K-12 (3-6) Demonstration of professional competence in planning, instruction and classroom management. Internship is offered in local public schools. Prereq: 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. E

493 Independent Study in Music Education (1-5) Prereq: Consent of instructor. May be repeated. Maximum 9 hours. Letter grade only. E

MUSIC ENSEMBLE (708) Prerequisite: By audition or consent of instructor.

301-501 Woodwind Choir (1,1) May be repeated. Maximum 4 hours.

302-502 Jazz Saxophone Ensemble (1,1) May be repeated. Maximum 4 hours.

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 Tuba 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.

315-515 Chamber Music Ensemble (1,1) May be repeated. Maximum 12 hours.

316-516 Steel Band (1,1) May be repeated.

320-520 UT Singers (1,1) May be repeated.

330-530 Chamber Singers (1,1) May be repeated.

334-534 Saxophone Choir (1,1) May be repeated.

340-540 Opera Theatre (1,1) May be repeated.

350-550 Concert Band (1,1) May be repeated.

352-552 Symphonic Band (1,1) May be repeated.

353-553 Wind Ensemble (1,1) May be repeated.

354-554 Pep Band (1,1) May be repeated.

359-559 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.

383-583 Men’s Chorale (1,1) May be repeated.

389-589 Women’s Chorale (1,1) May be repeated.

399-599 Accompanying (1,1) May be repeated.

MUSIC GENERAL (698)

140 Fundamentals of Performance (1-2) Private instrumental or vocal study, one or two half lessons per week. (1 hour credit - elective, secondary or minor; two hours credit - major.) This course is designed to prepare students for enrollment in Music Performance 103-195. Cannot be used to satisfy applied music requirements at the principal level in the B.M. or the B.A. degree in music. May be taken for a maximum of 4 credit hours per instrument. Admission by audition. A, B, C, N. Requires payment of Applied Music fee. F, Sp

200 Solo Class (0)

301 Junior Recital (0)

310 Practical Experience in Arts Management (3) Arts management practicum with approved arts organization. Individualized work with music instructor in conjunction with supervised experience in arts organization management. For music majors only. Prereq: Consent of instructor. May be repeated for credit in another area of arts management.

401 Senior Recital (0)

411 Lecture Recital (0)

421 Special Topics in Performance (1-3) Prereq: Consent of department head. May be repeated. Maximum 4 hours.

431 Special Topics in Pedagogy (1-3) Prereq: Consent of department head. May be repeated. Maximum 4 hours.

MUSIC HISTORY (709)

110 Introduction to Music in Western Culture (3) Developing listening skills and understanding of Western music from the ancient world through the 20th Century. For non-music majors. Writing-emphasis course. E

115 Music in the United States (3) Explores musical traditions of the United States. 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. F, Sp

200 Introduction to Music Literature (3) Basic forms of music and accompaniments works through chronological approach. For music majors and minors only. Sp


290 Introduction to World Musics (3) Survey of music of representative cultures from Africa, Asia, Oceania, and the Americas with a focus on music as sound and as part of the human condition. Also includes an emphasis on applying basic music terminology to listening skills.

310 Introduction to African-American Music (3) History of African music, blues, gospel music, and jazz with emphasis on Black artists and their contributions. (Same as African and African-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.)

340-341 Contemporary Trends in American Church Music I, II (2,2) Survey of sacred music in popular contemporary style emphasizing analysis and evaluation of music. Must be taken in sequence. 340 includes theory and keyboard harmony appropriate to the style. 341 includes composition and arranging within the style. Prereq: Music Theory 210-220.

350 History of Jazz (3) Origin, development, and styles of jazz music and its exponents. Cultivation of special listening techniques. Writing-emphasis course. (Same as African and African-American Studies 350.) F, Sp

380 Music in World Cultures (3) Examines music from an ethnomusicological perspective focusing on musical performance and the interrelationships of music, culture, and daily life. The course surveys music from a variety of cultures through a series of case studies. Prereq: 210-220, or permission of instructor.

400 Music History Survey (3) History of music with emphasis on genres, style changes, and cultural forces. 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 6 hours.

420 History of Opera (3) Dramatic, vocal, and orchestral elements in opera of Italian, French, and German schools. 1600-present.

430 Symphonic Literature (3) Survey of literature for orchestra from Baroque to the present, with emphasis on the evolution of the symphony.

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 eras through selected writings. Writing-emphasis course.

480 Music in Christian Worship (3) Hymnody, liturgies, and liturgical music.

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 brass 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 (3) 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- Survey of string techniques, issues, research and pedagogies; topical presentations by the applied string faculty and guests. 350-Development of the violin family of instruments and bows; survey of string literature, performance styles, 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.

490 Instrumental Conducting (3) Knowledge and skills in instrumental conducting; various periods and composers and teachers of different styles to the conductor’s art; musical analysis and practice in conducting. Prereq: Music Education 320 or equivalent.

MUSIC JAZZ (711)

110 Jazz Theory (2) Fundamentals of the jazz language, including tumology, chord symbols, chord scales, and chord progressions, plus ear training lab. Prereq: Music Theory 110.

120 Analysis of Jazz Styles (2) Individual improvisatory styles through analysis of their 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, formulae for voicing chords, chord progressions, and fundamental melody-playing and improvisation for right hand. Must be taken in sequence.

160 Introduction to Styles in Jazz Drumming (2) Examination of major composers and performers who have contributed significantly to creation of principal styles through analysis of their transcribed solos, including improvisation, hymn playing, and accompanying. Prereq: 230 and organ proficiency at the 200 level.

260 Early Keyboard Instruments (1) An introduction to the harpsichord, clavichord, and baroque organ. Emphasis on appropriate playing techniques. Brief survey of instrument types, repertoire, and performance practice issues. Prereq: Ability to perform keyboard literature at the 180, 185, or 190 level.

310-320 Church Service Playing I, II (1,1) Continuation of 240. Prereq: 240.

330 Sight Reading at the Keyboard (1) Prereq: Consent of instructor.

340-350 Piano Pedagogy I, II (3,3) Pedagogical methods and materials related to the development of principles of learning; collateral teaching experience. Must be taken in sequence.


420-430 Piano Literature I, II (3,3) 420—from 1750 to middle 19th century; 430—middle 19th century to present.

460-470 The Organ and Its Literature I, II (3,3) Development of the organ and organ literature from the Middle Ages through the Baroque; emphasis on style and interpretation of organ literature and methods; organ design. Prereq: or Coreq: Music History 220 and consent of instructor.

480 Teaching Class Piano (3) Historical survey and evaluation of teaching methods and methodology for college and/or adult beginning piano classes, with collateral teaching experience. Prereq: Consent of instructor.

485 Suzuki Piano Method I (2) Study of the psychology, procedures, and literature of the Suzuki piano method. Must be taken in sequence. Prereq: Consent of instructor.

490-491 Internship (2,2) Opportunity for pedagogy students to gain experience in teaching beginning students under the supervision of experienced instructors. Includes weekly discussion seminars.

495 Suzuki Piano Method II (2) Study of the psychology, procedures, and curriculum of the Suzuki Piano Method. Prereq: Consent of instructor.

MUSIC PERFORMANCE (713)

Prerequisite: By audition only, Music General 140 or equivalent.

103-203-303-403-503 Flute (1-4) May be repeated.

105-205-305-405-505 Oboe (1-4) May be repeated.

110-210-310-410-510 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.

176-276-376-476-576 Electric Bass (1-4) May be repeated.

179-279-379-479-579 Guitar I (1-4) May be repeated.

180-280-380-480-580 Piano (1-4) May be repeated.


190-290-390-490-590 Organ (1-4) May be repeated.

294-394-494-594 Composition I (1-3) May be repeated. Prereq: Music Theory 210 and 230, grade C or higher, or consent of instructor.

305-495-595 Composition with Electronic Media (1-3) May be repeated. Prereq: Music Theory 210 and 230, grade C or higher, or consent of instructor.

499 Improvisation (1-2) May be repeated. Prereq: Consent of instructor. Cannot be used to satisfy applied music requirement.

MUSIC TECHNOLOGY (717)

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 digital real-time processing, noise reduction, mixing, editing, monitors, system wiring, and maintenance.

340 Introduction to Computer Music Transcription (3) Exercise in notation, playback and publishing incorporating elements of word processing, graphic design, sequencing and page layout. Study of Music Instrument Digital Interface protocol as it applies to computer music work station design. Prereq: consent of instructor.

390 Sound Synthesis Techniques (3) Studio and real-time applications of synthesizers. Historical and theoretical concepts, equipment interface and usage, analysis of sounds and compositions. Prereq: 290 or consent of instructor.

MUSIC THEORY (714)

100 Fundamentals of Music (3) Theory and practice of basic elements of music. Writing-emphasis course. F, S

110-120 Theory I, II (3,3) Materials of music including basic notation, harmonic and melodic dictation, and major and minor scales. Exercise in analysis, composition, and improvisation of music with emphasis on common practice. Must be taken in sequence. Prereq: 110 - successful completion of music audition and theory placement exam. 120 - Music Theory 110, grade C or higher.


140 Ear Training II (1) Development of proficiency in identifying and notating melodic, harmonic and rhythmic models. Includes computer lab. Should be taken concurrently with 120.

210-220 Theory III, IV (3,3) Materials of music including altered chords and analytical methods. Emphasis on literature of the Classic, Romantic, and Contemporary periods. Exercises in analysis, composition, and improvisation of music. Must be taken in sequence. Prereq: 210 - Music Theory 120, grade C or higher, or consent of instructor; 220 - Music Theory 210, grade C or higher, or consent of instructor.


310 Form and Analysis (3) Study and practice in analysis of forms of music from smallest structural units to large compound forms. Prereq: Music Theory 210 and 240, grade C or higher.

320 Instrumentation (2) Basic techniques in scoring for voice, brass, woodwind and string choirs and percussion. To be taken by jazz and music education majors. Prereq: Music Theory 210 and 230, grade C or higher.

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.

410 Ear Training Review (1) Review and application of harmonic and melodic dictation skills for graduate and advanced undergraduate students. Prereq: 240 or the equivalent. Required of entering graduate students with deficiency in ear-training. Satisfaction/No credit grading only.
420 Orchestration (3) Advanced techniques in instrumental writing with emphasis on scoring for the concert orchestra. To be taken by theory and composition majors. Prereq: Music Theory 210 and 230, grade C or higher.

430-440 Counterpoint I, II (3,3) — Species 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 16th century and fugue analysis of works from the 17th through the 20th centuries. Prereq: 430; Music Theory 210 and 230, grade C or higher. 440: Music Theory 430, grade C or higher.

450 Choral Arranging (2) Analysis of scores and writing of arrangements for choirs. Prereq: Music Theory 210 and 240, grade C or higher, 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.

230 Acting for Singers (1) Advanced work on song presentation and interpretation; scene study and characterization. Prereq: Consent of instructor. May be repeated. Maximum 3 hours.

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) — German songs. 420-French, Italian, Russian, Scandinavian, Czechoslovakian, British, and American art songs. No graduate credit for students in the M.M. concentration in Vocal Performance.

425 Functional Diction for Singers (3) Comprehensive one-semester course in the pronunciation of languages. English, French, German, Italian and Latin and Spanish. Basic instruction in the International Phonetic Alphabet; development of pronunciation skills; overview of diction styles and traditions in each language; survey of diction resources and reference materials. Suitable for Sacred Music and Music Education majors with a concentration in Voice and for graduate students in Choral Conducting. Does not fulfill deficiency requirements for graduate students in Voice or Accompanying.

450-460 Pedagogy I, II (2,1) 450-Concepts and approaches to the vocal training of children, all ages and all levels of voices. 460-Vocal teaching materials: includes collateral teaching experiences. Prereq: Consent of instructor.

490 Church Music Methods, K-12 (3) Development of the child’s voice from preschool through high school. Choral literature for the youth church choir, non-vocal musical activities appropriate to various age groups as used in church music programs (e.g., Orff, handbells, rhythm activities, etc.)

NUCLEAR MEDICINE TECHNOLOGY (718)

Courses in this concentration are open only to qualified students who have completed the first three years of the Nuclear Medical Technology Curriculum, described in the College of Allied Health Sciences curricula section of this catalog, and who have been admitted to the Nuclear Medical Technology Program at UTMC.

410 Physics for Nuclear Medicine I (3) Nuclear physics, mathematics, and statistics. Survey of historic and current concepts in atomic and nuclear structure, edges, relationships between matter and energy, nuclear reactions, nuclear stability, production of radionuclides, radionuclide generators, decay scheme, and charts used in nuclide identification and behavior prediction. Mathematics and statistics topics include basic arithmetic theories, mathematical manipulations, and applied technical mathematics for use in radio active decay equations, dose calculations and concentration, volume and shielding determinations. Graphing, counting statistics and other physical and chemical applications of mathematics to nuclear medicine are included. May not be substituted for Physics 471 or 472.

411 Nuclear Instrumentation (3) Course concerns non-imaging, imaging, and instrument quality assurance. Non-imaging topics include basic radiation detectors, their applications, functions, and limitations with overview of basic electronics, gas-filled detectors, statistics and counting, solid and liquid scintillation detection systems, semiconductor detectors, and quality control. Imaging topics are instrumentation of imaging devices, including basic function, application of principles and techniques, and specificity. Topics emphasize size function and maintenance requirements of nuclear instrumentation, radiation safety practices, and statistical analysis of quality control data.

412 Radiopharmacy (2) Emphasis on basic chemistry and physical sciences. Topics include radiopharmaceutical preparation and quality assurance, radionuclide production, and basic photographic film chemistry. Kinetics, biochemistry, toxicology mechanisms of localization are also included, plus guidelines and regulations governing radiopharmacy management and operation.

415 Physics for Nuclear Medicine II (3) Continuation of 410 with focus on radiobiology and radiation safety. Radiobiology topics include interactions of radiation with matter, cellular and systemic responses to radiation, early and late somatic and genetic effects, biological effects of low level radiation, clinical organ and dose calculations, and benefit versus risk factor. Radiation safety topics include dose limit recommendations, ALARA philosophy, federal and state regulations, radiation monitoring equipment, and methods and techniques for safe practice of nuclear medicine.

420-430-440 Clinical Nuclear Medicine I, II, III (4,4,4) Theories and applications of nuclear medicine. I—Patient care, central nervous system, endocrine system, respiratory system and digestive system; II—hematopoietic, lymphatic system, genitourinary system, musculoskeletal system, non-organ, tumor, inflammatory, imaging, cardiovascular imaging, non-imaging nuclear medicine; III—single photon emission tomography, positron emission tomography, clinical quality assurance, pediatric nuclear medicine, radionuclide therapy, and management and administration of nuclear medicine programs.

425 Computer Applications in Nuclear Medicine (3) Computer systems, applications, and components in quantitation in nuclear medicine. Topics include acquisition modes and limitations, image processing modes and limitations, and image quantitation with some attention to machine and language architecture and numbering systems.

450-460-470 Clinical Practicum I, II, III (4,4,4) Clinical nursing for nuclear medicine students. Clinical experiences are conducted at UTMC and other clinical sites. Clinical instruction activities in imaging, instrumentation, radiation therapy, dose administration, radiation safety and protection; pharmacological and non-imaging nuclear medicine, image processing and interpretation, computer applications, radionuclide therapy, and basic administrative and management procedures.

475 Nuclear Medicine Registry Review (2) Preparatory course for the National Registry Examination with special emphasis on film interpretation and reporting in technical critique sessions.

NURSING (720)

All upper division nursing courses except 314, 351, 406, and 480 are restricted to students who have progressed into the major. See Progression Policies and Procedures.

201 Intro to Nursing (3) Introduction to Nursing (3) History, philosophy, and scope of nursing practice with emphasis on the holism of persons, standards for professional practice, and an overview of the nursing process and nursing theories.

202 Health and Culture (3) An exploration of the beliefs and values that govern the health of the people of the United States in relation to health, illness and the health care delivery system. Implications for the helping professions are examined. This course has no prerequisites and is open to all UT undergraduate students.

305 Transitions to Professional Nursing (5) Builds on the knowledge base and experience of RNs in transition to professional nursing. Focuses on the conceptual foundations of nursing practice and issues in health care delivery. For RNs only. 4 lecture, 1 lab. Su

311 Foundations of Professional Nursing Practice (5) Emphasis on patient centered communication, therapeutic interventions, and critical thinking as key elements in the nursing process. Clinical laboratory experiences provide opportunity for the application of these processes in the care of adults in selected health care settings. 2 lecture, 3 lab. Prereq: 201; Coreq: 319, 333, 341, F

314 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. Biopsychosocial interactions of lifestyle and genetic risk factors for cardiovascular and malignant diseases, wellness potential, and prevention. 4 lecture, 2 lab. Prereq: Consent of instructor. Open to undergraduate students in all colleges.

319 Pathophysiology of Health Deviations (4) Application of physiological concepts to health promotion, maintenance, deviations, and restoration. Introduction to psychoneuroimmunology. Emphasis on interactions of body systems, and impact of disease processes on the human body. F

333 Health Assessment (3) Theory and laboratory course in the systematic assessment of health status including history taking and performance of physical assessment skills. For RNs this course is prerequisite to clinical course beyond 305 Transitions. 2 lecture, 1 lab. F

341 Health Promotion (3) Introduction to health promotion concepts and nursing interventions for health promotion and disease prevention. F

351 Pharmacology I (2) Biochemical and pharmacological concepts of therapeutics. Basic concepts of drug action and interactions. Major drug classifications. Prereq: Chem 100-110, and at least 6 semester hours of Anatomy and Physiology. Sp

361 Health Maintenance and Restoration Across the Life Span (5) Focus on health maintenance and restoration in nursing practice with children or adults experiencing commonly occurring acute or chronic illness. 4 lecture, 1 lab. Prereq: N311, N319, N333, N341, or RN Status. Coreq: N351.

381 Professional Leadership Issues I (2) Focus on concepts and strategies for management and leadership as a professional nurse. Emphasis on problem identification, individual responsibility, decision making, communication, confrontation, collaboration, conflict resolution, coordination, delegations, supervision, and teamwork. Focus on support safe client care. Prereq: N311, N341 or RN status. Sp

382 Health Promotion and Maintenance in Community (4) Focus on nursing care of at-risk populations. Design and implement interventions to promote and maintain health and wellness assessment tools, value systems, and environmental factors, health education, and community resources. Prereq: 311, 319, 333, 341, or RN status. Co or Prereq: 351, 361. 2 lecture, 2 lab. F

403 Health Promotion and Maintenance in Child Bearing Families (5) Nursing practice for promotion, maintenance, and restoration of reproductive health. Emphasis on therapeutic relationships with childbearing families for long-term positive impact on health care and lifestyle. 3 lecture, 2 lab. Prereq: All required 300 level courses or RN status. F, Sp

406 Pharmacology II (2) Continuation of 351 with emphasis on nursing responsibilities in the safe and effective use of therapeutic drugs, recognition and reporting of side effects, and critical aspects of patient education. Prereq: 319, 351. F

415 Family/Community Health Nursing (6) Application of the nursing process to individuals, families, groups in the childbearing/bearing stages of development. Clinical experience are provided in a variety of hospital and community settings. 3 lectures, 3 lab. Prereq: All 300 level nursing courses. For non-nurse MSN students only. Su

421 Mental Health Maintenance and Restoration (4) Nursing care and care for persons with mental health needs. Emphasis on use of self as therapeutic agent with individuals, groups and families and developing nursing interventions for mental health maintenance and restoration. Prereq: all required 300 level nursing courses or RN status. 2 lecture, 2 lab. F, Sp
342 Health Promotion, Maintenance, Restoration in the Community (3) Focus on nursing care of at risk individuals, communities, and populations. Assessment of sociocultural values, environmental factors, health education, and community resources. Design of interventions to promote, maintain, and restore health through the use of the epidemiological approach. 

451 Professional Leadership Issues II (2) Survey of issues and trends in the practice of professional nursing. Prereq: N311, N333, N341, F

452 Professional Leadership Issues III (2) Legal and regulatory processes affecting nursing practice and clarification of personal and professional values. Application of decision making dynamics and team work to issues having an impact on nursing practice. Prereq: All required 300 level nursing courses and N451. Sp.

461 Health Restoration Across the Life Span (5) Focus on health restoration in nursing practice to support and care for children or adults and their families with acute, complex health needs. Emphasis on quality of care, continuity of care, coordination of care and end of life care. Prereq: All required 300 level nursing courses. 3, 2lec, 2, 3 lab. F, Sp.

470 Special Topics (1-3) In-depth study of selected nursing topics, problems, or issues not covered in other courses. Topics determined by faculty and student interest. Consent of instructor. 

471 Nursing Research (3) Introduction to research design, and methodologies. Critique of selected research studies for application to evidenced-based nursing practice. Prereq: All required 300 level courses, or consent of instructor. 

480 Nursing Informatics I (3) Provides opportunity for nursing students and/or registered nurses to develop beginning knowledge and skills in computer applications and the field of nursing informatics. Existing and future health information systems will be examined. Emphasis is placed on hands-on acquisition of basic computer competencies. Use of electronic communication, word processing, spreadsheet, database, and computer-assisted instruction programs. Students will also be exposed to nursing documentation, flowcharting, and authoring software. 2 lecture, 1 lab. Prereq: Upperdivision, or RN status or consent of instructor. 

482 Health Maintenance and Restoration in the Community (4) Analysis of health needs of a selected community utilizing the epidemiological process. Emphasis on visiting clients and families across the life span in their own environment. Prereq: All required 300 level nursing courses for RNs, 305, 333, 351 and pre or coreq: 319: 2lec, 2 lab. F, Sp.

490 Specialty Preceptorship (4) In-depth practicum to develop knowledge and skill in a selected specialty area under direct guidance of clinical preceptor. Knowledge development in specialty area under guidance of faculty. Prereq: Consent of instructor. N421, N471, N441, N482 or RN Status. 1lec, 3 lab. Sp.

493 Independent Study (1-3) Nursing or health-related topic not covered in other nursing courses. Prereq: Senior standing or consent of instructor.

NUTRITION (726) 

100 Introductory Nutrition (3) Conceptual nutrients: current consumer issues in nutrition; nutritional needs through childhood, growth, and aging; nutrition concerns and issues. A nutrition major who has received credit for NTR 300 may not receive credit for this course. F, Sp.

201 Careers in Nutrition (1) Overview of nutrition-related careers. Routes to meeting academic, registration, and experiential requirements. Letter grade only.

300 Fundamentals of Nutrition (3) Nutrition in normal and altered health states during life cycle; nutritional analysis of diets. Prereq: Chemistry 110 or equivalent. Prereq or Coreq: BCBM 230. A nutrition major who has received credit for NTR 100 may not receive credit for this course. Sp.

302 Life Span Nutrition (3) Physiological development and psychosocial factors that influence nutrient needs and nutrition behaviors of individuals across the life span. Nutrition and health for selected populations, for selected age groups. Prereq: 100, BCBM 230 or consent of instructor.

303 Foodservice Systems Management (3) Assessment of managerial, organizational and operational structures in foodservice systems with focus on markets related to dietetics; human resource policies and strategies applied to foodservice systems management. Sp.

310 Physiological Chemistry (4) Same as Biochemistry 310. 


313 Vitamins and Minerals (3) Functional properties and interactions among vitamins and minerals as they apply to human nutrition. Prereq: 100, BCBM 230, Chemistry 350. Coreq: or Prereq: 310. 

314 Energy Metabolism and Metabolic Integration (3) Integration of carbohydrate, fat and protein metabolism as applied to nutrient utilization and requirements in humans. Prereq: 310, 313.

410 Professional Issues in Dietetics (1) Dietetic registration, licensure; third party payments; dietetic practice; marketing dietetics; internship application preparation, public policy in dietetic practice. Prereq: Senior standing.

412 Food and Nutrition in the Community (3) Influence of health characteristics, geographic, social, economic, educational and cultural factors on food and nutrition programming; relationship of community food and nutrition problems to programs and services for families and communities with particular attention to disease prevention; public policy. Prereq: 302, 415. 


420 Food and Nutritional Analysis (4) Principles, procedures, and instrumentation for analysis of food and body fluids. Interpretation of chemical, dietary, and anthropometric data analysis in nutrition research. Prereq: 100, 310. 

450 Special Topics: Nutrition (1-3) Developments, issues and problems in Nutrition; topics variable. Prereq: Junior or Senior standing in NTR or consent of instructor. May be repeated. Maximum 3 credits.

492 Field Experience: Nutrition (1-3) Prereq: Junior or Senior standing, consent of instructor. SATrade only. 

493 Directed Study: Nutrition (1-3) Prereq: Junior or Senior standing, consent of instructor. Letter grade only.

ORNAMENTAL HORTICULTURE AND LANDSCAPE DESIGN (740)

110 Introduction to Ornamental Horticulture (3) Survey of the history, science, crafts, professions, and businesses of ornamental horticulture. Prereq: Enrollment restricted to: PSLS freshmen and transfer sophomores; open to all non-majors. F

220 Basic Landscape Plants (3) Identification, classification, adaptation, culture and landscape design uses of basic ornamental trees, shrubs, and vines. Prereq: 8 hours biological sciences or consent of instructor. F, Sp. 2 hours and 1 lab.

230 Interior Plantscaping (3) History and introduction of the interior plantscaping industry. Identification, culture, propagation, and use of plants for the commercial interior plantscaping market. Management of the interior environment including light, humidity, growing media, insects, and diseases. Commercial use of containers, plants, water features, and artificial plants. Prereq: 110 or consent of instructor. F


280 Fundamentals of Landscape Design (3) History of landscape design as it relates to contemporary applications. Awareness and sensitivity to the landscape; basic principles and design theory with an emphasis on residential landscape planning. Introduction to landform, landscape materials, and planting design. 1 hour and 2 labs. E

326 Public Horticulture (3) In-depth study of the public horticulture industry. Attention given to the diversity of public horticulture institutions, career opportunities, and research. Discussion of current topics and issues. Prereq: 110 or consent of instructor. F.

330 Plant Propagation (3) Physiology, methodology, and environmental requirements for propagation. Prereq: 8 hours of biological sciences or consent of instructor. 2 hours and 1 lab. F.

350 Basic Landscape Construction (3) Basic materials and techniques as applied to the landscape construction and contracting industry; application of landscape materials, wood, concrete and masonry construction; site drainage, and landscape grading. Prereq: 280. 2 hours and 1 lab.

360 Practicum in Landscape Construction (3) Practical experience in implementation of landscape development projects. Directed lab and field instruction in planting operations. Foundation of basic landscapes construction including interpreting and implementing landscape design drawings and specifications. Prereq: 350. Two three hour labs. Sp.

370 Grounds Maintenance (3) Identification and understanding of maintenance practices for soil amendments, landscape treatments, growth control, irrigation, climate protection and pest control. Maintenance and use of equipment; management practices. 2 hours and 1 lab.

380 Supplemental Landscape Design Graphics (3) Refinement of graphic skills as applied to landscape design elevations, sections, isometric projections, and perspectives. Lettering, plan graphics, color rendering, and other visual presentation media. Prereq: 280. Two hour labs. F.

390 Fall Herbaceous Ornamental Plants (3) Identification, culture, and landscape use of late summer and fall herbaceous ornamental plants including annuals, perennials, herbs, and ornamental grasses. Basic gardening practices and design elements using such herbaceous ornamental plants. Prereq: 110 or consent of instructor. F.

391 Spring Herbaceous Ornamental Plants (3) Identification, culture, and landscape use of Spring and early summer herbaceous ornamental plants including annuals, perennials, herbs, bulbs and wildflowers. Basic gardening practices and design elements using such herbaceous ornamental plants. Prereq: 110 or consent of instructor. Sp. A-E


421 Native Plants in the Landscape (3) Native plants and plant communities as a basis for landscaping and environmental restoration. Weekly lecture coupled with either an outing or service practicum of invasive exotic plant removals or planting of natives. Study and work sites will primarily be demonstration projects of the UT Environmental Landscape Design Lab. They include local schoolyard habitats, greenways, wetlands, streambanks, and shorelines. Prereq: ONL 1220, Botany 330 or consent of instructor. F.

427 Management and Administration of Public Horticulture Institutions (3) Management of resources in nonprofit institutions, support organizations and communities. Theoretical framework and institutional mission; strategic planning and programming; financial accounting and budgeting; development and fund raising; personnel policies; volunteer development; marketing and publicity; legal issues; relationships between staff and governing boards; the use of information technology in management. Prereq: 310, 320; or consent of instructor. F.

429 Field Study of Public Horticulture Institutions (3) Extended 10-12 day field study of various public horticulture institutions, such as botanical gardens, arboretums, historical grounds, zoos, conservatories, cemeteries, and nature preserves. Application and travel fee required. Prereq: 326. Sp, min-term.

435  Public Garden Operations and Management (3) An analysis of year-round operations and management of public gardens. Case studies involving time and labor management, development and management, implementation of volunteer programs, information dissemination methods for public outreach, management of grounds and facilities using the University of Tennessee Institute of Agriculture Gardens as a model. Prereq: 326. Sp.

436  Plant and Garden Photography (2) Principles and techniques of photography as they relate to plants and gardens. Study of equipment options and field shooting under various weather conditions and in different seasons. Prereq: Senior standing and consent of the instructor. Sp. A

440  Medical Ethics (3) Introduction to the application of bioethics as a role for treatment, rehabilitation and/or training of individuals with disabilities. Senior standing and consent of the instructor. F, A

450  Specialty Landscape Construction (3) Methods of design, materials, and construction techniques for specialized components of the landscape industry. Irrigation systems, outdoor lighting, garden ponds and water features. F

451  Plant Tissue Culture (3) Same as Botany 451.

460  Professional Practices in Landscape Construction and Management (2) Professionalism, salesmanship, proposals, bidding, estimating, specifications, and contracts management in landscape services industry. Computer technology applicable to landscape construction and contracting industry. Includes presentations by industry representatives. Prereq: 350 or consent of instructor. 2 hours, Sp

480  Advanced Landscape Design (3) Comprehensive application of landscape design skills to a variety of project experiences with an emphasis on landscape planning and analysis, planting design, and materials estimating. Prereq: 280, 380. Two 3 hour labs. Sp

485  Computer Aided Landscape Design (3) Overview of Computer Aided Design (CAD) as it relates to landscape design and construction. Emphasis on development of landscape designs through utilization of LANDCAD software. Prereq: 280, 380, and Agriculture and Natural Resources 290. F, Sp

494  Professional Horticultural Communications (3) Communication for public horticulturists through written, oral, and visual media. Emphasis on communication skills using proper writing techniques and grammar for print media, brochure design using desktop publishing, slide show development, oral presentations, and video use for educational and informational presentations in Ornamental Horticulture. Prereq: Agriculture and Natural Resources 290 and senior standing. F, A-E

PERSIAN (744)

161-162 Elementary Persian I,II (4,4) (Same as Asian Studies 141-142.)

261-262 Intermediate Persian I,II (4,4) (Same as Asian Studies 261-262.)

PHILOSOPHY (745)

110  The Human Condition: Values 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.

120  Foundations of Western Thought: Antiquity through 1500 (3) Plato, Aristotle, Late 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 (3) An introduction to practical reasoning in natural language, designed to enhance skills in recognizing, analyzing, evaluating and constructing arguments. Satisfies Arts and Sciences Basic Skills Requirement “Mathematics, Computer Science or Logic.”

135  Formal Logic (3) Introduction to formal deductive systems: propositional and predicate logic. Satisfies Arts and Sciences 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.

290  Social and Political Philosophy (3) Basic problems and concepts of social and political philosophy.

300  Special Topics (3) May be repeated. Maximum 6 hours.

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 and Judaic Studies 322.) Writing-emphasis course.

324  Seventeenth- and Eighteenth-Century Philosophy (3) Writing-emphasis course.

326  Nineteenth- and Twentieth-Century Philosophy (3) Writing-emphasis course.

324  Business Ethics (3) Ethical problems as they confront both business as a social institution and individuals in business. Writing emphasis course.

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. Writing emphasis course. (Same as Legal Studies 344 and Religious Studies 344.)

345  Bioethics (3) Ethical issues in health care such as abortion, euthanasia, human experimentation, fairness in health care delivery and the doctor-patient relationship. Writing-emphasis course. (Same as Religious Studies 345.)

346  Environmental Ethics (3) Issues concerning the nature of the environment and the place of humanity within it.

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  Philosophy of Science (3) An introduction to major problems in the Philosophy of Science. Specific issues vary, but may include: the nature of causality; the relationship between experiments, theories, and scientific practice; how theories change and how scientific disputes get settled; the role played by social organization in science (e.g. gender and race issues); Basic or others. Writing emphasis course. Prereq: None

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.)

375  Buddhist Philosophy and Religion (3) (Same as Religious Studies 375.)

379  Religion and Philosophy in China (3) (Same as Religious Studies 379.)

382  Philosophy of Feminism (3) Various feminist theories and their application to social issues of concern to women today. Writing emphasis course. (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.

392  Philosophy of Law (3) A course in analytic and normative jurisprudence. Such topics as the nature of legal systems as normative social practices, the relationships between law and morality, theories of adjudication and legal reasoning, the justification of punishment, theories of legal responsibility, law and economics, and feminist and neo-Marxist critiques of law. Writing emphasis course. (Same as Legal Studies 392.)

395  Existentialism (3) Themes related to freedom and finitude in the tradition that begins with Kierkegaard and Nietzsche and extends to Heidegger and Jaspers. Sarte 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.)

419  Science as Method (3) (Same as Ecology and Evolutionary Biology 419 and Botany 419.)

420  Topics in History of Philosophy (3) One or more topics in the history of philosophy through the eighteenth century. Prereq: 6 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum 9 hours.

435  Intermediate Formal Logic (3) Metatheory of formal logic and philosophy of logic. Prereq: 135 or consent of instructor.

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.

462  Philosophy of Biology (3) An introduction to current issues in the Philosophy of Biology. Specific problems vary, but will likely include: the nature of natural selection, adaptation, and fitness; the level of selection debate; the nature of species; the interaction of environment and organism, and others. Prereq: upper division course work in philosophy or biology or permission of instructor.

472  Philosophy of Language (3) Problems of meaning, reference and truth. What is the relation between words and the world? How do sentences manage to be about the world? What is it for something to be true? Prereq: 3 philosophy courses 200 level or above.

473  Philosophy of Mind (3) Problems of mind and body in relation to consciousness and personal identity. Prereq: 6 hours of philosophy or consent of instructor.

479  Studies in Recent Continental Philosophy (3) Selected topics with topics from areas such as Existentialism, Phenomenology, Hermeneutics, Structuralism, Post-Structuralism. Prereq: 6 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum 6 hours.

491  Foreign Study (1-15)

492  Off-Campus Study (1-15)

493  Independent Study (1-15)

PHYSICAL EDUCATION ACTIVITY PROGRAM (764)

200  Special Topics (1-2) Selected topics in various activities not covered in the regular program. When content varies, may be repeated. Maximum 6 hours. S/NC or letter grade.

202  Badminton (1) Fundamental badminton technique, game strategy, and rules for singles and doubles play.

206  Bowling (1) Introduction to ball selection, approach, spot bowling, rules, scoring, etiquette, and basic terminology necessary for enjoyable recreational bowling.

211  Golf (1) Introduction to chipping, putting, full swing, rules, etiquette, and scoring necessary for enjoyable recreational play.
213 Ice Skating (1) Beginning skills and etiquette in ice skating. Satisfactory/No credit grading only.

216 Martial Arts (Special Topics) (2) Special Topics. Successive topics in various forms of martial arts, including but not limited to jujitsu, judo, karate, and tai chi. When Content varies may be repeated. Maximum 6 hours.

223 Personal Safety and Self Defense (1) Develop and enhance the options of self defense so they may become viable considerations for personal safety. Satisfactory/No Credit grading only.

224 Physical Fitness: Conditioning (1) Program of flexibility, strength, and cardiovascular endurance through exposure to various exercise forms. Satisfactory/No Credit grading only.

225 Physical Fitness: Exercise to Music (1) Total body workout to music with emphasis on fundamental fitness components of flexibility, strength, and cardiovascular fitness.

226 Exercise and Weight Control (1) Fitness activities and basic fundamentals of nutrition for students interested in losing weight: includes body composition assessment and instruction on achieving a goal weight.

229 Physical Fitness: Jogging (1) General factors on physical fitness with emphasis on the improvement of cardiovascular fitness through jogging.

230 Physical Fitness: Swimming (1) Introductory course outlining basic principles of fitness, evaluation, and workout design in the aquatic environment.

231 Physical Fitness: Walking (1) Course for those wishing to begin an exercise program: includes measurement and interpretation of fitness components, including body composition, cardiovascular fitness, low back function and nutrition.

232 Racquetball I (1) Pass, kill, ceiling shots, and basic serves. Single, and doubles strategy, necessary for recreational play.

234 Soccer (1) Introduction to individual and team fundamentals, rules, and strategy.

235 Social Dance (2) Popular ballroom dance forms such as the swing (shag), fox trot, cha cha, tango and rumba.

236 Softball (1) Introduction to individual and team fundamentals, rules and strategy.

239 Beginning Swimming (1) Includes skills in the American Red Cross basic swimming course for the non-swimmer.

240 Intermediate Swimming (1) Crawl stroke, elementary back stroke, sidestroke, back crawl, breast stroke, entries and turns.

244 Tennis I (2) Introduction to forehand, backhand, serve, volley, rules, scoring and simple strategy.

245 Tennis II (1) Development of accuracy and improved technique in tennis. Introduction to smash, spin serve, and advanced strategy.

249 Tumbling (1) Beginning tumbling skills including forward and backward rolls, twisting, balance, agility, and combinations.

251 Volleyball (1) Introduction to individual and team fundamentals, rules, and strategy.

252 Weight Training (1) Introduction to the principles of strength development among muscle groups through the use of free weights and machines.

254 Yoga and Relaxation (1) Introduction to yoga and various forms of relaxation, with the majority of class time spent learning and refining the postures. Satisfactory/No Credit grading only.

255 Water Safety Instructor (2) Prepares individuals to teach American Red Cross basic swimming and personal safety courses. ARC certification. Prereq: Swim test second day of class.

259 Snow Skiling (1) Development of skills necessary to balance, walk, and slide while on the snow. Learn ski etiquette and “Skier’s Responsibility Code.” Satisfactory/No Credit grading only.

260 Western Dance (1) Popular western dance forms including line dances, western social dances, mixers and couples.

261 Scuba Diving (1) Introduction and developmental SCUBA diving skills as well as the theory, safety skills and practical application of skills to open water SCUBA diving.

PHYSICS (773)

101-102 How Things Work (3,3) For students with majors outside of science. Extends familiar objects of everyday experience and leads to an understanding of the physical principles that make them work. No prerequisite.

135-136 Introduction to Physics for Physical Science and Mathematics Majors (4,4) A one year course covering basic physics at the introductory level and beyond. Alternative to honors physics 137-138 for physics majors. Coreq: Math 141-142. 3 hours lecture, 2 hours lab.

137-138 Honors Fundamentals of Physics for Physics Majors (5,5) For physics and engineering physics majors and qualified students from other majors. Coreq: Mathematics 141-142.

161 Elements of Physics for Architects and Interior Design Students (3) Chosen topics in physics for architecture and interior design students. Course emphasizes material development by logic and lecture demonstrations. Prereq: Intermediate Algebra and one year of geometry.

221-222 Elements of Physics (4,4) Basic physical principles and applications required in premedical, pre-dental, pre-pharmacy and pre-veterinary programs. 221-Mechanics, heat, wave motion, and optics. 222-Electricity and magnetism. Must be taken in sequence. 3 hours lecture, 3 hours lab. Prereq: Mathematics 130 or Calculus.

231 Fundamentals of Physics: Electricity and Magnetism (3) For engineers and Arts and Sciences majors in mathematics and the physical sciences. Required of all engineering students. Prereq: Engineering Fundamentals 102; Coreq: Mathematics 142. 2 hours lecture, 3 hours lab/recitation.


240 Fundamentals of Physics: Modern Physics (3) Special relativity, fundamental concepts of modern physics and their applications to atomic, nuclear, particle and condensed matter physics. Prereq 136 or 138 or consent of instructor.


321 Thermal Physics (3) Concepts of temperature and heat; laws of thermodynamics; elementary statistical mechanics; applications to physical and chemical problems. Prereq. 311, or 136, or 138, or 231.

341 Introduction to Nuclear Physics (3) Introductory theoretical nuclear physics with emphasis on applied aspects. Primarily for Nuclear Engineering majors. Prereq: 240 or 232.

342 Structure of Matter (3) Physics of molecules and condensed matter. Prereq. 240 or 232.

361-362 Electronics Laboratory (3,3) Electronic devices and instrumentation techniques in the physical laboratory. 361-Basic analog and digital electronics, including elementary building blocks of relevance to data acquisition, simple microprocessor interfacing. 362-Advanced instrumentation techniques applied to the study of electronic circuits as dynamic physical systems, feedback and stability, noise, discrete sampling, Fourier analysis and synthesis, nonlinear circuit dynamics. Prereq: 316 or 341, or 232, 6 week lab.

401 A Survey of Physics (3) A survey of physics from earliest times to the present, emphasizing the unifying philosophical and mathematical principles. Classical theories of mechanics, quantum electro-dynamics, and recent theories of particles, fields, and the cosmos. Considers the influence of physics on modern society and the practice of physics from a value-oriented perspective. Written reports on important original papers... thought-provoking problems combining different fields of classical physics, and a final oral and written report on some independent study. Prereq: Senior standing in Physics or consent of instructor.


421 Modern Optics (4) Transmission of light in uniform, isotropic media, reflection and transmission at interfaces; mathematics of wave motion and interference effects. Rudiments of Fourier optics and holography. Prereq: 431, or 136 or 138 and 232 and consent of instructor. 3 hours lecture, 3 hours lab.

431-432 Electricity and Magnetism (3,3) Electrodynamics, magnetostatics, coupled electric and magnetic fields. Maxwell’s Equations, electromagnetic waves and radiation. Prereq: 138 or 136 or 232.

441-442 Contemporary Physics (3,3) An introduction to the major fields of contemporary physics ranging from Cosmology to High Energy. In addition to a discussion of the fundamental concepts in each field, the essential elements of Electricity, Magnetism and Quantum Mechanics will be covered. Must be taken in sequence. Prereq: 420 or equivalent, 311-312, 321.

453-454 Team Research Project (3,3) Student teams will carry out major experimental or computational projects. The team in consultation with the instructor will choose the topic and develop a plan for the project. Each team will conduct several oral presentations in an independent manner, carry out the project, and produce a final written report. Must be taken in sequence. Prereq: 361, 461.

461-462 Modern Physics Laboratory (3,3) 461-Introduction to fundamental and modern techniques in experimental physics, and to the theory and practice of measurement and data analysis. Selected experiments in nuclear, atomic, molecular and solid state physics, and modern optics. Prereq: 361 and either 240 or 411, 462-Advanced experiments and experimental techniques in modern physics; experimental team work. Thorugh quantum mechanics, special relativity, and advanced topics of scientific reports. Prereq: 461. 6 hours lab per week.

490 Senior Seminar (1-3) Topics of current interest. May be repeated with consent of department. Maximum 6 hours.

491 Foreign Study (3-15)

492 Off-Campus Study (3-15)

493 Research and Independent Study (1-3) Research and study in field of particular interest with faculty guidance. Consent of department is required. Maximum 6 hours.

PLANT SCIENCES AND LANDSCAPE SYSTEMS (790)

471 Statistics for Biological Research (3) Notation, descriptive statistics, probability, distributions, confidence intervals, estimation, hypothesis tests, analysis of variance, mean separation procedures, linear regression and correlation. Prereq: Math 125 or equivalent. 3 hours and 1 rec. F, Sp

490 Seminar (1) Current topics in Horticulture, Crop Sciences, and Landscape Design. Prereq: Senior standing. F, Sp

492 Internship in Horticultural and Plant Sciences (1-3) Supervised work experience with a departmentally-approved employer within the ornamental horticulture, turfgrass, production horticulture, or field crop science industry. May be repeated. Maximum of 6 credits. E
493 Problems in Horticultural and Plant Sciences (1-3) Supervised individual problems relating to the plant sciences or landscape design. May be repeated. Maximum of 6 credits. E

POLITICAL SCIENCE (801)

101 United States Government and Politics (3) Introduction to fundamental processes and policies of American National Politics including the Constitution, voting, the Presidency, the Congress and the courts.

102 Introduction to Political Science (3) Introduction to politics and political systems.

107 Honors: United States Government and Politics (3) Analysis and understanding of political systems for students with superior ability. Admission by permission of department for students with at least a B average; entering freshmen accepted on basis of strong placement scores and high school record.

300 Introduction to Political Philosophy (3) An introduction to the concepts, enduring questions and significant thinkers associated with political philosophy with specific attention to differing conceptions of human nature, politics, the state, civic obligation and rights, freedom, justice and democracy.

311 Contemporary Issues in American Public Policy (3) Selected public policy issues confronting the nation, including the background, nature, and effects of present policies, and options for the future. Writing-emphasis course.

312 Popular Culture and American Politics (3) Popular culture related to American politics and government focusing on the role of television, fiction, music, drama, art and sports. Writing-emphasis course. (Same as American Studies 312 and Cinema Studies 312.)

315 Tennessee Government and Politics (3) Major elements in Tennessee government and politics.

320 State Government and Politics (3) Setting, institutions, and processes of government in the fifty states, generalizations and comparisons, with emphasis on federalism and intergovernmental relations.

321 Urban Politics and Process (3) Development of politics and policy-making in the modern American city. (Same as Urban Studies 321.)

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-emphasis course. (Same as Legal Studies 330.)

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 development and comparative-emphasis course.

361 Politics in Western Democracies (3) Political culture patterns, and institutions of Western democratic systems. Writing-emphasis course.

365 Introduction to International Relations (3) Resource availability, international economics, international security, and peace, war, diplomacy, the balance of power, international law and international organization.) Writing-emphasis course.

366 United States Foreign Policy Process (3) Processes whereby United States foreign policies are made and implemented, focusing on interaction within federal bureaucracy and roles of the President, Congress, the press, and public opinion.

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-emphasis course.

387-388 Junior Honors Seminar (3,3) Required of honors majors; admission with consent of department.

401 Political Analysis (3) Nature, character, and functions of research design, data collection, and statistical techniques used in the study of politics.

410 Special Topics in Political Science (3) May be repeated with consent of department. Maximum 6 hours.


420 Political Attitudes and Behavior (3) Systematic examination of political attitudes, public opinion and political behavior. (Same as American Studies 420)

421 Political Parties and Interest Groups (3) Analysis of political parties, interest groups, campaigns and elections.

430 United States Constitutional Law: Sources of Power and Restraint (3) Judicial review, constitutional powers of the President and Congress, federalization of regulatory authority, and constitutional protection of political and economic rights. (Same as Legal Studies 430.)

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. (Same as Legal Studies 431.)

435 Criminal Law and Procedure (3) An overview of the criminal process. Writing-emphasis course. Focus on constitutional issues and public policy issues.

440 Public Management and Human Resources (3) How to mobilize and manage technical and human resources in pursuit of public sector organization goals.

441 Public Budgeting (3) The process, participants, and policies of governmental budgeting, emphasis on federal government budgeting. Includes an overview of budget reform measures and their effectiveness.

442 Administrative Law (3) Legal dimensions of administrative power and procedures, and constitutional controls over administrators. (Same as Legal Studies 442.)

451 Ethnic Conflict in Foreign Countries (3) Examines political and violent conflict among ethnic and national groups and the challenges these conflicts pose for democratic and democratic states.

452 Black Political History (3) Recent evolution and current political environment of Black African nations. Writing-emphasis course. (Same as African and African-American Studies 452.)

454 Government and Politics of China and Japan (3) Political setting, structure and political processes in China and Japan. Writing-emphasis course.

456 Latin American Government and Politics (3) Introduction to the political development of Latin America with an emphasis on contemporary politics. Writing-emphasis course. (Same as Latin American Studies 456.)

459 Government and Politics of Russia and Eastern Europe (3) System transformation, political processes and governmental structure in Russia and Eastern European countries. Writing-emphasis course.

461 Policy Making in Democracies (3) Comparative approach to theory and process of making public policies.

463 Contemporary Middle East Politics (3) Governments and movements in the Middle East, their characteristics, bases, and interrelationships.

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 and war. (Same as Legal Studies 470.)

471 International Political Economy (3) Economic relations between countries; theoretical and case studies of efforts to construct multilateral international institutions. Topics include economic growth, international trade and investment, development and global equity. Writing-emphasis course.

472 Normative Issues in International Relations (3) An examination of such normative issues among states as human rights, environmental degradation and distributive justice. Writing-emphasis course.

475 Ancient and Medieval Political Thought (3) Major Western political thinkers from Socrates to Marsili of Padua. (Same as Medieval Studies 475.)

476 Modern Political Thought (3) Major Western political thinkers from Machiavelli to Marx.

487-488 Senior Honors Thesis and Seminar (3,3) Required of honors majors; admission with consent of department.

491 Foreign Study (1-15) Prerequisite: Consent of Department. May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Prerequisite: Consent of Department. May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Prerequisite: Consent of Instructor. May be repeated. Maximum 15 hours.

494 Internship (1-6) Prerequisite: Consent of Department. May be repeated. Maximum of 6 hours. May not be counted toward requirements for the Political Science major. S/NC only.

PORTUGUESE (811)

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

199 Portuguese Language and World Business (3) 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 Arts and Sciences will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students majoring in the Language and World Business major concentration. See the Director for further information. F

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

301-302 Literature, Culture and Civilization of the Portuguese-Speaking World (3,3) A course for students who have completed the intermediate sequence of Portuguese and wish to enhance their knowledge of language and culture through the medium of literature. Taught in Portuguese. Prerequisite: 212, 400, or the equivalent.

309 Intermediate Conversation and Composition (3) Designed to improve proficiency in oral and written communication in Portuguese. Prerequisite: 212, 400, or the equivalent.

315-316 Aspects of Luso-Brazilian Literature (3,3) Lusophone literature through literary theory and history of literature. Prerequisite: At least one course at the 300 level or the equivalent. (Same as Latin American Studies 315-316.)

400 Portuguese for Speakers of Another Romance Language (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. Prerequisite: 300 level or the equivalent.

409 Advanced Conversation & Composition (3) Informal and structured conversation on contemporary topics (business, politics, economics, religion, an culture) and formal writing practice at an advanced level. Prerequisite: 309 or the equivalent.

431-432 Topics in the Literature & Language of the Portuguese-speaking World (3,3) Outstanding works of literature and culture from the countries where Portuguese is spoken. Topics may vary. May be repeated. Maximum 12 hours. Prerequisite: At least one course at the 300 level or the equivalent. (Same as Latin American Studies 431-432.)

490 Internship (1-15) Career-related experiences in the United States or abroad with permission of the Language and World Business Director. For Language and World Business majors only. S/NC only.

491 Foreign Study (1-15) S/NC only.

493 Independent Study (1-15) S/NC only.

PSYCHOLOGY (830)

110 General Psychology (3) Introduction to the study of human behavior and experience. E

117 Honors General Psychology (3) Open to University Honors Students and to students with ACT’s of 29 or higher (or SAT equivalent). Prerequisite: Consent of Instructor.

220 Behavior and Experience: Humanistic Psychology (3) Behavioral and phenomenological analysis of individuals and their development in natural environments. Prereq: 110. E.

295 Research Analysis in Psychology (3) An introduction to the research methods and data analyses used in psychological research. This course should be taken as soon as possible after declaring psychology a major. Prerequisite: Psychology 110.  

300 Child Psychology (3) The normal child from conception through infancy, childhood, and adolescence. Psychosocial, physical, cognitive, social, and emotional development. Prereq: 110. E.

310 Learning and Thinking (3) Survey of theory and findings of research concerning both human and non-human. Prereq: 110. F, Sp.


347 Honors Seminar (1) Classic works in psychology; professional and ethical issues in psychology; presentations of faculty scholarship and honors students' projects. Meets weekly. May be repeated (maximum 8 hours). Prereq: Consent of instructor.

360 Social Psychology (3) Theories, methods, and findings of research concerning individual behavior in a social context. Prereq: 110. E.

367 Psychology Honors Project (3) Independent studies course which leads to the Honors thesis. Students must have plans of study approved by their mentor prior to enrollment. May be repeated (maximum 15 hours). Prereq: Consent of instructor.

370 Ethology and Sociobiology (3) Same as Ecology and Evolutionary Biology 370. Sp

382 Contemporary Topics in Psychology (3) Current issue or problem, such as architectural psychology, impact of technology, artificial intelligence, or stereotypes. Different topic each semester. Prereq: 110 and upper division standing (30 or more semester hours). Maximum of 6 hours may be applied toward major. May be repeated. E.

385 Statistics in Psychology (3) Descriptive statistics; logic of hypothesis-testing and statistical inference. Basic parametric and nonparametric tests. Not open to students with credit in Math 115 or Statistics 201. E.

395 Methods of Research in Psychology (3) Fundamentals in design, conduct, and interpretation of research, including systematic observation, experiments, quasi-experiments, and program-evaluations. Focus on both laboratory and natural settings. Prereq: 110 and 385 or Math 115 or Statistics 201; and Junior standing (60 semester hours). F, Sp.

399 Supervised Research and Field Work (1-3) Field experience in community-based research and service settings. Prereq: Consent of instructor. Note: Any combination of 6 hours of 399, 489, 491, 492, or 493 may be used in major. An additional 6 hours may be used as electives. May be repeated. E.

400 Cognitive Psychology: Language and Symbolic Processes (3) Study of the thinking processes, language, memory, acquisition, and understanding. Directed and associative thinking, physiological and psychological theories of perception. Emphasis on audition and vision. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor. Prereq: Psych 385 or Math 115 or Statistics 201 or Graduate standing. Sp

415 Psychology of Religion (3) History of the psychology of religion with an examination of various philosophical and empirical orientations. Exploration of the psychological function of religion for individuals and society. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor. (Same as Religious Studies 415.)

420 History and Systems of Psychology (3) History of psychological thought. Classical approaches and recent developments. Prereq: 110 and upper division standing (60 semester hours) or consent of instructor or Graduate standing. F, Sp.

424 Psychology and the Law (3) Psychological aspects of legal systems. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor or Graduate standing.

430 Health Psychology (3) Psychological factors related to health and illness, including stress, personality, and environment. Applications of psychological treatments to physical illness. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor.

434 Psychology of Gender (3) Biological, psychological, and social factors in gender. Importance of gender roles to theory and research. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor. (Same as Women's Studies 434.)

440 Organizational Psychology (3) Social-psychological analysis of organizations, emphasizing role-theory and systems theory. Prereq: 110 and 360 and Junior standing (60 semester hours) or consent of instructor. (Same as Management 440.)

445 Measurement and Testing (3) Theory of test construction and psychological measurement. Statistical methodology for the behavioral sciences. Prereq: 110, Psych 385 or Math 115 or Statistics 201 and Junior standing (60 semester hours) or consent of instructor.


450 Comparative Animal Behavior (3) Same as Ecology and Evolutionary Biology 450. F.

459 Comparative Animal Behavior Laboratory (3) Coreq: 450. (Same as Ecology and Evolutionary Biology 459.) F.

461 Physiological Psychology (3) Nervous system and physiological correlates of behavior. Biological basis of emotion, learning, memory and stress. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor. One of the following three sequences: Biology 101/102 or Biology 210 and 120, and Anthropology 110 and 210. F, Sp.

467 Psychology Honors Thesis (3) Independent study for writing and oral defense of Honors thesis. S/NC only. Prereq: consent of instructor.

470 Theories of Personality (3) Major theories of human personality and their development. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor. Sp.

475 Adolescent Development (3) Theoretical perspectives and empirical research findings pertinent to adolescent development. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor. F, Sp.

480 Theories of Learning (3) Classical and current approaches to learning and cognition. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor. F.

482 Topics in Psychology (3) Intensive analysis of special topics, such as African-American Psychology or evaluation of programs in the community. Prereq: 110 and Junior standing (60 semester hours) or consent of instructor. No more than 6 hours of Psych 382 and Psych 482 may count towards the major. An additional 6 hours of Psych 382 and 482 may count as electives. May be repeated. E.

489 Supervised Research (1-9) Prereq: Junior standing (60 semester hours) and consent of instructor. No more than 6 hours of 399, 489, 491, 492, or 493 may be used in major. An additional 6 hours may be used as electives. May be repeated. E.

491 Foreign Study (1-15) Prereq: Junior standing (60 semester hours) and consent of instructor. Note: Any combination of 6 hours of 399, 489, 491, 492, or 493 may be used in this major. An additional 6 hours may be used as electives. May be repeated.

492 Off-Campus Study (1-15) Prereq: Junior standing (60 semester hours) and consent of instructor. Maximum 12 hours in 399, 489, 491, 492, and 493 may be applied toward major requirements. Note: Any combination of 6 hours of 399, 489, 491, 492, or 493 may be used in this major. An additional 6 hours may be used as electives. May be repeated.

493 Directed Independent Study (1-3) Individual study of selected issues. Prereq: Consent of instructor. May be repeated. Maximum 6 hours. E.

PUBLIC HEALTH (839)

300 Introduction to Public Health (3) Aspects of public health including discussion of contemporary and controversial health issues. Prereq: Junior standing (60 semester hours) or consent of instructor. No more than 6 hours of 399, 489, 491, 492, or 493 may be used in major. An additional 6 hours may be used as electives. May be repeated. Sp.

305 Disease Epidemiology, Prevention and Control (3) Foundations of epidemiology applied to infectious, acute, and chronic diseases. Emphasis on applications of public health prevention and control initiatives throughout the disease cycle. Prereq: 110 and 360 or 240. F.

310 Environmental Management and Control (3) Contemporary principles of control of disease-producing agents in our environment. Emphasizes concepts for effective application of control principles to vocational endeavors and/or daily living activities. Includes: Drinking water quality (chemical, physical and biological), waste management (liquid, solid and hazardous), vector control, safe food management, and environmental sanitation and safety to include pool management, shelter hygiene (homes, child care, schools, hospitals, etc.), occupational health and safety. F, Sp.

400 Consumer Health (3) (Same as Health 400.)

410 Worksite Health Promotion (3) Foundations of health promotion programs delivered in the workforce that revolve around issues relative to employees and management. Emphasis on theory, program design, implementation, and evaluation from the perspective of health promotion specialist. Prereq: 310 and 320. Sp.

493 Directed Independent Study (1-3) Individual study of selected issues. Prereq: Consent of instructor. May be repeated. Maximum 6 hours. E.

PUBLIC RELATIONS (841)

270 Public Relations Principles (3) Theories and principles of public relations. Overview of public relations in management of business, government, institutions and organizations. Brief case studies and public relations projects.

320 Public Relations Communications (3) Mechanics of effective writing for various media to achieve organizational goals. Overview of governing communication and persuasion theories. Focus on implementation of research-based, planned and managed techniques in a lab setting. Prereq: 270 or ADV 250, and Journalism 200, or consent of instructor.

370 Public Relations Cases (3) Oral and written analysis of current and classic case studies in public relations. Ethics, professional organizations, publications, research and history of public relations. Methods of communication and persuasion. Prereq: 270.

412 Opinion Writing (3) (Same as Journalism 412.)

416 Issues in Public Relations (3) Topics vary. May be repeated. Maximum credit 6 hours. Prereq: Consent of instructor.

470 Public Relations Campaigns (3) Research, planning and communication and evaluation of major public relations campaigns. Oral and written presentation of a public relations project from inception to completion. Extensive out-of-class work. Prereq: 320 and 370 or consent of instructor.
300 Principles of Interpreting (3) Theory and practice in interpreting appropriate to the context. Techniques for reducing visual fatigue and overload.

355 Sign to Voice Interpretation (3) Interpreting from sign language to English in a variety of physical settings (one-to-one, classroom, assemblies) for students of all ages with varying communication styles. Selecting appropriate to the context. Attention is also given to cross-cultural communication issues.

410 Practicum With Deaf/Hard of Hearing (3) Supervised practicum with hearing impaired students in pre-school, school, and/or residential school setting.


419 Speech Development of Deaf/Hard of Hearing (4) Theories of speech development, approaches in training perception and production of speech, and aural habilitation. Practicum experience.

424 Nature of Hearing Impairments (3) Anatomy and physiology of hearing; nature and causes of hearing loss; methods and instrumentation for assessment of hearing levels; interpretation of audiologic services to medical and other rehabilitation disciplines.

425 Introduction to the Psychology and Education of the Deaf/Hard of Hearing (3) Primarily for those planning to teach the hearing impaired. Research related to psychology, social adjustment, communication methodology, language development, and the role of the hearing impaired. Survey of literature. Visits to programs.

431-432 American Sign Language III and IV (3,3) Sequence stresses fluency of expressive and receptive sign communication skills. Using language in context is emphasized. Grammatical structures of ASL and cultural implications of the deaf community. Must be taken in sequence. Prereq: for 431: 422 or consent of instructor. Prereq: for 432: 431 or consent of instructor.

493 Directed Independent Study (1-3) Tutorial and specialized area. Prereq: Consent of instructor. May be repeated. Maximum 6 hours. S/N/C or letter grade.

RELIGIOUS STUDIES (863)

101 World Religions in History (3) Introduction to religion in culture and society, including examination of religious traditions from China, India, and the Mediterranean world. Writing emphasis course.

102 The Comparison of World Religions (3) Introduction to religion in culture and society, focusing on cross-cultural interpretation and the treatment of common problems and themes within religious traditions. Writing emphasis course.

232 Varieties of Religious Community (3) How different forms of religious communities (cults, tribes, sects, monastic orders, denominations, familial, etc.) have sought to reject, reinforce, transform, ignore, or dominate their culture and society. (Same as Sociology 232.)

300 Ways of Understanding Religion (3) Sources and methods used in the study of religion and religions; analysis of approaches to the study of religion. Writing emphasis course.

301 Religious Myth, Symbol, and Ritual (3) Distinctive religious interpretative procedures and approaches appropriate to their particular social and cultural functions in religions.

302 Anthropology of Religion (3) Religions of selected non-literate peoples. Role of religion in their social and cultural systems. (Same as Anthropology 302.)